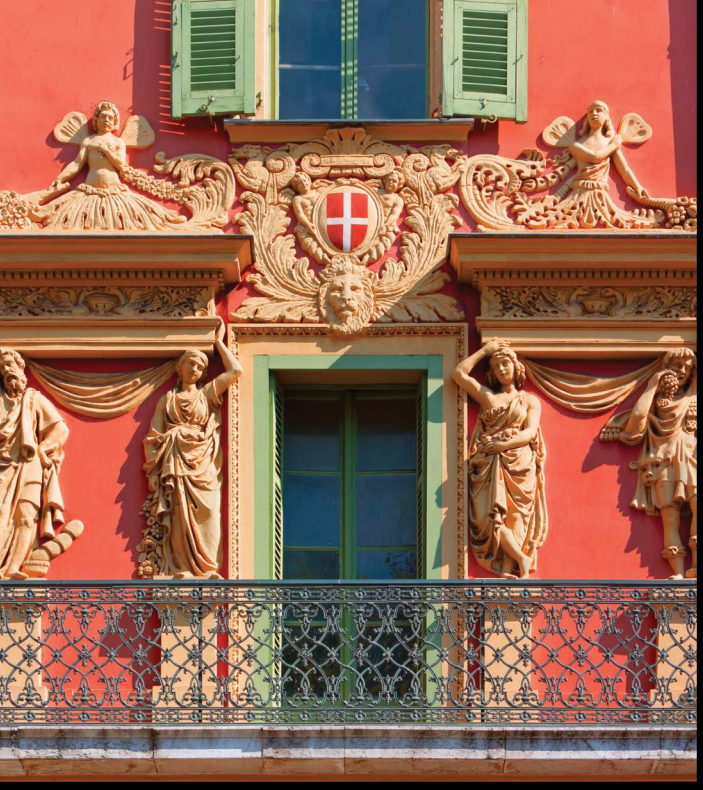

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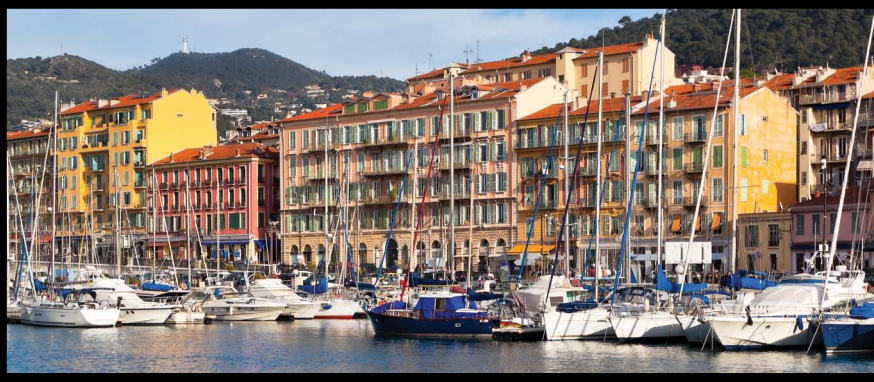
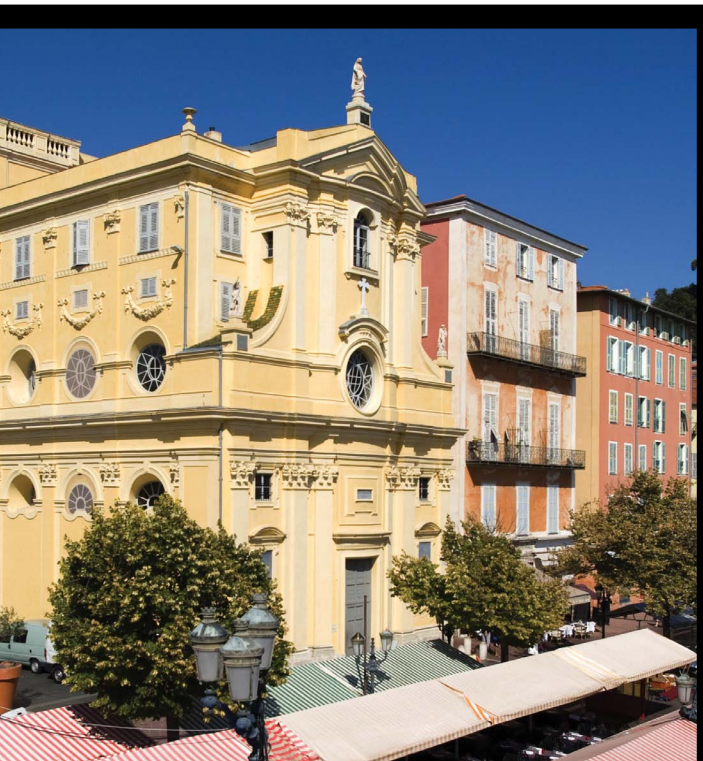


ABSTRACT E-BOOK



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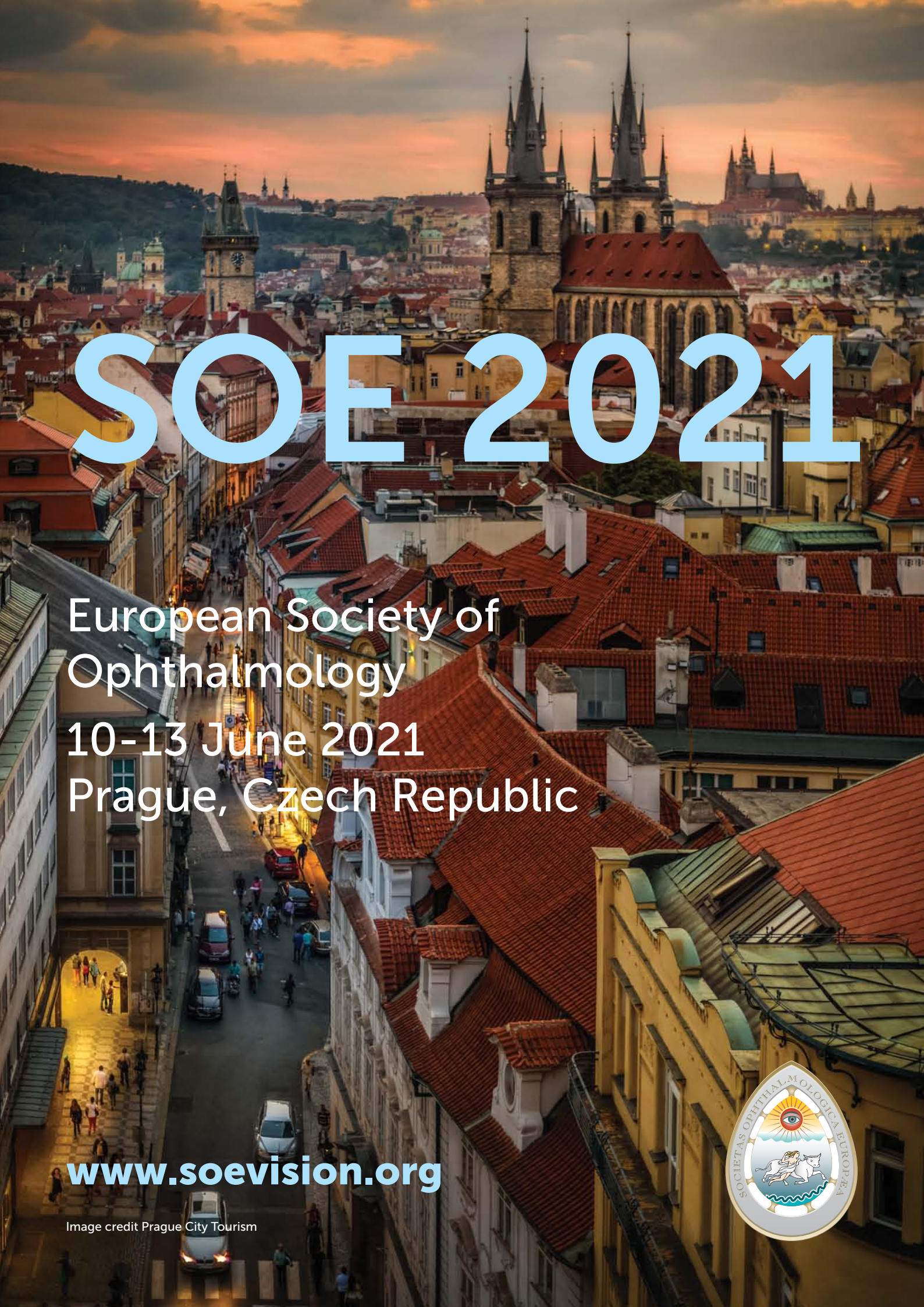

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European Society of Ophthalmology

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Congress of the European Society of Ophthalmology (SOE) 2019

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Congress of the European Society of Ophthalmology (SOE) 2019

13-16 June, 2019, Nice, France

Contents

FREE PAPER PRESENTATIONS
FP01: Retina

FP01-02-RET

Retinal microcirculation and plasma endothelin-1 level in patients with subclinical atherosclerosis and hypertension

Adzhemian N.[1], Kiseleva T.[1], Ezhov M.[2], Tankovskiy V.[1], Guseva N.[1], Balatskaya N.[1]
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Purpose: To evaluate parameters of ocular blood flow (OBF), retinal vessels caliber, and plasma endothelin (ET)-1 level in patients with mild hypertension (HT) and subclinical atherosclerosis (SA).
Methods: A total of 58 patients aged from 40 to 60 years with mild hypertension were enrolled. The control group consisted of 20 healthy volunteers of the same age range. Retinal vascular caliber was measured from digital retinal photographs. The amount of plasma ET-1 was measured by sensitive enzyme-linked immunosorbent assay. Carotid arteries and OBF were evaluated using Color Doppler Imaging (CDI).
Results: Ultrasonography of carotid arteries showed atherosclerotic plaques and internal carotid artery stenosis (< 30%) in 17 (29.3%) of 58 subjects and increase of intima-media thickness in 25(43.1%) cases. Ocular blood flow evaluation showed statistically significant increase of resistance index (RI) in posterior ciliary arteries in subjects with HT (0.66±0.05) and the increase of RI in ophthalmic artery (0.78±0.06), central retinal artery (0.75±0.07) and posterior ciliary arteries (0.74±0.05) in HT-subjects associated with SA. ET-1 levels were higher in 70% patients with SA and HT (0.95±0.18*f*mol/l) in comparison with control (0.4±0.21*f*mol/l).Mean retinal arterial caliber was narrowed in patients with HT (65±7.4μm) and further narrowed in patients with HT and SA (54.1±5.3μm) than in control group (75±9μm). Mean retinal venular caliber was significantly wider in patients with HT and SA (133±17.07μm) than in control group (104±11 μm) and patients with HT (115± 15.7).
Conclusions: CDI of OBF showed significant increase of vascular resistance in choroidal and retinal circulation, retinal arterial narrowing, the increase of plasma ET-1level in cases of HT and SA.The findings suggest that retinal venular dilatation is a specific sign of microvascular dysfunction and may be a preclinical marker of atherosclerosis and systemic vascular diseases.

FP01-03-RET

Choroidal patterns in Stargardt disease: correlation with visual acuity and disease progression

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Purpose: To identify different choroidal patterns in Stargardt disease (STGD).
Methods: This prospective, observational case series was performed in Clinical Practice setting.50 STGD patients (28 males; mean age 42.3±10.7) and 50 healthy controls (28 males; mean age 42.2±8.8) were included. We obtained, for all patients, both optical coherence tomography (OCT) and OCT angiography (OCTA) images. Different choroidal patterns were detected by analyzing Haller's and Sattler's layers changes on structural OCT. Moreover, structural OCT and OCTA quantitative parameters were calculated. The statistical analysis was used to assess the relationships between the adopted parameters.
The main features measured were: best corrected visual acuity (BCVA), central macular thickness (CMT), choroidal thickness (CT), vessel density (VD), vessel tortuosity (VT), vessel dispersion (VDisp), vessel rarefaction (VR) and choroidal vascularity index (CVI).
Results: Mean BCVA was significantly lower in STGD patients with respect to controls ($p< 0.01$). CMT, CT, CVI and OCTA parameters were statistically different between STGD and
Healthy subjects ($p< 0.01$). Choroidal patterns were associated with different amount of involvement both of vascular and non-vascular retinal structures. Moreover, these were also associated with different STGD progression after one year of follow-up. We found also several statistically significant correlations between the adopted parameters.
Conclusions: The present study described different choroidal patterns in STGD and their relationship with anatomical and functional retinal integrity. Moreover, it was possible to distinguish subgroup of patients showing significant anatomical and functional worsening after one year of follow-up.

FP01-04-RET

Choroidal patterns in retinitis pigmentosa: correlation with visual acuity and disease progression

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Purpose: To identify different choroidal patterns in retinitis pigmentosa (RP).
Methods: This prospective, observational case series was performed in a Clinical Practice setting. 45 RP patients (29 males; mean age 44.5±11.7) and 45 healthy controls (29 males; mean age 44.2±9.8) were included. We obtained, for all patients, both optical coherence tomography (OCT) and OCT angiography (OCTA) images. The following three choroidal patterns were identified: normal appearing choroid (Pattern 1), reduced Haller and Sattler layers (Pattern 2), and Pattern 2 + choroidal caverns (Pattern 3). Structural OCT and OCTA quantitative parameters were calculated. The statistical analysis was used to assess the relationships between the adopted parameters.
The main features measured were: best corrected visual acuity (BCVA), central macular thickness (CMT), choroidal thickness (CT), vessel density (VD), vessel tortuosity (VT), vessel dispersion (VDisp), vessel rarefaction (VR) and choroidal vascularity index (CVI).
Results: Mean BCVA was 0.27±0.30 LogMAR for RP patients and 0.0±0.0 LogMAR for controls ($p< 0.01$). CMT, CT, CVI and OCTA parameters were statistically different between RP and controls ($p< 0.01$).
Choroidal patterns 1, 2 and 3 were identified in 20 (44%), 15 (33%), and 10 (23%) RP patients, respectively.
We found also several statistically significant correlations. Interestingly, only Pattern 3 showed disease's progression after one year ($p< 0.01$).
Conclusions: The present study described three different choroidal patterns in RP and their relationship with anatomical and functional retinal integrity. Moreover, it was possible to distinguish a subgroup of patients showing significant anatomical and functional worsening after one year of follow-up.

FP01-09-RET

Relationship between nutrients intake and risk of developing age-related macular degeneration (AMD)

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Purpose: To investigate the association between nutrient intake and the prevalence of AMD.
Methods: This was a cross-sectional study with data collected among the 584 Japanese immigrants and descents who participated in a Japanese-Americans health study in Los Angeles, August 2015. All participant underwent fundus photograph to determine the presence of AMD lesion. All retinal images were screened and graded using Wisconsin Age-Related Maculopathy Grading System modified for non-stereoscopic retinal images. Dietary intake data were collected using food frequency questionnaire and other medical assessment. The nutrient intake was then analyzed by dietitian using nutrition support program (Chatty, Sakurasaku net, Osaka, Japan). Logistic regression analyses were used to identify the associations between nutrient intake and AMD changes.
Results: Early AMD was diagnosed in 113 participants of 584 participants. The mean age was 66.7±1.24 years. The proportion of female participants (61%) which had early AMD was greater than that of male participants. In a multivariate analysis, besides age, intake of animal lipid (odds ratio (OR): 1.01, P< 0.001) and saturated fatty acid (OR: 1.02, P<0.001) were identified as risk factors for AMD. Vegetable lipid and polyunsaturated fatty acid (PUFA) intake showed no significant association with AMD. There was no difference in the amount of protein, carbohydrate, and vitamin A, B1, B2, and C intake between the two groups.
Conclusions: The findings suggest that high intake of animal fat and saturated fatty acid may increase the risk of AMD.

FP01-10-RET

The difficulties of learning neural network (NN) to diagnose eye retina diseases

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Purpose: The use of artificial intelligence (AI) in recent years is rapidly growth. It is used to diagnose diseases in oncology, pathology, radiology, dermatology and also in ophthalmology. The purpose - to determine the difficulties in the process of training the NN, which reduce the quality of diagnosis and affect false negative and false positive diagnosis.
Methods: For training the NN to determine the manifestations of diabetic retinopathy, 2 datasets were used. The first one consisted of 3000 fundus images. The second is 5000 shots. Both datasets are positioned as previously handmarked by doctors and provided for use in the study. Further were proposed 1000 images as a test for diagnosing in a group of ophthalmologists with work experience of more than 15 years, at the same time they were tested by a NN trained in a marked dataset.
Results: There are several groups of difficulties in learning NN. The first group is technical: low quality of presented images, a lot of artifacts, multi diagnosis. In the first group were about 10% of low-quality images. Somewhat less - 7% of low-quality images were found in a group of previously classified images. Multi Diagnosis occurred in 5% and 7%, respectively, in the 1st and 2nd study groups. In the 2nd group occurs - the human factor, a decrease in attention and fatigue of the doctors conducting the classification. For every 200 scanned images from 2 to 10 errors noted. A trained NN on a dataset with poor quality images contained from 30% to 50% false. Therefore, in the earlier stages it is very important for NN learning to present the best possible images with well-defined pathology.
Conclusions: In order to obtain a correct diagnosis, approaching 100%, using NN is possible when training it on high-quality images and correctly classified fundus pathology. Therefore, when manually grading pictures, it is necessary to use double and triple control to eliminate the influence of the human factor.

FREE PAPER PRESENTATIONS
FP02: Cataract

FP02-01-CAT

Sutureless intraocular lens scleral fixation (modified Yamane technique)

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Purpose: Partial or total dehiscence of the zonule and insufficient or absent capsular support in cataract surgery were often completed with an anterior chamber lens implant whose frequent complication of irreversible decompensation of the corneal endothelium is well known. The present paper aims to present the advantages of sutureless scleral fixation.
Methods: We report the case of a 28-year-old male who presenting for reduced visual acuity and local pain, affirmatively with aggression trauma. Clinical examination shows the right eye (OD) clinically normal, the best corrected visual acuity (VA) of the left eye (OS) is light perception, intraocular pressure (IOP) OS is 18 mm Hg, corneal abrasion, edematous and bruising lids, subconjunctival hemorrhage, subluxated transparent crystalline lens, hemoftalmus, fundus cannot be visualized, ultrasound showed attached retina.
After 4 months of local and general treatment, the evolution is favorable, the examination reveals VA = count fingers and subluxated cataract. It is proceeded in OS, under subconjunctival anesthesia, phacoemulsification of the cataract and posterior chamber implantation by sutureless scleral fixation of a 3-piece artificial lens.
Results: Postoperative, VA is 0.8 and IOP is 15mm Hg, retina without pathological changes. Local and general antibiotic and anti-inflammatory treatment is recommended and the evolution is favorable at 3-month follow-up. The

patient will return to periodic controls to detect a possible secondary traumatic glaucoma.
Conclusions: Sutureless scleral fixation via modified Yamane technique involves triggering a minimal inflammatory response, both through minimal tissue trauma and the absence of suture material. We encourage the use of this implant method especially in young people where the use of other techniques involving wider manipulation of tissues or the use of suture wounds would result in a pronounced inflammatory reaction, excessive scarring, and alteration of local anatomy.

FP02-02-CAT

Intracameral antibiotics for phacoemulsification post-op endophthalmitis prevention: an 18 year United States tertiary care hospital experience

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Purpose: To evaluate the effectiveness of intracameral cefuroxime post-phacoemulsification endophthalmitis prophylaxis at a United States tertiary care hospital.
Methods: Retrospective chart review.
Results: Over 18 years, 36,797 phacoemulsification cases were performed with 7,537 (20.4%) receiving intracameral cefuroxime antibiotics. In the 29,260 patients not receiving cefuroxime, there were 12 cases of clinically suspected (1/2,438) and 10 (1/2,926) cases of culture-proven post-operative endophthalmitis. In the cefuroxime group, there were 1 clinically suspected (1/7,537; p=0.21) and 0 (p=0.09) culture-proven cases of post-operative endophthalmitis. There were no reported or suspected cases of allergy or toxicity from the intracameral cefuroxime injections.
Conclusions: At a United States tertiary care hospital, off-label intracameral cefuroxime endophthalmitis prophylaxis has been safe and free from toxicity in 7,537 cases. Although data suggest clinical effectiveness, demonstrating statistically significant impacts on endophthalmitis rates is challenging in environments with relatively low baseline endophthalmitis rates.

FP02-03-CAT

Post-operative drops following routine cataract surgery, are topical antibiotics beneficial? - A large UK based multi-centre study

Silvester A., Pitalia A.
SpaMedica, Bolton, United Kingdom

Purpose: There is little evidence or consensus for the benefit of topical antibiotics following routine cataract surgery, however, this remains common practice in the United Kingdom. Systematic reviews and large national studies have found that topical postoperative antibiotics are not important in preventing endophthalmitis after cataract surgery when the patients have received intracameral antibiotics. However, there is evidence that overuse of antibiotics leads to resistance.
Methods: Retrospective analysis of Medisoft database of 11,849 cataract operations performed at 10 hospitals in the United Kingdom between 01/06/18 to 30/11/18; primary outcome measure included endophthalmitis rate and secondary outcomes were incidence of post operative anterior uveitis, cystoid macular oedema, corneal oedema, and visual harm (defined as loss of more than 3 lines of vision).
Results: 5,386 patients received combination topical corticosteroid and antibiotic drops (Maxitrol) postoperatively and 6,463 patients received topical corticosteroid only. All patients received intracameral antibiotics peri-operatively. All patients were reviewed 4 weeks post cataract surgery. No cases of endophthalmitis in either group. No significant difference between the groups found in rates of post operative anterior uveitis (4.42% versus 3.88%) cystoid macular oedema (2.75% versus 2.27%) and corneal oedema 2.31% versus 1.58%). No difference in visual harm (0.55% versus 0.57%).
Conclusions: Topical antibiotics are not necessary following routine cataract surgery.

FP02-04-CAT

Endophthalmitis after bilateral same day cataract surgery

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Purpose: To compare the endophthalmitis rate between unilateral and bilateral same day cataract operations.
Methods: The database of the Swedish National Cataract Register was searched for endophthalmitis cases from 2002 through 2017.
Results: The rate of endophtalmitis was 0.03% in unilateral cases (412 in 1 364 600 surgeries) and 0.015% in bilateral same day cases (14 in 92 225 surgeries), p = 0.01
Conclusions: Bilateral same day cataract surgery is associated with a lower endophthalmits rate than that of unilaterl surgery. Various risk factors for endophtalmitis were tested in a logistic regression model showing that the lack of use of intracameral antibiotics, capsule rupture and age 85 years or more were independent determinants. In this preliminary model, bilateral same day surgery was statistically significantly "protective" against endophthalmitis and further analyses will show whether this is due to mere selection.

FP02-06-CAT

Precision pulse capsulotomy technology adoption to reduce the capsulorhexis complication rate

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Purpose: Radial tears in the capsulorhexis increase the rate surgical complications.Zepto precision pulse capsulotomy (PPC) technology (Mynosys - Fremont, California) is compared with manual continuous curvilinear capsulorhexis (CCC) outcomes by the reproducibility, uniformity, circularity and diameter size.
Materials, Patients and methods: A novel capsulotomy method and technology called PPC and trade named Zepto was adopted on 121 consecutive eyes with cataract
Results: The ACD was 2.72 ± 0.38. ECC preop was 2232 407 and 4 months postop 2181 380 with a 3.58% lost cells. We experienced 8 anterior radial tears in the first 25 cases.
Conclusions: The Zepto PPC technology creates a precise circular anterior capsulotomy. This technique allows cataract surgeons to reduce the rate of capsular tears

FP02-07-RET

Comparison of macular choroidal thickness and retinal nerve fiber layer in patients with pseudoexfoliation syndrome, pseudoexfoliation glaucoma and mild cataract

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Purpose: To investigate retinal nerve fiber layer thickness (RNFLT) and choroidal thickness in patients with mild cataract, pseudoexfoliation syndrome (PEX) and pseudoexfoliation glaucoma (PXG).
Methods: This cross-sectional, prospective study included 20 eyes of 20 patients with PEX, 20 eyes of 20 patients with PXG and 20 eyes of 20 patients with mild cataract (control group). Besides a comprehensive ocular and physical examination, RNFLT was analyzed with standart optical coherence tomography protocol while choroidal thickness was compared in nine sectors of the Early Treatment Diabetic Retinopathy Study (ETDRS) layout profile.
Results: The average age and axial length of control group was 66,25 ± 7,70 years (y) and 22,68 ± 0,48 mm, PEX group - 70 ± 4,9 y and 22,71 ± 0,43 mm, PXG group - 69,68 ± 7,56 y and 22,80 ± 0,28 mm. Gender, age, and axial length did not significantly differ between the groups ($p>0.05$). There was no statistically significant difference in macular choroidal thickness in all groups ($p>0,05$). RNFLT in all quadrants was higher in PEX and control groups compared to PXG ($p< 0,05$). RNFLT comparisons between PEX and control eyes did not show a significant difference ($p>0.05$).
Conclusions: Our findings demonstrate that the choroid does not seem to be significantly altered in PEX and PXG eyes and RNFLT is lower in PXG group.

FP02-08-CAT

Pupillary delusions

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Purpose: To demonstrate the possible pupillary artifacts during femto assisted cataract procedures which lead to imperfections and teaches the way to identify and avoid them.
Methods: An analysis of potentially rare but possible occurrences of pupillary artifacts during femto cataract procedures. Though femtosecond laser assistance helps optimizing cataract procedures, extreme amount of caution is to be practised during automated pupillary recognition.
Results: False recognition of reflected artifacts could be sensed as pupil and could result in false over sizing of pupil which may lead to complications and very adverse outcome of irritative exaggerated miosis, accidental lasers on Iris surface, inadequate capsulorhexis and nucleolysis. In addition ways to recognize and avoid such complications at the earliest would be taught.
Conclusions: Though femto laser cataract surgery outcomes are highly precise, unusual complications following pupillary artifacts do exist and human skills in early recognition to avoid major complications are very essential.

FP02-09-CAT

Does cataract surgery benefit patients with retinitis pigmentosa?

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Purpose: To evaluate pre and postphacoemulsification visual acuity and assess satisfaction following phacoemulsifiaction procedure in patients with RP .
Methods: All patients showed retinal pigmentary degeneration confirmed by electrophysiological studies, and in most cases by genetic tests. The paper presents a retrospective comparison of visual acuity (logMAR) preoperatively, first day after surgery, 14 days postoperatively and one year after cataract removal. In the study, special attention was paid to the presence or absence of fibrosis syndrome (phimosis) of the lens capsule, CMO,. The satisfaction survey was conducted using a postal questionnaire after at least one year of study.
Results: Mean BCVA in patients before surgery was 1,74 (logMAR) and after phacoemulsification was 1,55 . One year observation showed mean BCVA 1,68. Most patients chose little or good improvement of visual acuity after cataract surgery.
Conclusions: Cataract surgery is beneficial for patients with RP comparing subjective and objective factors.

FP02-10-CAT

Clinical validation of a new online eyetest: the manifest vs. online refractive evaluation (MORE trial)

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Purpose: We recently launched an online eyetest that measures visual acuity and both spherical and cylindrical refractive errors. This test is live and CE-marked (check https://easee.online for a detailed instruction). The purpose of this study is to validate the online test in a prospective open-label non-inferiority clinical trial (https://clinicaltrials.gov/ct2/show/NCT0331392).
Methods: Healthy volunteers between 18-45 yo with a refraction error between -6D and +4D were eligible for inclusion. Manifest refractive error was measured by an optometrist, and the online refraction was attained independently by the participants using a smartphone and PC. Differences between a manifest refraction and online refraction outcomes were converted to vectors and spherical equivalents, with a difference >0.5D considered clinically relevant. Best corrected visual acuity with either prescription was recorded.
Results: 200 eyes of 100 healthy volunteers were enrolled in the study. The mean difference in spherical equivalent was 0.16D (SD±0.93, $P > 0.05$), the J0 and J45 vector differences were 0.04 (SD±0.30) and 0.03D (SD±0.30) respectively. Subgroup analyses in the low myopia range (up to -3D) revealed 85% of eyes scored within the +/- 0.5D boundary compared to a standard optometrist manifest refraction.
Conclusions: Online eye testing is a valid method to assess refractive error in healthy eyes, especially for mild myopes. Self learning algorithms will improve these outcomes in due time. Online eye testing improves the accessibility of healthcare and has the potential to reduce costs.

FREE PAPER PRESENTATIONS
FP03: Cataract, Refractive Surgery

FP03-01-CAT

Biodegradation of hydrophilic acrylic intraocular lens (IOL) in patient with retinitis pigmetosa (RP): case report

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Purpose: To describe characteristics of IOL opacification of patients diagnosed with RP.
Methods: Patient P. (32 y) underwent uneventful cataract phacoemulsification two years ago. IOL repositions were performed twice during the last year for it's decentration, due to capsular bag fibrotic changes. Next surgery (8 months ago) included suture fixation of the IOL to the sclera and capsular bag removal. We explanted IOL due to patient's progressively decreasing visual acuity and significant opacity of IOL.
Explanted IOL was then examined using light microscopy (x75 time imagination MT8500 Meiji Techno, Japan), scanning electron microscopy and energy-dispersive X-ray spectroscopy (PEM-106 I Selmi, Ukraine), alizarin red staining.
Results: On light microscopy, we noticed that opacification was only present on the anterior side. It consisted of a significant amount of small transparent bubbles in the peripheral part of IOL, which aggregated into an opaque structure in the center. We did not find any additional organic compounds (Calcium and Phosphorus that dominantly are cause of hydrophilic IOL opacification) using energy-dispersive X-ray spectroscopy. This was also proved by the absence of staining IOL with alizarin red.
Conclusions: Biodegradation hydrophilic acrylic IOL of patient with retinitis pigmentosa was described and found to be totally different from classical opacification of such IOL.

FP03-02-CAT

Clinical experience with extended depth of focus lens - Tetraflex XR

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Purpose: To evaluate visual outcomes and satisfaction following implantation of the Tetraflex XR lens
Methods: A prospective study was undertaken to evaluate 60 eyes (30 patients) implanted with the Tetraflex XR lens in patients with no corneal, retinal or optic nerve pathology and in eyes with no previous refractive surgery. Corneal astigmatism up to 1 diopter was accepted. Patients were evaluated preoperatively for uncorrected (UCDVA) and best corrected (BCDVA) distance visual acuity and at 1 day, 1 month and 6 months post-op for UCDVA, uncorreted intermediate visual acuity (UCIVA) (66cm) and uncorrected near visual acuity (UCNVA)(40cm). Visual acuity values are represented in decimal. Monocular and binocular defocus curve testing was performed at the 6 month post-operative visit. A patient reported outcomes (PRO) questionnaire was also administered at the 6 month post-operative visit.
Results: All patients experienced improvement in distance monocular and binocular vision, relative to pre-operative values. Eighty-five percent of eyes were within ±0,5D of intended target and 100% were within ±1.0D (SRK-T formula). At the six-months post-operative visit, monocular UCDVA was 1,05 (± 0,1), UCIVA was 0,76 (± 0,15) and UCNVA was 0,55 (± 0,17). Monocular defocus curves show a continuous range of vision (visual acuity ≥0,8) from 0 D to - 1,5 D (which equates to 60 cm). Binocular defocus curve data improve to 0 D to -1,75 D. Ninety-five percent of patients were very satisfied with their distance and intermediate vision, per questionnaire results. Some patients reported wearing spectacles when reading for a long period of time. No patient reported any incidence of glare and/or halo.
Conclusions: Patients receiving the Tetraflex XR model IOL in this study attained excellent visual outcomes for distances, intermediate and social near distance. Satisfaction with the IOL was also high through all distances, and no instance of photic phenomemon was reported.

FP03-04-CAT

Small amount bioptics after different type of cataract surgery with multifocal IOL

Oh T., Lee S.
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Purpose: To evaluate visual quality of small amount bioptics after cataract surgery with different type of multifocal IOL
Methods: Cataract surgery was performed with different type of multifocal IOL. refractive multifocal IOl(SBL-3) is inserted in group 1, diffractive bifocal multifocal IOL in group 2.
Far, near visual acuity was measured. subjective visual quality of life including night driving vision was evaluated with questionnaire with subjective scoring system.
Results: There is no difference in objective far, near visual acuity. but there is statistically significant more patient's satisfaction increase with refractive type multifocal IOL in clear vision ("crispy vision") and night driving vision.
Conclusions: Objective visual acuity was functinally enough with both multifocal IOL type. but patient's satisfaction with night driving and clearness was slightly more easily obtained with refractive type of multifocal IOL

FP03-05-CAT

Trifocal technology IOLs to correct refractive defects and presbyopia after cataract surgery

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Purpose: To evaluate results in cataract eyes after phacoemulsification and trifocal/trifocal toric Intraocular Lens implantation.
Methods: 332 Eyes with cataract were implanted with presbyopic IOLs (Carl Zeiss Meditec)
169 Eyes of 104 patients (mean age: 68.24 ± 10.89 yrs) had AT LISA tri 839 MP trifocal IOL
158 eyes of 93 patients (mean age: 66.66 ± 11.64 yrs) with corneal astigmatism (1.46 ± 0.53 D) had AT LISA tri toric 939MP implantation
Results: At 5 years monocular Trifocal IOLs results are UCDVA 20/22 ± 2.40 UCIVA 20/24 ± 3.13 UCNVA 20/27 ± 5.37 , monocular Toric Trifocal IOLs are UCDVA 20/20 ± 3.25 UCIVA 20/35 ± 4.75 UCNVA 20/29 ± 2.56

Binocular results (158 patients) are UCDVA was 20/20, intermediate 20/20 and near vision 20/24
95.4% OF PATIENTS IN THE RIGHT RANGE (Almost One Eye in the Right Range Sphere Equivalent Within - ±0.50 Sph)
Conclusions: AT LISA tri toric 939MP and AT LISA tri 839 MP trifocal IOLs are the most efficient development of multifocal IOLs family. Clinical outcomes indicate that this is an effective multifocal design to correct refractive defects and to achieve presbyopia after cataract surgery

FP03-06-CAT

Presbyopia correction with innovative trifocal IOL implantation

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Purpose: To evaluate refractive and functional results of the trifocal IOL implantation and the improvement of patient satisfaction.
Patients and methods: The analysed group of patients consisted of 16 patients (32 eyes) with Trifocal IOL (RayOne Trifocal IOL, Rayner, UK) implanted.
There were 9 men and 7 woman in age 40-76 (mean 67.25y). Exclusion criteria: corneal astigmatism > 1.0D Cyl., corneal, retinal or optic nerve pathologies, previous eye surgery.
Follow-up examination were done until 6 months postoperative.
There were assessed: Binocular UCDVA, UCIVA, UCNVA, Patient's postoperative quality of life (VF-14 test), Best reading distance, Reading speed after bilateral implantation, Contrast sensitivity in photopic and mesopic conditions, Independence from glasses, Visual adverse effects, Defocus curve and postoperative complications.
Results: Implanted IOL power 12.5-25.0D, Mean UCDVA improved from 0.3 to 1,0, (p=0.002). UCNVA improved significantly p=0.0003 (1.25 to 0.5 in Snellen scale). Postop intermediate J2 was reached in 15 patients.
Mean refractive error before was -2.543 +/- 2.45 and after surgery -0.345 +/- 0.23. No refractive unexpected cases were observed. Contrast sensitivity improved significantly p< 0.05. No one IOL were dislocated.
Changes in VF-14 test was statistically significant (T-test for dependent variables p=0.002) and was 60.3 (40.5-85.0 SD +/-15.5) and 92.0 (78.2 - 100.0 SD +/-9.5) points. Corneal endothelial cells density (mean: 2557.44 versus 2677.34) and IOP - no significant differences.
Conclusions: This solution (RayOne Trifocal IOL) seems to be good option for patients with presbyopia. In the significant majority of patients, the maximum visual acuity was reached for distance, near and intermediate. In this initial patients group during this observation time refractive error was stable. This trifocal IOL gives high patients satisfaction.

FP03-07-CAT

Effective lens position

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Purpose: The aim of this study was the quantification of the effective lens position 4 weeks postoperatively.
Methods: 100 patients undergoing cataract surgery were included in this prospective study. Vivinex iSert (Hoya Surgical Optics) was inserted in all cases by two experienced surgeons (RM, CL) at the general hospital of Vienna. Data was assessed one week pre- and 4 weeks postoperative with a swept source OCT biometer (IOLMaster 700; Carl Zeiss Meditech AG) and an anterior segment fourier source OCT (CASIA2; Tomey Corporation Japan).
Study objectives included:
- Correlation between the axial position of the phakic lens and the intraocular lens (IOL)
- Correlation between the refractive error, decentration and tilt of the IOL

Results: Results will be presented
Conclusions: It is known, that the postoperative IOL position is essential for modern IOL power calculation formulas. This study attempted to quantify the IOL position in correlation with the phakic lens position using reliable OCT measurements.

FP03-10-REF

Comparison of high order aberrations after single-step transepithelial and conventional alcohol-assisted photorefractive keratectomy

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Purpose: To compare the postoperative one-year asphericity and high order aberration (HOA) analyses of single-step transepithelial photorefractive keratectomy (tPRK) and conventional alcohol-assisted PRK (aaPRK) in patients with myopia and compound myopic astigmatism.
Methods: This retrospective, non-randomized, comparative study included 109 eyes of 55 patients. 54 eyes underwent tPRK with Amaris excimer laser (SCHWIND eye-tech-solutions GmbH and Co., Germany) while 55 eyes underwent aaPRK. The postoperative 1st year was defined as the primary endpoint of the study and best corrected visual acuity (BCVA), manifest refraction spherical aberration (MRSE), flat and steep keratometries, intraocular pressure (IOP), central corneal thickness (CCT), asphericity, and HOAs including horizontal and vertical coma, horizontal and vertical trefoil, spherical aberration, second order vertical coma, and aberration coefficient were compared.
Results: Demographic and baseline characteristics were similar between the two groups (p>0.05, for all). Postoperative one-year BCVA, MRSE, flat and steep keratometries, IOP, and CCT were also similar (p>0.05, for all). Postoperative one-year asphericity, horizontal and vertical coma, horizontal and vertical trefoil, spherical aberration, and second order vertical coma were similar (p>0.05, for all), while the aberration coefficient was different between the tPRK and aaPRK groups (p=0.017).
Conclusions: Both tPRK and aaPRK offer quite similar postoperative BCVA, MRSE, asphericity, and HOAs, but the postoperative aberration coefficient was observed to be different in the tPRK and aaPRK groups.

FREE PAPER PRESENTATIONS
FP04: Glaucoma

FP04-01-GLA

Selective laser trabeculoplasty: the rebirth of a treatment?

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Purpose: Selective Laser Trabeculoplasty (SLT) is a laser procedure that has resurged in recent years in glaucoma treatment. We evaluate its short-term efficacy in reducing intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension, and compare the results of the treatments performed by residents and by attending glaucoma specialists.
Methods: Prospective analysis of patients undergoing SLT at our hospital in the first semester of 2018. The treatments in right eyes were performed by specialists and in left eyes by residents. The main indications for treatment were: IOP insufficiently controlled by medical therapy, intolerance to topical eyedrops, or even as first-line treatment. Patients IOP was recorded at 2, 4 and 6 weeks, 2, 3, 4 and 6 months. Success rates were defined as a ≥20% reduction relative to baseline IOP.
Results: Seventy-one eyes of 41 patients with an mean baseline IOP of 18.93±5.70 mmHg were analyzed. Mean IOP reduction was significant in all evaluations ($p< 0.001$): - 4.92 mmHg at 6 weeks, -4.90 mmHg at 2 months, -5.21 mmHg at 3 months and -4.00 mmHg at 4 months. After 6 weeks, relative mean IOP reduction ranged between 19-26%. Success was achieved in 53% to 67% of eyes, at 6 weeks and 4 months, respectively. As demonstrated in other studies, higher baseline IOP levels were associated with a more marked IOP reduction, with statistical significance ($p< 0.05$) at 6 weeks, 2 and 3 months post-SLT. Procedures performed by residents and specialists obtained similar results ($p> 0.05$). Only 2 eyes (3%) had complications (self-limited hypertensive peak after laser treatment).
Conclusions: SLT is a simple procedure with minimal complications that allows IOP reductions comparable to some of the new minimally invasive glaucoma surgeries. We should consider this treatment option more often, despite the unpredictability in the duration of its effect and the need for more regular patient follow-up.

FP04-02-GLA

High intensity focused ultrasound for glaucoma: 1-year results from a prospective pragmatic study

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Purpose: High-Intensity Focused Ultrasound (HIFU*)* technology acts through the selective coagulation of the ciliary body. Our aim was to evaluate the safety and efficacy profiles of 8-second probe HIFU cyclocoagulation using the EyeOP1 device.
Methods: Prospective pragmatic trial in a tertiary healthcare centre. Inclusion criteria: adult glaucoma patients with uncontrolled IOP despite optimized medical therapy.
Primary outcome: surgical success defined as IOP reduction from baseline >20% without adding any IOP-lowering drugs; or decreased use of IOP-lowering drugs with stable/decreased IOP.
Secondary outcomes: mean IOP, intra and postoperative complications, best-corrected visual acuity (BCVA), and number of IOP-lowering drugs at each visit.
Outcome data were collected pre-operatively and at postoperative days 1 and 7, and months 1, 3, 6 and 12.
Results: Fifty-one eyes of 49 patients (28 male) with a mean age of 70±14 years were enrolled. Pre-operative IOP was 26.7±7.7mmHg under 2.8±0.9 medications, decreasing to 18±6.2mmHg under 2.3±1 drugs at 12months ($p< 0.01$). One-year surgical success was achieved in 80% of patients (IOP-reduction criteria in 68.6%; decreased use of IOP-lowering drugs in 66.7%). Eight patients were submitted to other glaucoma surgical interventions; in these, surgery was delayed by up to 10 months. One serious adverse event (hypotony) was registered.
Conclusions: This innovative non-invasive technology seems to be safe and effective in decreasing glaucoma patients' IOP and the number of administered drops. It seems a valuable tool to delay or preclude the need for filtering procedures in the majority of the patients.

FP04-03-GLA

Hypertrophic 'mega-blebs' following ab-interno Xen gel stent glaucoma surgery: management and 'Switch and Stitch' revision surgery

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The Xen ab-interno gel stent is an effective and safe minimally invasive glaucoma surgical device. No prospective comparison to Trabeculectomy has been published to date however incidence of some adverse effects may be lower with ab-interno subconjunctival filtration compared to ab-externo. However, bleb dysaesthesia may be more common following ab-interno gel stent, especially if stent exit is nasal and bleb tissue is present in the interpalpebral aperture. We describe 6 cases from a series or 259 (2.3%) where troublesome bleb dysaesthesia occurred. We describe a stepwise approach of observation, slit lamp lancing, bandage contact lens compression and 'Switch and Stitch" revision surgery.

FP04-04-GLA

Efficacy and safety of the ab-interno Xen gel stent following failed trabeculectomy

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Aims: To assess the efficacy and safety of the Xen gel stent in reducing intraocular pressure (IOP) in eyes with prior failed trabeculectomy and to determine the frequency of complications and further intervention.
Methods: Retrospective case note review of all patients with prior trabeculectomy undergoing Xen surgery across five centres from August 2015 to May 2017.

Results: 17 surgeries were reviewed. IOP reduced from 21.5 (±2.4) mmHg preoperatively to 13.6 (±3.4) mmHg at Month 12 (p< 0.05). Medication usage reduced from 2.8 (±0.6) preoperatively to 1.0 (±1.3) at Month 12 (p< 0.05). Adverse events included: numerical hypotony (IOP < 6mmHg) in 4 cases (23.5%) that all resolved spontaneously, IOP spike of ≥30mmHg in 2 (11.8%) cases and transient occlusion of the implant by iris in 1 (5.9%) case. Secondary filtration surgery (Baerveldt tube implantation) was required in 2 (11.8%) cases. Postoperative bleb intervention was required in 9 cases (52.9%), usually in the first month after surgery.
Conclusions: Xen reduces IOP and number of medications in eyes with failed trabeculectomy. Detailed preoperative conjunctival assessment and targeted stent placement is required. Prospective data and follow up beyond 12 months is required but Xen appears a viable, effective and safe option post failed trabeculectomy.

FP04-05-GLA

Penetrating deep sclerectomy in primary open angle glaucomas

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During the 3 years follow-up period Penetrating Deep Sclerectomy (PDS) presented very positive outcome. The addition of a controlled perforation of the trabeculodescemetic membrane in Deep Sclerectomy, playing the role of an early goniopuncture, seems to ensure a satisfactory outcome and is not associated with additional complications.
Purpose: to evaluate the outcomes of a new antiglaucoma surgical method, a combination of the standard Deep Sclerectomy with the Trabeculectomy, the Penetrating Deep Sclerectomy (PDS).
Methods: In this study were enrolled 29 patient s/ 29 eyes. In a fornix -based surgical procedure all eyes underwent the proposed Penetrating Deep Sclerectomy (Deep Sclerectomy plus Trabeculectomy) with the use of MMC applied intraoperatively (0.2mg/ml for 2 min). The follow-up period was 3 years. Ocular examination was conducted before the operation and at 1,3, 6, 12, 18, 24, 36 months postoperatively.
Results: The average reduction of IOP at the end of follow-up was 12.95 (49.25%). The complete success rate (IOP ≤21 mm Hg without medication) after 3 years was 55.6 %. The qualified success rate (IOP≤21 mmHg without or with medication) was 100% . Postoperatively the mean number of medication dropped from 4.095 ± 0.89 to 1.00±1.28. Low postoperative complications were recorded.
Conclusions: During the 3 years follow-up period Penetrating Deep Sclerectomy (PDS) presented very positive outcome. The addition of a controlled perforation of the trabeculodescemetic membrane in Deep Sclerectomy, playing the role of an early goniopuncture, seems to ensure a satisfactory outcome and is not associated with additional complications.

FP04-06-GLA

Assessment of IOP in patients after phacoemulsification according to preoperatively parameters changes of the anterior segment of eye

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Purpose: To evaluate intraocular pressure (IOP) change after phacoemulsification according to preoperatively parameters changes of the anterior segment of eye.
Methods: The patients were divided into two groups, eyes with only cataract and eyes with cataract associated pseudoexfoliation syndrome (PXS).
Biometric parameters of eye and IOP were measured using preoperatively, and in 7 days, in 3 weeks and in 4 months after surgery was obtained. Main outcome measures were preoperative and postoperative anterior chamber volume (ACV), anterior chamber depth (ACD), anterior chamber angle (ACA), and central corneal thickness (CCT) obtained with AS-OCT (TOMEY CASIA-2). Evaluate intraocular pressure (IOP) were measured a calibrated Goldmann applanation tonometer.
The sample included 84 eyes of 80 patients with a mean age of 76.4 ± 6.8 years.
Results: Before cataract surgery, the mean IOP in the group eyes with only cataract was 17.5 ± 3.4 mm Hg, which decreased by 2.2 ± 0.3 mm Hg to 15.3 ± 3.5 mmHg at 3 months (p<0.001).
The preoperative IOP in the group eyes with cataract associated PXS was 23.1 ± 3.3 mmHg. The mean IOP reduction was 2.6 mm Hg from a preoperative mean. The IOP reduction was significantly greater in eyes with narrow angles than in eyes with open angles.
As a result of phacoemulsification all anterior chamber angle parameters, ACD and ACA (P<0.001 for all) were increased. Patients with PXS had a more pronounced IOP reduction than patients without these diagnoses.
Conclusions: Study results showed that mean postoperative IOP in the surgery group was 19.8 mmHg; the decrease was statistically significant (P<0.001).
The average decrease in IOP after surgery was 16.5 %; postoperative IOP was at least 20 % lower than preoperative IOP of the patients two groups.
Cataract extraction without medications is effective method of IOP compensation.

FP04-07-GLA

One-year outcomes of trabecular micro-bypass stents with concomitant cataract surgery in primary angle closure glaucoma

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Purpose: Trabecular microbypass stents have allowed improved multidirectional flow with good efficacy and safety profile in primary open-angle glaucoma. The efficacy of these devices in primary angle closure glaucoma has been understudied. We aimed to assess the one-year postoperative outcomes following implantation of trabecular micro-bypass stents with concomitant cataract surgery in angle-closure glaucoma patients.
Methods: We evaluated the baseline clinical characteristics and the 12-month outcomes of patients with mild to severe primary angle-closure glaucoma who underwent cataract surgery with implantation of either a first generation trabecular microbypass stent (iStent group) or two second generation trabecular

microbypass stents (iStent-inject group). The primary outcomes included intraocular pressure (IOP) and anti-glaucoma medication use. The secondary outcomes were success rate (defined by IOP between 5-18 mmHg with IOP reduction of at least 20%) and visual acuity.
Results: A total of 83 eyes (58 from the iStent and 25 from the iStent-inject group) were included with an average age of 68.9±8.6 and 67.6±8.3 years, respectively. All eyes had mild to severe angle-closure glaucoma. At one-year follow-up, the IOP decreased by 21% (from 18.8±4.5mmHg) and 25% (from 18.7±3.6mmHg), in each group respectively (p< 0.001). Additionally, the medication burden dropped by 52% and 50% at one-year follow-up (p< 0.001). The 12-month success rate was 45% in the iStent group compared to 64% in the iStent-inject group (p=0.086) and visual acuity remained stable.
Conclusions: The present study provides clinically relevant, real-world data on the utility of iStent and iStent inject with cataract surgery in angle-closure glaucoma - a population that has been understudied in the world of trabecular micro-bypass stents. Our data demonstrated efficacy of these stents in reducing intraocular pressure and medication burden among patients with primary angle closure glaucoma.

FP04-08-GLA

Use of amniotic membrane in trabeculectomy with mitomycin C: a retrospective comparative study

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Purpose: The use of antifibrotic agents such as mitomycin C (MMC) in trabeculectomy surgery has not completely overcome conjunctival scarring. Amniotic membrane transplantation (AMT) has been investigated as an alternative antifibrotic adjunctive. This study compared the effect of AMT in trabeculectomy with MMC.
Methods: Retrospective comparative study of the glaucoma patients submitted to trabeculectomy with MMC (non-AMT group) compared to trabeculectomy with MMC and AMT (AMT group). Medical records from the first 15 postoperative months of the patients submitted to these two procedures in our hospital from January 2015 to May 2018 were consulted.
Results: We analised 51 eyes of 45 glaucoma patients (29 eyes in non-AMT group and 22 in AMT group). Mean pre-operative IOP was 25,72±2,39 mmHg, with no significant difference between groups. Postoperative mean IOP in AMT group was significantly lower only at first postoperative week. On follow-up months 1, 3, 6, 12 and 15, mean IOP was lower in AMT group without statistical significance. Both groups had a mean of 4 antihypertensive medications preoperatively. This number decreased significantly but tended to be higher in the AMT group. The lower levels of mean IOP in AMT group thus could have been related to the higher number of medications used.
Absolute success in IOP reduction (IOP≤21 mmHg with no antihypertensive medications) tended to be higher in the non-AMT group (71-83% in non-AMT group versus 42-76% in AMT group). Relative success (with medications) was obtained in 9-20% of the eyes in non-AMT group and in 10-58% in the AMT group. Re-interventions were needed in 28% of the eyes in non-AMT group versus 23% in AMT group (p=0,69). Mean time until first re-intervention was also similar: 3,1 and 2 months respectively.
Conclusions: AMT addittion to MMC-augmented trabeculectomy was an effective procedure but did not significantly improve the outcomes.

FP04-09-GLA

Circumferential suture trabeculotomy versus standart trabeculotomy in primary congenital glaucoma

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Purpose: To compare the outcomes of standart (rigid probe) trabeculotomy with circumferential suture trabeculotomy for the treatment of primary congenital glaucoma (PCG).
Methods: A retrospective comparative study included 91 eyes of 51 patients. Postoperative outcomes of standart trabeculotomy were compared to those of circumferential suture trabeculotomy using the 6/0 prolene suture. Baseline and final intraocular pressures (IOP), anti-glaucoma medication and further surgery need, axial length, cup-to-disc ratio, horizontal and vertical corneal diameters were recorded. Postoperative success was defined as IOP < 21 mm Hg ± glaucoma medications, without glaucoma progression/additional IOP-lowering surgery.
Results: Thirty-four eyes of 20 patients underwent circumferential suture trabeculotomy wheras fifty-seven eyes of 31 patients underwent standart trabeculotomy. The average follow-up was 30.6 (6-116) months. 46,4% of patients had severe corneal edema with high IOPs. Surgical success was achieved in 27 of 57 (47%) eyes in standart trabeculotomy group and 24 of 34 (71%) eyes in circumferential suture trabeculotomy group (p:0.002). Final IOPs and the percentages of patients using postoperative anti-glaucoma medications were significantly different in both groups; 21.3±5.4 versus 17.4±4.1 mmHg and 60.0% versus 39.2%, (p:0.011 and p:0.008, respectively).
Conclusions: Circumferential suture trabeculotomy seems to have better outcomes than standart trabeculotomy for patients with PCG.

FP04-10-GLA

Patient-centred care in glaucoma: the patients' perspective

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Purpose: To evaluate the attitudes of glaucoma patients towards patient-centred care using a validated questionnaire.
Methods: Qualitative study conducted at Moorfields Eye Hospital, London, UK. Consecutive new and follow-up patients attending glaucoma clinics were invited to complete a validated questionnaire; patient practitioner orientation scale (PPOS). Non-english speaking patients were excluded. The PPOS contains 18 items in a 6-point Likert format. Total mean scores for the 18 items were calculated. Scores can range from 1 to 6. Higher scores suggest a more patient-centered orientation. Sub-scale scores for 'sharing' and 'caring' were calculated. Scores refer to the extent to which the respondents believe that a) practitioners should share power on an equal basis and should share as much information as possible with their patients, and b) good interpersonal relations is a key aspect of the medical encounter, respectively.
Results: Data was collected from 178 patients. Sex distribution was equal; the median age was 67 years old, with the majority of respondents belonging to the 50-59 (24%), 60-69 (17%), 70-79 (28%) and 80-89 (18%) age groups;

49% were Caucasian, 23% were African and 23% were Asian; 45% had early years/primary/secondary education, 25% had further education and 25% were of higher education. The total mean PPOS score was 3.53. Subscores for 'sharing' and 'caring' were 3.66 and 3.41 respectively. In seven out of the nine 'sharing' items, as opposed to five out of the nine 'caring' items, patient held attitudes favouring a patient-centred style. Differences in responses were noted both in the 'sharing' and 'sharing' subscale, between those < 65 and ≥65 years old, and across levels of education.
Conclusions: Average PPOS scores indicate a moderately patient-centred approach towards healthcare, with more favourable attitudes towards the 'sharing' aspect. However, patients' views on patient-centred care are affected by age and level of education.

FREE PAPER PRESENTATIONS
FP05: Retina

FP05-01-RET

Effect of cataract surgery along with Ranibizumab on patients with persistent diabetic macular edema

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Purpose: Of the study is to evaluate visual acuity change and changes in the thickness of macula in patients with persistent clinically significant diabetic macular edema undergoing cataract surgery along with intravitreal ranibizumab
Methods: Its a prospective, non randomized clinical trial conducted at Arora eye hospital and retina centre , Jalandhar Diabetic patients with clinically significant cataract already on inj ranibizumab for macular edema for last 6 months were included in the study . All included patients received intravitreal ranibizumab at the time of cataract surgery .And also repeat injection at follow up if required
Results: 32 patients included in the study with mean age 62.7 years and male :female ratio of 3:1 . Mean base line visual acuity .9 logMAR and CMT of 353 microns range (262 -534) microns at the start of study . At the end of 1 month post cataract surgery mean BCVA .5 logMAR and mean CMT 312 microns with range 244-562 microns . At 6 the end of 6months mean BCVA .7 logMAR and mean CMT 362 microns .None of the patients had any injection related side effects . 18.7%of patients had decrease in visual acuity post cataract surgery
Conclusions: Patients of diabetic macular edema on ranibizumab with concurrent cataract have beneficent in terms of visual acuity post cataract surgery .Though multiple injections of ranibizumab are required post operatively to sustain visual acuity achieved

FP05-02-RET

Endocannabinoids in aqueous humour: gender differences in diabetic and non-diabetic patients

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Purpose: The primary aim was to determine endocannabinoid (EC) levels of 2-Arachidonoylglycerol (2-AG) and the ethanolamides Oleoylethanolamine (OEA), Palmitoylethanolamide (PEA) and Anandamide (AEA) in the aqueous humour of patients undergoing routine cataract surgery. Secondary aims were to compare values by diabetic status and gender.
Methods: All patients gave informed consent. Diabetic patients with diabetic maculopathy, pre-proliferative or stable treated proliferative diabetic retinopathy were commenced on Nepafenac drops the day before surgery to reduce the risk of pseudophakic macular oedema. A sample of aqueous humour was removed from the anterior chamber of patients at the beginning of cataract surgery and snap-frozen in Liquid Nitrogen. Levels of 2-AG, PEA, OEA and AEA were measured by HPLC and the mean values were grouped by gender and diabetic status and compared by ANOVA.
Results: Aqueous humour samples taken from 83 patients. Of the 48 female patients, 20 had diabetes, and 12 of the 35 male patients had diabetes. All 4 EC's were identified in the aqueous humour samples.
The levels of all EC's were higher in females than males (p= 0.016) and 2-AG levels were slightly higher in diabetic patients (p= 0.067).
In non-diabetics the ethanolamides were higher in females (AEA p= 0.04, PEA p= 0.005, OEA p= 0.07) but whilst mean values increased in male diabetic patients, these significant differences were lost, and female diabetic values decreased.
Conclusions: There were gender and diabetic differences in aqueous humour EC's. Since EC receptors are present in ocular tissues including the retina (neurones, glia and endothelial cells) the different levels of EC's in the aqueous humour of diabetic and non-diabetic patients may provide a novel therapeutic target for diabetic retinopathy. The effect of pre-operative Nepafenac is unknown.

FP05-03-RET

Late indocyanine green staining of large microvascular abnormalities during diabetic macular edema

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Purpose: Retinal microvascular abnormalities are commonly observed in retinal vascular diseases, including diabetic retinopathy. Convergent clinical evidence suggests that targeted photocoagulation of large microvascular abnormalities may be beneficial for treating macular edema. These lesions are better identified on late frames of indocyanine green angiography (ICGA) however little is known about their clinical presentation.

Here, we investigated the prevalence and clinical spectrum of late ICG staining and optical coherence tomography (OCT) of retinal microvascular abnormalities in patients with diabetic macular edema (DME).
Methods: Retrospective, observational study. The fundus photographs, ICGA and OCT charts of 35 eyes from 25 consecutive patients with DME were reviewed. The cutoff defining late frames was 10 mn after dye injection
Results: Twenty-two eyes (63%) had at least one focal area of ICG staining persisting longer than that of microaneurysms. Late ICGA stained microvessels were located at a median distance of 2708 µm from the fovea (range: 1064-4583 µm). Their size ranged from 153 to 307 µm; as a rule, larger lesions stained later and for a longer period. Their prevalence was 4/10 in eyes with dust-like HEs, 9/14 in eyes with moderate HEs and 9/9 in eyes with circinate HEs (p=0.03 for the difference between groups).
Conclusions: Foci of microvascular abnormalities showing late ICG staining are commonly found during DME. The size of lesions correlates with shifting to the right of the ICG staining over time curve. Their prevalence is related to the severity of HEs, which suggests their implication in the occurrence of DME. We propose the term telangiectatic capillaries (TelCaps) to describe them.

FP05-04-RET

Microperimetry changes in naïve diabetic macular patients after one dose of anti-VEGF intravitreal injection

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Purpose: To study morphological and functional changes after anti-VEGF treatment in patients with diabetic macular edema (DME)
Methods: This prospective study included consecutive naive patients with DME that started treatment with ranibizumab or aflibercept in our center. All patients underwent best corrected visual acuity (BCVA) measurement, microperimetry with strategy 4-2 fast testing 13 central points and OCT-A by using MP-3/RS-3000 advance (Nidek®) before and 1 week after intravitreal treatment. The data was analyzed using SPSS Statistics 22.0.
Results: We collected a total of 17 eyes of 15 patients. In the sample 64,7% and 35,3% was non proliferative and proliferative diabetic retinopathy respectively. Recived aflibercept intravitreal 7 patients and ranibizumab intravitreal 10 patients. Before and after treatment the results were: mean BCVA pre and post: 0.54 +/- 0.25 and 0.54 +/- 0.29 (p=0.45); mean central retinal thickness (CRT) pre and post: 399 +/- 109 µm and 334 +/- 69 µm (p=0.02); mean retinal sensitivity (SRM) pre and post: 21,3 +/- 7,4 and 23,6 +/- 5,1 (p=0.05).
Conclusions: In the first week of anti-VEGF treatment in naive patients with EMD, significant functional changes are observed according to the results of our study

FP05-05-RET

Long-term visual function effects of pan-retinal photocoagulation in diabetic retinopathy

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Purpose: To characterize the visual function in patients with diabetic retinopathy submitted to pan-retinal photocoagulation and to relate the outcomes with clinical factors and treatment strategies.
Methods: Retrospective study including 113 eyes of 57 patients. Clinical data was obtained through the patient's clinical processes. Visual function was accessed by the study of the Humphrey Esterman Visual Field (HEVF, Humphrey analyzer3®), the contrast sensitivity function (CSF, Metrovision-MonPack3®) and the analysis of light scattering in the retina (HD Analyzer®). Spectral domain-optical coherence tomography (Heidelberg®) was made in all patients.
Results: 37 men and 20 women, aged 62,2 years were evaluated. 29 were type1 and 28 were type2 diabetics and the average disease evolution time was 29,7 years.
Average best corrected visual acuity (BCVA) was 148/200 (0.13 logMAR) and mean objective scatter index (OSI) was 2,95. BCVA and OSI were significantly worse in patients with cataracts (p=0,000; p=0,000) and no significant differences were found between those who received macular laser and the others (p=0,366; p=0,56)
Mean HEVF SCORE was 84.6%. The "confluent" photocoagulation pattern had a significantly better SCORE than the "very confluent" one (p=0,000), YAGII laser achieve a significantly better SCORE than Argon laser (p=0,000). Mean CSF (2-5cpd) was 19,42 and 14,11 in photopic and mesopic conditions respectively. Photopic CSF was significantly better in the "confluent" than in the "very confluent" pattern but there was no statistically significant difference in mesopic conditions (p= 0.003; p=0.075)
According Portuguese law, 77,1% patients have driving license visual field requirements.
Conclusions: Laser pan-photocoagulation is an effective long-term treatment for the stabilization of diabetic retinopathy. Despite the aggression to the retinal tissue, the results of visual function are good and compatible with activities such as driving in most cases.

FP05-06-RET

Structure-function correlation using OCT angiography and microperimetry in diabetic retinopathy

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Purpose: The aim of the study was to correlate retinal vascular density with retinal sensitivity in diabetic retinopathy (DR) with or without diabetic macular edema (DME).
Methods: Prospective cross-sectional study of 128 subjects: 122 eyes of patients with DR and 88 eyes of non-diabetic patients. All subjects underwent complete ophthalmic examination including best-corrected visual acuity

(BCVA), slit-lamp anterior and posterior biomicroscopy, optical coherence tomography (OCT), OCT angiography, and microperimetry with MP-3 (Nidek, Gamagori, Japan). Retinal vascular density measured by OCT angiography in 9 areas were correlated with retinal sensitivity in the same 9 areasby Spearman correlation.
Results: Diabetic patients mean age was 55,64 +/- 13,23 years; non-diabetic subjects were 46,37 +/- 13,39 years. The BCVA was 0,78 +/- 0,23 in the diabetic group and 0,99 +/- 0,1 in the non-diabetic group.
Mean vascular density was decreased in the DR group compared to non-diabetics ($p< 0,05$) and in all of the 9 areas ($p< 0,05$).
Correlations by areas between vascular density and retinal sensitivity were assessed, we found moderate correlation in 4 of the 9 areas, central and temporal-superior areas ($r= 0,45$; $r=0,37$; $r=0,42$; $r=0,36$) with statistical significant correlation ($p< 0,01$) in the DR group but not in the non-diabetic subjects.
Conclusions: Diabetic retinopathy results in a retinal vascular density decreased that entails a reduction of retinal sensitivity. Microangiopathic changes are correlated with microperimetry sensitivity drop in 4 of the 9 areas.

Financial disclosures: none

FP05-09-RET

Multimodal imaging of hypertensive retinopathy, neuropathy and choroidopathy: a case report

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Purpose: Accelerated hypertension can present with visual symptoms. Ocular manifestations include retinopathy, optic neuropathy and choroidopathy. The purpose of this case report is to explore the multimodal imaging findings of hypertensive fundal changes.
Methods: A 57-year-old man presented with a 2-day history of bilateral blurred vision, and "patches" in his right visual field. He had a past medical history of hypertension, on 5mg Amlodipine once a day. Visual acuity was 6/9 in each eye. Pupillary examination and colour vision were normal. Anterior segments were within normal limits. Dilated fundal examination revealed bilateral disc swelling and Paton lines in the left eye. Extensive (>20) Elschnig spots were noted at the right macula. Bilateral AV-nipping, and a left cotton wool spot were also present. Blood pressure was 190/110. A diagnosis of accelerated hypertension was made and he was referred for medical management.
Results: Multimodal retinal imaging was acquired: fundus photos, fundus autofluorescence (FAF), and optical coherence tomography (OCT) of the discs and maculae. Fundus photos documented the clinical findings as outlined. On FAF, Elschnig spots were identified as hypoautofluorescent. OCT showed thickening of the retinal layers bilaterally, with marked choroidal folds at the left macula. OCT of the right macula demonstrated focal attenuation of the ellipsoid zone in areas overlying Elschnig spots.
Conclusions: This report describes the multimodal retinal imaging findings of a case of simultaneous hypertensive retinopathy, neuropathy and choroidopathy. Elschnig spots are areas of focal choroidal ischaemia and resultant damage to the overlying retinal pigment epithelium (RPE). Lipofuscin is the fluorescent pigment that accumulates in the RPE as part of cell metabolism and is the basis for FAF imaging. Elschnig spots are therefore hypoautofluorescent. Furthermore, ellipsoid zone attenuation on OCT corresponds with this pathological mechanism.

FP05-10-RET

Human mercaptalbumin and ascorbic acid as protective shields in the vitreous humour

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Purpose: Ascorbic acid (Asc) occurs at high concentrations in vitreous and plays a central role in vitreous redox chemistry. Albumin is the main protein in vitreous - it occurs in different oxidation states, which can be used as redox indicators. This study, addressed the vitreous redox state of cysteine-34 of albumin in relation to Asc, which has been suggested to exert a main function in detoxifying reactive oxygen in the vitreous.
Methods: A total of 58 vitreous samples obtained from patients undergoing vitrectomy were analysed for human mercaptalbumin, (HMA), the reduced thiol form; human non-mercaptalbumin 1 (HNA1), a reversible oxidative modification with a disulfide at cysteine-34 ; and human non-mercaptalbumin 2 (HNA2), a non-reversibly, highly oxidized form of albumin. Vitreous Asc concentrations were determined and correlated with the redox state of vitreous albumin. Blood samples were taken to compare albumin redox state between plasma and vitreous.
Results: Vitreous albumin showed greater variability in the redox state of cysteine-34 and a shift to the oxidized fractions compared to plasma albumin ($P < 0.001$). A strong positive relation was observed between the vitreous ascorbic acid concentrations and the reversibly oxidized form, HNA1 ($P < 0.001$), and a negative relation with the reduced form, HMA, while no relation was found with HNA2. Furthermore, higher ascorbic acid concentrations in females were found to correspond to higher HNA1 fractions and even stronger in males
Conclusions: Our results support the view that ascorbic acid, by decreasing the concentration of molecular oxygen generates hydrogen peroxide and that thiols including HMA are acting as antioxidants in patients. This study, for the first time, provides evidence that vitreous albumin is an appropriate marker molecule in evaluating the appearance of reactive oxygen species in the vitreous of those patients.

FREE PAPER PRESENTATIONS
FP06: Retina

FP06-01-RET

Vision-related quality of life after retinal detachment measured by a modified NEI VFQ-25

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Purpose: To examine the postoperative visual recovery and quality of life (QoL) in patients following retinal detachment (RD) surgery.
Methods: Included patients underwent a baseline clinical examination and completed the National Eye Institute Visual Functioning Questionnaire preoperatively and at 1 and 3 months (M1, M3) postoperatively. Composite score (CS) and short-form scores (visual functioning scale (SFVFS) and socioemotional scale (SFSES)) were analyzed.

Results: 194 patients were enrolled and 47 returned the questionnaire for all three time-points (26 macula-ON (ON) RD and 21 macula-OFF (OFF) RD). Best corrected visual acuity (BCVA, SE=Snellen equivalent) was SE 20/25 preoperatively, 20/25 at M1 and 20/20 at M3 postoperatively. Postoperatively, the OFF group showed a positive correlation between BCVA and QoL, especially at M3 between BCVA and SFSES score ($p< 0.001$, $R^2=0.58$). The ON group showed a significant correlation with BCVA only in SFVFS score at M3 ($p< 0.001$, $R^2=0.41$).
Conclusions: There is a significant difference in QoL in CS and more importantly in SFSES and SFVFS between ON and OFF RD. ON patients show a transient reduction in QoL at M1 while OFF patients exhibit a positive progression in their QoL throughout follow-up. These data will help to better manage patients' expectations after RD surgery.

FP06-02-RET

GS030-DP, a gene therapy product for retinitis pigmentosa, is well tolerated after bilateral intravitreal administration and exposure to 595-nm LED light in blind rd1 mice

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Purpose: GS030-DP is an engineered AAV2 (AAV2.7m8) vector encoding the light-sensitive opsin ChrimsonR-tdTomato in clinical development for retinitis pigmentosa (RP) subjects. GS030-DP converts retinal ganglion cells into 595-nm light-activatable cells. The objective of this study was to characterize the ocular phototoxicity of GS030-DP in a relevant animal model following transgene expression and exposure to the 595-nm light required for opsin activation.
Methods: *Rd1* blind mice received a bilateral intravitreal injection of either vehicle or GS030-DP [7.84E9 vg/eye]. Five weeks post injection, the mice were anesthetized and exposed for two hours to either room light or pulsed 595nm LED light (retinal irradiance of 1.4E16 or 1.7E17 photons/cm^2/s), using a purpose-built illuminator. Animals were monitored for 2 weeks following light exposure prior to sacrifice and histopathology evaluation.
Results: ChrimsonR-tdTomato immunolabeling was observed in the retinas and axons of the optic nerve of GS030DP animals.
Examination using a slit-lamp biomicroscope and indirect ophthalmoscope indicated no GS030-DP-related findings and no LEDlight related retinal findings. Cataract and corneal oedema were noted in all groups and light conditions and were considered secondary to the light exposure procedure (i.e. anaesthesia, mydriatic, lubricant). Some corneal findings (ulcer, inflammation) seemed found in both control and GS030-DP groups but at a corneal irradiance 75 times higher than the one used in first-in-man study.
Microscopic evaluations did not identify any GS030-DP-related findings in the eye or optic nerve, and no LEDlight related findings were reported in the retina.
Conclusions: Bilateral intravitreal administration of GS030-DP was well-tolerated in *rd1* mice. Transgene expression combined with 595nm LED light exposure was not associated with toxicity in the retina or optic nerve. Results await confirmation from ongoing first-in-man study in RP subjects, PIONEER.

FP06-03-RET

A Phase 1/2 optogenetic retinal gene therapy clinical trial for non-syndromic retinitis pigmentosa: the PIONEER study

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Purpose: The PIONEER study evaluates the safety and tolerability of GS030, an investigational treatment combining gene therapy and a light stimulation medical device in subjects with non-syndromic retinitis pigmentosa (RP).
Methods: PIONEER is a Phase 1/2a, open-label, dose-escalation study combing a drug product (GS030-DP) with a medical device (GS030-MD) for subjects with end-stage non-syndromic RP. GS030-DP is an optogenetic gene therapy targeting Retinal Ganglion Cells (RGCs) and encoding an optimized form of channel-rhodopsin ChrimsonR, ChrimsonRtdTomato (ChR-tdT), administered via a modified AAV2 vector (AAV2.7m8) by intravitreal injection (IVT). Visual interface stimulating goggles, GS030-MD, process special "event" images of the visual world which modulate a powerful and tailored light source projected onto the genetically re-engineered retina, in real time. Three dose-escalation cohorts (5E10, 1.5E11, 5E11 vg/eye) include 3 subjects each, with an extension cohort of 9 subjects treated at the highest tolerated dose.
Results: The first human subject was injected with 5E10 vg/eye of ChRtdT in October 2018. The IVT resulted in mild anterior chamber inflammation responsive to steroids, which resolved by 4 weeks post injection. The subject reported mild light sensitivity following injection. First use of the medical device post gene therapy was initiated two months following IVT without untoward effects or safety signals.
Conclusions: The PIONEER Study is the first clinical trial combining treatment with the simultaneous action of a gene therapy and a medical device, using an optogenetic approach to target patients with end-stage RP. This approach is independent of the specific genetic variant contributing to pathology. In advanced RP, both rod and cone photoreceptors are lost while RGCs are preserved. In such a population of patients, a therapeutic intervention that converts RGCs into photo-responsive cells via an optogenetic protein may offer great promise.

FP06-06-RET

Complete internal limiting membrane peeling versus inverted flap technique for macular hole surgery: a meta-analysis

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Purpose: To compare the anatomic and functional outcomes of vitrectomy with complete internal limiting membrane (ILM) peeling versus inverted flap technique, in macular hole (MH) surgery.

Methods: Electronic database search on MEDLINE (PubMed), and CENTRAL (Cochrane Central Register of Controlled Trials) to reach all comparative studies of both techniques. Search was last run in February 16, 2019. Three main subgroups of MH were defined: idiopathic large MH; myopic MH without retinal detachment; and myopic MH-induced retinal detachment (MHRD).

Primary outcomes: MH closure rate (anatomic success); and best-corrected visual acuity (BCVA) improvement (mean difference from baseline in LogMAR; functional outcome).

Secondary outcomes: recurrence rate; and surgery-related adverse events. Two independent reviewers assessed records, selected included studies, extracted data and evaluated the risk of bias. Meta-analyses were performed using RevMan 5.3 software.

Results: Fifteen papers (2 randomized control trials, 13 retrospective) enrolling 1313 eyes were included in this meta-analysis (complete ILM peeling 689, inverted flap 624). Mean age was 67.4±10.6 years. MH mean minimum diameter was superior in the inverted flap group (540±194µm vs. 622±231µm, p<0.001), as well as time of symptomatic evolution (11 vs. 13 months, p<0.01). Overall, MH closure rate was superior with the inverted flap technique (75% vs. 93%; RR 1.29, 95% CI [1.16, 1.43], p< 0.0001), as in all subgroups: *idiopathic large MH* - n=362, 87% vs. 96%, RR 1.12, 95% CI [1.05, 1.20], p<0.001; *myopic MH without retinal detachment* - 70% vs. 95%; RR 1.35, 95% CI [1.14, 1.59], p< 0.001; *MHRD* - n=198, 47% vs. 91%; RR 1.89, 95% CI [1.31, 2.73], p<0.001.

No statistically significant differences were found in any of the MH groups regarding BCVA improvement.

Discussion: Our results suggest the inverted flap technique is more effective in achieving MH closure. In all subgroups, higher closure rates were not accompanied by significant improvements in BCVA.

FP06-07-RET

Nonsupine positioning after macular hole surgery. A prospective multicenter study

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Purpose: To evaluate the postoperative closure rate of full-thickness macular holes (MH) after nonsupine positioning, which means that the patients avoid upward gaze and a supine sleeping position, and to investigate the correlation between postoperative positioning compliance and closure rate.

Methods: Prospective, multicenter study. (ClinicalTrial.gov: NCT02295943). Patients underwent pars plana vitrectomy with internal limiting membrane peeling and SF_6 gas tamponade followed by 3-5 days of nonsupine positioning. A "positioning measuring device" which recorded the time in supine position, was attached to patients' forehead postoperatively for 24 hours. Main outcome measures were anatomical closure rate of MH at two weeks or more after surgery, and the time spent in supine position during the first 24 hours postoperatively.

Results: A total of 205 participants were included of which two were lost to follow-up. Two hundred and two out of 203 MH closed after a single operation giving a closure rate of 99.5% (95% confidence interval: 97.3-99.9%).

The median time of supine positioning during the first 24 hours was 29 seconds (range, 0:00:00-01:52:28).

Because of the very high closure rate, a correlation between positioning compliance and closure rate could not be established.

Conclusions: Pars plana vitrectomy with internal limiting membrane peeling followed by a short-term nonsupine positioning accomplished a very high MH closure rate. Thus, face-down positioning is not necessary to achieve excellent closure rates in MH surgery.

FP06-08-RET

Clinical outcomes of slow-release, fluocinolone acetonide intravitreal implant (Iluvien®) from a tertiary center of Ophthalmology in Portugal

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Purpose: To evaluate the efficacy and safety of the slow-release fluocinolone acetonide 0.19mg implant(FAc) in refractory macular edema (rME) in a Tertiary Center of Ophthalmology in Portugal.

Methods: Retrospective study of the patients with FAc implanted for rME at our institution. PreFAc data analysed were etiology of rME, previous treatments (intravitreal antiVEGF, LASER, vitrectomy), lens status, best-corrected visual acuity (BCVA,ETDRS letters), intraocular pressure (IOP,mmHg), foveal thickness (FT,µm) on spectral-domain optical coherence tomography (SD-OCT), type of edema and vitreoretinal interface on OCT. Post-FAc data analysed were follow-up time, 3, 6 and 12-month BCVA, 3, 6 and 12-month FT, 12-month IOP, and need of further treatments for ME. Primary outcomes were BCVA and FT changes (ΔBCVA,ΔFT) at 12 months. Secondary outcomes were need of further treatments, 12-month change in IOP (ΔIOP).
Results: 14 eyes (10 patients) had FAc implanted (13 chronic refractory diabetic macular edemas (rDME), 1 postvitrectomy rME); all eyes had rME for over 2 years. Mean (SD) baseline BCVA was 35.7(27.4)ETDRS letters. Mean preFAc FT was 605.4 (189.2)µm. Mean preFAc IOP was 16.7 (3.0) mmHg. Mean follow-up time postFAc was 13.6(8.8) months. ΔBCVA was statistically significant at 3 (mean +15.8(17.4) letters;p=0.026) and 12months (median +6.5(15) letters;p=0.043). Mean ΔFT was statistically significant at 3 (-52.2(149.4) µm;p=0.001) and 12 months (-146.4(169.3) µm;p=0.038). Patients with better baseline BCVA showed the best improvement in VA. 7eyes needed antiVEGF therapy, 2eyes needed LASER. No eyes had vitrectomy. 2/7 phakic eyes needed cataract surgery. Mean 12-month ΔIOP was statistically nonsignificant (p=0.638).
Conclusions: In our study, the FAc implant resulted in significant anatomic and visual improvements in long-standing, severe rME, with a good safety profile. Importantly, our findings highlight the need for early consideration of combined treatments to improve outcomes in rDME.

FP06-09-RET

Long-term magic of Ocriplasmin in macular holes with vitreo-macular traction

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Purpose: To report the long-term outcome of intra-vitreal injection of Ocriplasmin in two patients treated with (Jetrea®; ThromboGenics, Inc., Iselin, NJ, USA) for Full Thickness Macular Hole (FTMH) associated with vitreo-macular traction (VMT) as the manufacturer data is limited to 28 days and 6 months. To establish the stability/improvement of visual acuity and the safety profile after an initial favourable outcome with the injection.
Methods: To report two cases demonstrating long term favourable outcome with Ocriplasmin. Both patients presented with distortion, and were treated with an intra-vitreal injection of Ocriplasmin for FTMH associated with VMT. They were monitored with visual acuity (VA) and OCT measurements for 4 years. Snellen's chart used for visual acuity and *Cirrus* HD-*OCT* (Carl Zeiss Meditec, UK) for OCT. Patient satisfaction and quality of life was noted at each visit.
Results: Initial post-operative changes at 28 days to 6 months showed a closed macular hole with minimal subretinal fluid but with no change in VA or the symptoms in both cases. However, at 24 months follow up, they showed dramatic improvement in VA. Case 1 from baseline 1/60 to 6/12, Case 2 improved from 6/36 to 6/9 both had complete resolution of distortion. The steady improvement continued further in both patients at 48 months with a complete closure of the Macular Hole. Serial OCT scans suggested long-term retinal tissue remodelling leading to the positive outcome.
Conclusions: It could be too early at 28 days or 6 months, to assess the favourable outcome in FTMH with Ocriplasmin injection. VA change and retinal tissue re-modelling could be on-going and improvement can occur even 4 years after the treatment.

FP06-10-RET

Novel technique of Nd: YAG laser posterior capsulotomy under silicone oil endotamponade

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Purpose: To evaluate effectiveness of new "from the bottom-upwards air bubble" technique of Nd:YAG laser posterior capsulotomy for the management of posterior capsule opacification (PCO) under condition of silicone oil endotamponade.
Methods: We reviewed 18 eyes in 18 adults who underwent Nd:YAG laser capsulotomy in PCO according to the technique, proposed by us, after phacoemulsification with intraocular lens implantation (IOL) without primary capsulectomy and vitrectomy with silicone oil endotamponade. All the patients underwent Nd:YAG laser capsulotomy (Nd:YAG laser Alcon) according to the proposed by us method, named "From the bottom-upwards air bubble technique". The technique comprised the application of YAG-laser on posterior capsule with its rupture and subsequent formation of air bubble at the bottom of the planned posterior capsulorhexis. Subsequent laser shots were applied in diagonal upwards direction to the area of the capsule adjacent directly to the air bubble, formed with the previous laser application. That allowed mechanical folding of posterior capsule with the air bubble, which increased in size after every shot and moved upwards and to the laser application side. Also sticking of PCO to the air bubble and moving back posterior capsule from the IOL for safe laser application were achieved. The effectiveness of laser treatment was evaluated.
Results: Sixteen eyes (89%) maintained a clear visual axis after a single Nd:YAG procedure. Two eyes (11%) required surgical pars plana posterior capsule removal to clear the visual axis because of cessation of YAG laser procedure connected with significant IOL pitting. Ten eyes (56%) developed IOL pitting which was clinically insignificant.
Conclusions: The proposed technique of Nd:YAG laser posterior capsulotomy under condition of silicone oil endotamponade is an acceptable option for the management of PCO and produces complications infrequently.

FREE PAPER PRESENTATIONS
FP07: Cornea, External Eye

FP07-01-COR

Real-world impact of topical ciclosporin 0.1% (Ikervis) beyond 12 months for dry eye disease

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Purpose: Topical ciclosporin 0.1% (Ikervis) is licensed for treatment of severe keratitis in dry eye disease (DED) and the key published studies reported outcomes up to 12 months. We wished to provide real-world data for our patients who had continued on Ikervis beyond 12 months.
Methods: In this retrospective case series, all patients prescribed Ikervis by two consultant ophthalmologists from October 2015 to May 2018 were identified. Records of those who persisted with Ikervis for greater than 12 months

were reviewed to identify patterns of concurrent topical medication use and any adverse events.
Results: 23 patients were identified (8 male; 15 female). Median course of treatment was 21 months (range 13-34). 19/23 (82.6%) were prescribed topical steroids during initiation of Ikervis. All remained on topical lubrication at least 4 times daily, however 9/23 (39%) reduced the frequency of lubricant drops required by 58% (from median of 12 to 5 drops/day). Beyond year 1, 6 patients required longterm topical steroid twice daily or less, with 3 additional patients requiring 4 week "rescue" courses of topical steroids. Prior to commencing Ikervis, patients were administering a median of 8 applications of topical treatment per day (range 4-24; 3 different products), decreasing to 7 applications in year 2 (range 5-16).
91% (21/23) were still using Ikervis as of last casenote review in December 2018. 1 patient discontinued treatment due to irritation (at 22 months). Another stopped at 13 months due to resolution of DED. 1 patient no longer required autologous serum drops.
Conclusions: Topical ciclosporin 0.1% (Ikervis) was well tolerated in the longer term in patients with DED. In this real-world series with greater than 1 year follow up, use of Ikervis enabled most patients to decrease or stop topical steroids, and reduce the total number of eyedrops applied.

FP07-02-COR

Characteristics of platelet lysate compared to autologous and allogeneic serum eye drops

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Purpose: Platelet lysate produced from platelet apheresis components has been proposed as an alternative to serum eye drops in the treatment of ocular surface disease. This study compared the effects of platelet lysate and serum on growth factor, cytokine and nanoparticle concentrations, and corneal epithelial cell proliferation.
Methods: The concentration of growth factors, cytokines and nanoparticles in platelet lysates manufactured from either fresh or expired platelet apheresis concentrations collected with Trima or Haemonetics technology was characterised and compared to those of allogeneic, autologous, and fetal calf serum. The ability to promote corneal epithelial cell proliferation and wound healing was tested *in vitro.*
Results: Platelet lysate enriched the amount of transforming growth factor-b1, platelet-derived growth factor -AB and -BB, fibroblast growth factor and epidermal growth factor compared to the two sera groups. The concentrations of insulin-like growth factor-1, hepatocyte growth factor and fibronectin were significantly lower than in sera. There were no differences in nanoparticle concentrations. There was no difference in corneal epithelial cell proliferation. Platelet lysates were comparable to fetal calf serum in accelerating corneal epithelial wound healing *in vitro*.
Conclusions: Fresh and expired platelet lysates from the Trima and Haemonetics systems had higher growth factor concentrations than sera. The ability of platelet lysates to promote corneal epithelial cell proliferation and wound healing was equivalent to sera. Platelet lysates may serve as an efficient and reliable source of human growth factors for the treatment of ocular surface diseases.

FP07-03-COR

The study on filamentary keratitis origin and treatment options

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Purpose: To analyze concomitant pathology contributing to filamentary keratitis and to evaluate effectiveness of different treatment regimens.
Methods: Filamentary keratitis is believed to be a form of dry eye. However often we face a severe dry eye with no filaments present. Obviously there should be a certain factor provoking filamentary keratitis. We examined 38 patients (76 eyes) with filamentary keratitis. All of them were consulted by co-specialists (internist, endocrinologist, reumatologist) to reveal concomitant diseases. All patients were divided into 3 groups depending on treatment regimen. The treatment included keratoprotectors, bandage contact lenses and one of the following components: Vitabact (1st group), Dexamethasone (2nd group), Cyclosporin 0.05% (3rd group). Besides, in case of decompensated concomitant disease, patients were treated by appropriate specialist. Investigative methods included: patients' questionnaire, biomicroscopy, 5-region corneal fluorescein staining scale, Shirmer test - 1, TBUT- test. Follow-up period was 6 months.
Results: Among concomitant pathology we revealed: Thyroid gland disfunction (34,2%), rheumatoid arthritis (21,1%) and their combination (10,5%), Sjögren's Syndrome (2,6%); II type diabetes mellitus (7,9%); Combination of diabetes and thyroid gland dysfunction (13,2 %) and neither endocrine nor rheumatoid diseases (10,5%). Shirmer test-1 results were variable and were not affected by the treatment. TBUT-test data before treatment were low (6-9 sec.) with an increase up to 9-11 sec. after the treatment.
Conclusions: Dexamethasone as a component of combined therapy contributed to rapid filaments' resorbtion, Cyclosporin - to fast effect and stable remission. 89,5% of patients had endocrine pathology or rheumatoid diseases or their combination. With this in view, we may consider filamentary keratitis not as a form of severe dry eye syndrome, but as a separate dystrophic corneal disorder with dry eye as its symptom.

FP07-04-COR

The protective effect of heparin and influence on the corneal structure regeneration

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Purpose: Heparin is an organic chemical compound that naturally has many functions in the human body, primarily related to antithrombotic activity. It is most often administered as a drug, for many systemic diseases, related to abnormal circulation in the human body. Heparin was also used as a substance as a component of drops and ophthalmic ointments used in pathologies related to the surface of the eyeball
In the prospective observational study it was decided to check and analyze data on the efficacy, tolerance and possible side effects of the used ophthalmic preparations with heparin, confirming the possible benefits of their use
Methods: Twenty people (6 women, 14 men) with corneal erosion due to blunt trauma (9) or with corneal foreign body (11) who came to ophthalmological accident & emergency department were included in the study.

The standard medical treatment was applied (fluoroquinolone antibiotic) and adjuvant treatment in the form of drops and eye ointments containing heparin with the recommendation of use: eye drops 4 x daily (HyloParin, Ursapharm, Germany - 1 mg / ml sodium hyaluronate + 1300 IU / ml sodium heparin), eye ointment 2 x daily (ParinPOS, Ursapharm, Germany - composition 1300 IU / ml sodium heparin).
Results: After 5-7 days the symptoms in all (100%) patients have significantly decreased. Regeneration of the corneal epithelium was observed and still present only a small amount of epithelial defects. Treatment resulted in improvement of cornea condition. Tests - Schirmer's and T-BUT confirmed the efficacy of applied treatment, parameters were within the population standard (> 15 mm / 5min for the Schirmer test without anesthesia and > 10 sec for the T-BUT test). The average of patients for the Schirmer test without anesthesia was 15.5 mm / 5min, average TBUT test was 11 sec.
Conclusions: Eye drops and ointments containing heparin were an effective additional treatment of corneal erosion after removing a foreign body or blunt trauma.

FP07-06-COR

Repeat corneal transplantation: indications, visual outcomes and risk factors for repeat keratoplasty failure

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Purpose: In New Zealand, repeat keratoplasty is now the second most common indication for corneal transplantation. This study aimed to report the indications, survival and visual/refractive outcomes of repeat keratoplasties and evaluate the risk factors for graft failure.
Methods: Prospectively recorded data of repeat corneal transplants from 1991-2017 were obtained from the NZ National Eye Bank. The clinical records of those performed at a single major centre were retrospectively reviewed. Those with less than 1-year follow-up data were excluded.
Results: We analysed 279 repeat corneal transplants at a single centre between 1991-2017. The most common primary indication was keratoconus (46.6%). The most common indication for repeat keratoplasty was endothelial decompensation (37.6%). Repeat transplant technique was penetrating keratoplasty in 86.7% and the remainder were endothelial keratoplasties.
Estimated 5-year survival was 56.6% for 1st, 41.3% for 2nd and 36.9% for 3rd repeat keratoplasty. Eyes with keratoconus had the longest graft survival (median 13.2 years). In surviving grafts median visual acuity was 6/15 at 1 year and 6/12 at 2 years.
On multivariate analysis, non-European ethnicity ($p<0.0005$), concurrent surgical procedure ($p<0.0005$), previous glaucoma surgery ($p<0.0005$), postoperative raised intraocular pressure ($p=0.002$), low donor endothelial cell density ($p=0.003$), and regraft number ($p=0.014$) were associated with keratoplasty failure.
There was no significant difference in survival between endothelial keratoplasties and penetrating keratoplasties.
Conclusions: Repeat keratoplasty survival is affected by multiple interacting factors and prognosis worsens with each subsequent regraft. These results will help guide clinicians in addressing patients' individual risk factors and provide personalised counselling, consent and post-operative management when embarking on repeat corneal transplant surgery.

FP07-08-EXT

Symptoms of thyroid eye disease and the smoking rate by age and gender

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Purpose: To evaluate the relationship between the symptoms of thyroid eye disease (TED) and the smoking rate based on age and gender
Methods: In total, 10643 patients with TED over 20 yrs of age were enrolled in this study from 2012 until 2017. The smoking rates of patients with TED were compared by age and sex with data from the Japanese Ministry of Health, Labor and Welfare (MHLW). We evaluated the relationship between smoking and the symptoms of TED, such as lid retraction, lid swelling, diplopia and exophthalmos.
Results: The current smoking rate of patients with TED was 40.5% in men and 19.1% in women. The results show that both rates were higher compared with Japanese smoking rate data from the MHLW which is 31.4% in men and 8.2% in women ($p< 0.001$, respectively). By age, the smoking rates of men over 40yrs and women of all ages were higher compared with the MHLW data ($p< 0.01$, respectively).
We found that lid retraction does not correlate with smoking, whereas lid swelling is highly correlated with smoking in patients of both genders in their 40's and 50's.
Furthermore, women in their 30's to 50's exhibit higher rates of diplopia, and exophthalmos is more severe in these patients.
Conclusions: In patients with TED, the symptoms of TED are more affected by smoking, especially in women in their 30's, 40's and 50's.

FP07-09-EXT

Treatment of lower punctal ectropion without significant horizontal lid laxity

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Purpose: Lower punctal ectropium is referred to that condition where the lower lacrimal punctum severely turns outward without the ectropion of the entire eyelid. Since the punctum can not drain the tear from the palpebral fissure any more, it results in excessive tearing as the leading symptom of the condition. Mild cases (eversio) can be easily solved with diamond shaped excision of the tarsal conjunctiva, but it may be ineffective in severe cases, and also can lead to vertical shortening of the medial part of the eyelid. Our own method was introduced to solve the more severe cases of punctal ectropium.
Methods: Ten cases of 8 patients suffering from chronic blepharitis were treated with our surgical method due to lower punctal ectropion without more extensive lid involvement. First, a full thickness incision was made perpendicularly to the lower eyelid edge, 2-3mm temporal from the lacrimal punctum. Thus, the lower eyelid was separated to a nasal and a temporal part. The 6-0 Vicryl intermarginal sutures were placed in a slightly oblique manner i.e. the bite in the nasal part was placed more anteriorly than in the temporal part so that the lacrimal point turns back into the right direction. After that the rest of the wound was sutured as usually. Removal of seams was done 3 weeks after surgery.

Results: 7 lacrimal drainage systems were successfully reconstructed by using our own microsurgical method, and favorable long-term results were achieved (at least one year symptom free), but in the other three cases, significant scarring was observed.
Conclusions: With our own microsurgical method, in severe cases of lower punctal ectropion without extensive horizontal lid laxity, good long-term results can be obtained.

FP07-10-EXT

Primary pterygium surgery - a randomized controlled trial between conjunctival autograft with autologous blood and suture technique

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Purpose: To evaluate the safety and efficacy among patients undergoing primary pterygium excision and conjunctival autografting using autologous blood or sutures (8-0 vicryl).
Methods: A randomized controlled trial with a study period of one year was conducted with 60 eyes from 43 patients having primary nasal pterygium. According to inclusion and exclusion criteria, they were selected and randomized into two groups for conjunctival autograft: Group-A (30) was treated with sutures (8-0 vicryl) and Group-B (30) was treated with autologous blood. All patients were examined preoperatively and postoperatively; peroperative and postoperative outcomes were evaluated and compared statistically. Follow up was done at 1st, 7th, 30th, 90th and 180th postoperative day. The main outcome variables were average operation time, postoperative comfort, graft adherence and recurrence.
Results: This study included 43 patients (60 eyes) with a mean age 46.17±7.53 (SD) in Group-A (30) and 46.77±7.04 (SD) in Group-B (30). A total of 32 males and 11 females, Group-A contained 15 males, 05 females and Group-B contained 17 males, 06 females. Average time required for operation in Group-A was 32.23±4.59 (SD) minutes and in Group-B was 24.73±3.69 (SD) minutes ($p< 0.001$). Follow-up at 1st and 7th postoperative day showed marked discomfort in Group-A (mean rank 41.82 and 40.62) compared to Group-B (mean rank 19.18 and 20.38) respectively ($p< 0.001$). At 1st postoperative day, there were 3 (10%) graft retraction in Group-B only. Within 180th postoperative day follow-up, all grafts were stable and there were 1 (3.3%) recurrence and 1 (3.3%) granuloma in Group-A only.
Conclusions: Conjunctival autograft with autologous blood showed better post-operative patient comfort with no recurrence as well as less operation time than suture technique. So, it appears to be a safe and effective procedure to perform in primary pterygium surgery.

FP07-11-COR

Conjunctival and ocular surface flaps in pediatric Keratoprosthesis

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Melting of donor the cornea following pediatric Keratoprosthesis (Kpro) is more common than in adults due primarily to the intense inflammatory response which can lead to backplate exposure requiring repair and even ultimate replacement. We describe novel techniques to minimize these complications.
Retrospective review of 103 primary and secondary pediatric Kpro procedures performed since 2004 enabled comparison of results following introduction of the newer techniques in 2014.
9 cases were primary and 18 involved repairs. The ocular surface improved in 19 cases remained unchanged in 4 and worsened in 4. Revisions were necessary in 6 instances. Available techniques include using thick sliding conjunctival flaps, buccal mucous membrane, and potentially periosteium and cross-linked donor cornea tissue.
Variability in case specifics and evolving surgical techniques render interpretation complex yet the techniques were deemed useful in both repair and primary interventions.
We conclude that vascularized structural reinforcement and surface barriers promote healing and thus device retention. Close follow up is mandatory and repair of incipient melting must be proactive and aggressive. The ability to retain a bandage contact lens may be protective.Topical application of immune modulators and TNF-alpha inhibitors may play a positive role. While more specific outcome data data is necessary, this experience may have application in complicated adult as well as pediatric cases.

FREE PAPER PRESENTATIONS
FP08: Cornea, Uveitis

FP08-01-COR

Plasma rich growth factor in the treatment of complex corneal disorders

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Plasma rich growth factor (PRGF) is an autologous blood product rich in proteins and growth factors which can be rapidly obtained from patient blood. Clinically, it is an affordable treatment with potentially broad spectrum of applications in ophthalmology especially in the treatment of complex or refractory corneal wounds.
Purpose: The aim of this study was to evaluate the efficiency of autologous platelet-rich factor in the treatment of complex corneal disorders.
Methods: There were 17 patients with corneal surface disorders, among which 5 patients with chemical burns, 8 patients with corneal ulcers and 4 with neurotrophic keratopathy. Visual acuity varied from hand motion to 0.1. Solid

PRGF was either just placed on the corneal surface or sutured with 2 nodes of 10-00 nylon suture at conjunctiva. If necessary, the procedure was repeated. All patients had corneal OCT scan before and after the treatment.
Results: Improved visual acuity and less subjective symptoms were observed in all patients. Complete healing of cornea was observed in all patients with chemical burns. As well considerable improvement experienced 7 of 8 patients with corneal ulcers (reduced size and depth of the ulceration, improved visual acuity, smaller conjunctival injection). Also an improvement was seen in 2 of 4 patients with neurotrophic keratopathy. None of the patients reported general or local side effects of the treatment.
Conclusions: PRGF is a reliable and effective therapeutic tool to promote wound healing in complex corneal disorders.

FP08-02-COR

Corneal confocal microscopy in type 1 diabetes mellitus: a six-year longitudinal study

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Purpose: Nerve biopsy or skin punch biopsy allows direct examination of peripheral nerve damage in diabetes mellitus (DM). However, both are invasive procedures and may be associated with persistent pain and other side-effects. The sub-basal nerves of the cornea originate from the trigeminal nerve, may be damaged by hyperglycaemia, and can be assessed non-invasively. The current study investigates the role of corneal in vivo confocal microscopy (IVCM) in predicting the effect of time and diabetic control on sub-basal corneal nerve density over a six year period.
Methods: Thirty participants with type 1 DM (56.8±12.8 yrs at follow-up), and 16 control participants (54±13.9 yrs) were assessed in 2011 and 2017. Exclusion criteria included bilateral cataract surgery or the development of DM in controls. All the participants underwent corneal IVCM in the eye previously examined. Central corneal sensitivity was evaluated by a non-contact aesthesiometer.
Results: The median duration of diabetes mellitus was 36 ±13.2 years. The sub-basal nerve density was low, but minimally increased in Type 1 DM participants (10.58±3.98 to 11.28±4.69mm/mm^2, p-=0.395) and decreased in control participants (21.89±3.63 to 18.77±3.46mm/mm^2, p-value=0.001). The corneal sensitivity in DM subjects also improved marginally (1.43±1.14mBAR to 1.27±0.88mBAR, p- = 0.001) and declined in the control group (0.16±0.26 o 0.78±0.39mBAR, p- =0.002). There was minimal change in HbA1c in patients with DM (59.9±13.3 to 58.3±12.9mmol/mol). There was no significant change noted in total neuropathy score.
Conclusions: The study shows there was no clinically significant change in corneal nerve density in patients with diabetes over a six year period of follow up. Although the nerve density values were significantly lower than controls at both time points consistent with a peripheral neuropathy, good glycaemic control seemingly contributed to stable corneal nerve densities and total neuropathy scores in DM.

FP08-03-COR

Pterygium pathology: a prospective case-control study on tear film cytokines

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Purpose: To investigate interleukin (IL)-6, IL-8 and vascular endothelial growth factor (VEGF) levels in the tear film as potential biomarkers in pterygium.
Methods: Our study included 38 eyes of 19 patients (primary pterygium (PPt), n=15; recurrent pterygium (RPt), n=8; pinguecula, n=5; and unaffected contralateral eyes (PHC), n=10) and 37 eyes of 19 age- and gender-matched healthy controls (HC). Pterygia were graded according to the Johnston, Williams & Sheppard's classification. Ocular photographs and tear film samples were collected pre-operatively, at 2weeks, 3months and 1year post-operatively. Tear film levels of IL-6, IL-8 and VEGF were determined through cytometric bead array analysis. Overall vascularized area (%) and pterygium size (%) were calculated using matlab-based processing software and ImageJ, respectively. Surgically resected tissues were processed for immunohistochemistry.
Results: Pre-operative tear samples from affected eyes (AE, PPt+RPt) show a mild increase in IL-6, IL-8 and VEGF levels compared to HC. Cytokine secretions in unilateral AE peak 2-weeks post-surgery, followed by a normalization to match healthy baseline levels. However, subgroup analysis of AE shows significantly higher levels of VEGF in PHC compared to HC. A positive correlation was detected between (I) IL-6 and VEGF secretion and (II) the corneal vascularized area (%) and size of pterygium (%). Age, gender and lesion grade were non-confounding factors.
Conclusions: There was no overall significant difference between the AE group and the healthy control group for the three cytokines measured.
However, it might be more relevant to consider the individual patients' cytokine level shifts from baseline over time as markers of disease resolution and/or recurrence. Further research on larger patient groups are needed to draw major conclusions. Nevertheless, the histological characteristics of resected tissue support the possibility that pterygium is a neoplastic-like growth disorder.

FP08-04-UVE

Retrospective audit of treatment outcomes of syphilitic uveitis over five years in a United Kingdom teaching hospital

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Purpose: Syphilis is an important cause of infectious uveitis. It should always be excluded since effective treatment can prevent morbidity, mortality and potential spread of this communicable disease. This audit aims to study the treatment outcomes of syphilitic uveitic patients at Moorfields Eye Hospital treated between 2012-2017.
Methods: Records from all patients with syphilitic uveitis treated between 2012 to 2017 at Moorfields Eye Hospital were analyzed retrospectively using the electronic record system and case notes.

Results: 35 eyes of 22 patients were included. 95% of patients were male. Ten patients were co-infected with HIV (45%); one patient had concurrent Tuberculosis (TB, 4.5%). Panuveitis was the most common presentation (46%); 31% had isolated anterior uveitis. Bilateral involvement was seen in 59% of patients.
Following antibiotic treatment with either penicillin or doxycycline, 18 of 22 patients (82%) had complete resolution of ocular inflammation. One patient was lost to follow-up (4.5%), and two had co-existing HLA-B27 positivity and central serous chorioretinopathy respectively.
At final follow-up, 91% of eyes had a best corrected visual acuity (BCVA) of ≥6/9. Three eyes (9%) had vision worse than 6/9 at final follow up; all three eyes had presented with severe syphilitic panuveitis; of which one is waiting for cataract surgery (4.5%).
Of the 35 eyes, the BCVA of 20 eyes (57%) improved, 12 eyes (34%) were unchanged, and 3 eyes (9%) lost vision from presentation to final follow-up. Vision loss was due to optic neuropathy, placoid disease, cataract respectively.
Conclusions: Appropriate antibiotics results in good visual outcomes for most eyes (91%). Poor vision (ie. 6/12 or worse, in 9% of eyes) was associated with syphilitic severe panuveitis on presentation. All patients must be referred to genito-urinary medicine (GUM) for treatment. Formal GUM referral guidelines will be initiated. A prospective re-audit will then be done in the future.

FP08-05-UVE

Treatment of non-infectious uveitis affecting the posterior segment of the eye (NIU-PS) with a single 0.18 mg fluocinolone acetonide (FAc) implant - the efficacy and safety outcomes at 3 years

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Purpose: The current study reports the 3-year efficacy and safety outcomes following treatment with the FAc implant in patients with NIU-PS.
Methods: Subjects with a >1 year history of recurrent NIU-PS, who had experienced at least 2 separate recurrences requiring ≥3 month systemic therapy or ≥2 intra- or periocular steroid injections, were randomized to receive the FAc implant (n=87 eyes) or sham injection (n=42).
The primary efficacy endpoint was recurrence of NIU-PS and defined as: 1) ≥+2 increase in vitreous haze; or 2) ≥15 letter loss of VA; or imputed in case of rescue treatment for ocular inflammation or missing data. VA and macular edema were secondary efficacy outcomes. Safety results included rates of cataract extraction and elevated IOP.
Results: Recurrence rates in FAc implant treated eyes (27.6%, 47.1% and 56.3%) were significantly lower than sham treated eyes (85.7%, 92.9% and 92.9%) at years 1, 2 and 3, respectively ($p < 0.001$). ≥15 letter gains were more common with FAc implant treatment (33% vs 15%) and losses were more common in the sham group (9% vs 1%) at the 3-year visit. Macular oedema resolved in 85% (34/40) of FAc implant and 70% (16/23) of sham eyes at year three. 42% and 33% of FAc implant and sham subjects required IOP lowering drops and IOP-lowering surgery was performed in 6% and 12% of eyes, respectively. Cataract surgery was performed on 74% and 24% of phakic study eyes in the FAc implant and sham groups, respectively.
Conclusions: Eyes treated with the FAc implant had a reduced rate of NIU-PS recurrence and a higher rate of macular oedema resolution. FAc treated eyes showed a higher rate of cataract, but glaucoma was not a significant problem.

FP08-06-UVE

Ocular findings and long term outcomes of the patients with cytomegalovirus anterior uveitis

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Purpose: To report fourty cases of Cytomegalovirus (CMV) anterior uveitis with long term follow-up and discuss the clinical characteristics of the entitiy.
Methods: The fourty patients diagnosed with cytomegalovirus anterior uveitis were enrolled in this multicenter retrospective study. The medical records of the patients including demographic features, ocular findings, laboratory results and treatment modalities were reviewed.
Results: Twenty-three male and 17 female with unilateral disease were evaluated. Mean age at the time of diagnosis was 37.3±14.7 (15-74) years and mean follow-up was 47.2±28.7 (3-96) months. At baseline, mean BCVA was 0.81±0.25 (0.05-1) and mean intraocular pressure was 30.9±13.11 (12-55) mmHg. Reccurence were seen in 28 patients with a 3.7±3 (1-12) mean number of attacks. Corneal endotheliitis with localised edema was present in 16 (40%) cases, keratic precipitates in 39 (97.5%), glaucoma in 38 (95%) and cataract in 9 (23.1%) cases. Anterior chamber inflammation was mild to moderate in all patients. Mean endothelial cell count was 2426±442 (1936-2873) whereas it was 3224±335 (2874-3859) in the fellow eyes (p=0.00). Keratic precipitates was medium size in 78.4% of the patients and located mostly inferiorly (61.5%). The mean maximum IOP was 38.5±11 (12-55) mmHg and 38 patients required antiglaucomatous medication and 6 patients underwent glaucoma surgery. Cataract surgery was necesseary in 11 patients. Diagnostic taps were performed in 35 cases and all were positivite. Systemic antiviral treatment were given to 36 patients (valganciclovir in 22 and valaciclovir in 10 cases) and topical antiviral ophthalmic gel (ganciclovir) were given in 34 patients. At the last visit, mean BCVA was 0.93±0.1 (0.3-1). Remission was achieved in 31 (77.5%) patients.
Conclusions: Early diagnosis and initiation of antiviral therapy is crucial to prevent and control the sight threathening complications in CMV anterior uveitis.

FP08-07-UVE

Real-world outcomes of biologic therapy for juvenile idiopathic arthritis associated uveitis

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Purpose: We aim to report the outcomes and complications of patients with uveitis from Juvenile Idiopathic Arthritis (JIA) treated with biologic therapy.
Methods: All patients who underwent treatment with biologic therapy for uveitis in the context of JIA between 2016 and 2017, followed in the Uveitis Department in Hospital de Santa Maria, were retrospectively included in the study. Patient medical records were analyzed retrospectively and clinical outcome and complications were registered.
Results: Nine patients (7 females, 2 males, 18 eyes) were included in the study. The mean age of JIA diagnosis was 6.6 years (±4,5) and the mean age of uveitis diagnosis was 7.9 years (±3,0). Six patients were being treated with

adalimumab (ADA), 2 with Infliximab (IFX) and 1 with Tocilizumab (TCZ), and of them 8 (88,9%) were treated successfully for uveitis. The resolution of anterior chamber inflammation was obtained with a mean interval of 2 months for ADA and 3 months for IFX. Before starting biologic therapy 33,3% (n=3) patients were on oral steroids, 55,6% (n=5) were doing methotrexate and 11,1% (n=1) was doing cyclosporine. After biological treatment, no patient was on oral steroids.
Regarding adverse effects, there are records of one reaction to infusion during the treatment with IFX and liver enzymes derangement with ADA, that resulted in the switch of therapy respectively to ADA and IFX.
Conclusions: In this small cohort, ADA, IFX and TCZ showed to be effective and relatively safe for treatment of JIA-associated uveitis.

FP08-08-UVE

Longitudinal study of a cohort of adolescents with juvenile idiopathic arthritis-associated uveitis

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Purpose: This study evaluates the characteristics of juvenile idiopathic arthritis-associated uveitis (JIAU) in adolescence and assesses disease activity and treatment burden.
Methods: All records for patients aged 12 years or older attending an adolescent Ophthalmology and Rheumatology multidisciplinary clinic between 2010 and 2017 were retrospectively reviewed for best-corrected visual acuity (BCVA), ocular complications, disease activity, topical and systemic treatments.
Results: 35 patients (12-21 years old; 22 girls,13 boys) were followed for a median of 7.6 years. 27 (77.1%) had bilateral uveitis. A diagnosis of JIA and uveitis were made at a median age of 4 and 7 years respectively.17 patients (48.6%) developed ocular complications (5 at presentation and 12 during follow-up) including cataract (n=14), band keratopathy (n=8), posterior synechiae (n=7) and ocular hypertension (n=6). Corticosteroids, Disease Modifying Anti-Rheumatic Drugs (DMARDs) and biologics were used in 42.9%, 100% and 68.6% of patients respectively. 9 patients (25.7%) had at least one ophthalmic surgery due to JIAU.
In the last year of follow-up, oral or topical steroids were used in 4 (11.4%) and 22 (62.9%) patients respectively. 11 patients (31.4%) were treated with one or more DMARDs; 2 patients (5.7%) received a biologic only and 16 patients (45.7%) were on a combination of at least one DMARD and one biologic treatment. At census, 19 patients (54.2%) had active uveitis and 10 patients (28.6%) had joint inflammation; both joints and eyes were inflamed in 5 patients (14.3%). Median BCVA was 6/5 in both eyes at census. Unilateral visual impairment (VA < 6/18) occurred in 3 patients (8.6%). 6 patients (17.1%) achieved drug-free remission at median age of 15.5 years after median disease duration of 8.5 years.
Conclusions: 91% of the adolescent patients maintained a good visual outcome. All patients were once on a DMARD and only 18% achieved drug-free remission by census.

FP08-09-UVE

Mycophenolate mofetil therapy for inflammatory eye disease: retrospective case series from a tertiary hospital

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Purpose: We aim to evaluate treatment outcomes with mycophenolate mofetil (MMF) in patients with inflammatory eye disease (IED).
Methods: All patients who underwent treatment with MMF exclusively for IED between 2016 and 2018, followed in the Uveitis Department in Hospital de Santa Maria, were retrospectively included in the study. Clinical outcomes, use of other immunosuppressive drugs (ID), and side effects (SE) associated with the use of MMF were recorded.
Results: Twelve patients (7 females, 5 males) with a mean age of 49 years, were included. Indications for treatment were uveitis in 80% (n=10) and mucous membrane pemphigoid (MP) in 16,7% (n=2). At baseline, 7 patients were being treated with oral steroids and 3 with other ID: 1 with adalimumab (ADA) and 2 with Ciclosporin A (CsA). Fifty percent (n=5) had no active inflammation on baseline. Of these, 3 had flare-ups during the follow-up: 1 because of MMF dose decrease while managing a SE; and 2 had inflammation control only after adding other ID or switching.
All patients with active disease at baseline (n=5) achieved inflammation control in a mean time of 2,3 months. Oral steroids mean daily dosage at the baseline and final observation was 54mg/day and 11mg/day, respectively. Five patients were able to completely stop, and the other 2 had a mean follow-up off less than 6 months. The average frequency of steroid drops was 5 times/day on baseline and 2 times/day in the last observation.
One patient had to switch from CsA to tacrolimus and 1 started ADA treatment, together with MMF, to achieve inflammation control. Regarding SE, the most frequent was anemia that was managed with temporary dose decrease.
Conclusions: These small case series suggest that MMF may be effective in the treatment of IED. We did not record any serious SE and the ones recorded were effectively managed.

FP08-10-UVE

The anti-inflammatory effect of tectorigenin in a mouse experimental autoimmune uveitis (EAU) model

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Purpose: The aim of this study is to investigate whether tectorigenin (an isoflavone derived from rhizome of Belamacanda chinensis) is effective in inhibiting ocular inflammation in a mouse experimental autoimmune uveitis (EAU) model.
Methods: C57BL/6mice were divided into three groups: a control group, an EAU group and tectorigenin treated group (1mg/kg or 10mg/kg). Mice were immunized with 100 mg IRBP emulsified in complete freund's adjuvant and 0.1ml of this emulsion was injected subcutaneously. Clinical and histopathological scoring of EAU were performed. IL-1a, IL-2 and IL-17 concentrations in the eyes of each group were quantified using ELISA. AIF, PARP, cleaved

PARP, VEGF, and caspase 8 were also analyzed by western blot. Intracellular expression of IL-17 in the activated CD4 positive T cells was assessed by flow cytometry.
Results: Daily intraperitoneal administration of high dose of tectorigenin (10mg/kg) improved clinical appearance of uveitis. On day 10, the mean clinical score of vehicle treated group was 3.4±0.3 whereas that of high dose of tectorigenin treated groups was 2.4±0.5 ($p<0.05$). In the vehicle treated group, IL-1a, IL-2 and IL-17 were markedly elevated and both dosages of tectorigenin significantly suppressed the expression of inflammatory cytokines ($p<0.05$). In the western blot analysis, high dosage of tectorigenin significantly down regulated the expression of PARP, VEGF, and caspase-8. Significant decrease of IL-17 positive T cells in PBMC were observed in mice treated with tectorigenin.
Conclusions: Intraperitoneal administration of tectorigenin diminished IRBP-induced experimental autoimmune uveitis in mouse by suppressing inflammatory cytokines and inhibiting various proteins which regulate apoptosis.

FREE PAPER PRESENTATIONS
FP09: Glaucoma

FP09-01-GLA

Long-term improvement of visual field with medicinal herbs in normal tension glaucoma

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Purpose: Glaucoma is a progressive optic neuropathy and a leading cause of blindness. While high intraocular pressure often is associated with glaucoma, this eye disease also can occur when intraocular pressure is normal (normal tension glaucoma). Though the exact cause of normal tension glaucoma is unknown, many researchers believe decreased blood flow to the optic nerve may be a factor. This could be caused by narrowing vessels that nourish the optic nerve and/or constrictions of these vessels.
The clinical trial was performed to test the therapeutic effect of medicinal herbs for patients with normal tension glaucoma.
Methods: 16 patients (33-77 yr old) were diagnosed as normal tension glaucoma with intraocular pressure of 8-18mmHg. They were treated with mixtures of 23-28 medicinal herbs prescribed according to the differential diagnosis of traditional herbal medicine. The remedies used for the cases consist of several different ingredients, which have well-established histories of use for treatment of vasospasms, poor blood flow, peripheral edema or intraocular inflammation and are expected to exert their specific effects. Visual field test (Humphrey Field Analyzer) was used to evaluate the effectiveness of the herbal therapy.
Results: Intraocular pressure was not changed with the herbal therapy.
However, visual field test demonstrated that MD (mean deviation) was improved after 4-10 months of herbal therapy in 15 of the 16 patients. In addition, visual fields have been continuously improved for 2~3 years of the herbal treatment.
Conclusions: The results imply that intraocular pressure does not affect the progression of optic neuropathy in normal tension glaucoma. Although the mechanism of improved vision cannot be proven, it is likely that herbal therapy resulted in some reversal of retinal ganglion cell dysfunction.

FP09-02-GLA

Adiponectin and endothelin-1 levels: a candidates biomarker for early detection of normo-tension glaucoma in metabolic syndrome-obstructive sleep apnea risk patients

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Purpose: To examine possible role of endothelin-1 (ET-1), TBARS, FRAP, hsCRP, adiponectin, leptin levels as biomarker for early detection of Normo-Tension Glaucoma (NTG) in Metabolic Syndrome-Obstructive Sleep Apnea (MS-OSA) risk patients
Methods: This study was a clinical trial conducted in National Cardiac Center Harapan Kita Hospital. The sum of 29 patients divided into 2 groups: 14 subjects MS-OSA risk with NTG and 15 subjects without eye disorders as control. OSA risk was determined according to STOP-BANG Questionnaire. MS was confirmed following the IDF criteria. NTG was determined based on normal intraocular pressure (IOP by tonopen handheld), glaucomatous visual field defect (mean defect (MD) by Humprey perimetry), thinning retinal nerve fiber layer (RNFL by OCT), and CD ratio. Protein biomarker candidates: Leptin, Adiponectin, hsCRP, and ET-1 were assessed by ELISA. FRAP and TBARS measurement was done by colorimetric assay.
Statistical analysis was performed using comparative test (T-test, Mann-Whitney test) and correlative test (Pearson Correlation, Spearman Correlation).
Results: The STOP-BANG score showed no marked difference ($p=0.824$) between NTG and non-NTG subjects.Significantly positive correlation existed between ET-1 and MD in NTG patients with MS + OSA risk ($p=0.031$; $r=0.409$).
While negative correlation between Adiponectin and Mean Defect ($p=0.013$; $r=-0.462$) was observed. There was significantly positive correlation between Adiponectin and RNFL thickness ($p=0.035$; $r=0.392$).
There were no statistically differences in TBARS (1.58 ± 0.43 vs 1.55 ± 0.39; $p = 0.913$), FRAP (120.46 ± 45.62 vs 92.59 ± 15.67; $p = 0.081$), hsCRP (2.45 ± 1.47 vs 3.54 ± 2.7; $p = 0.498$) and leptin level (22535 ± 14639.44 vs 20193 ± 12317.43; $p=0.646$) between MS-OSA risk with NTG and control group.
Conclusions: Adiponectin and ET-1 might be considered as a biomarker for NTG early detection in MS-OSA risk patients.

FP09-03-GLA

iNOS-inhibitor treatment leads retinal ganglion cell preservation in a porcine retina organ culture

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Purpose: Nitrite oxide (NO) plays an important role in the pathogenesis of glaucoma, Hypoxia based degeneration can be simulated by incubating porcine retinal explants with cobalt-chloride ($CoCl_2$). Treatment with the iNOS-inhibitor 1400W as a possible protectant was tested.

Methods: Explants of porcine retinae were cultivated for 4 and 8 days. Degeneration through 300µM $CoCl_2$ (for 48h) and treatment with the iNOS-inhibitor 1400W (for 72h) were applied simultaneously from day one. Three groups were compared: control, $CoCl_2$, and $CoCl_2$+iNOS-inhibitor. At days 4 and 8, retinal ganglion cells (RGCs), bipolar, and amacrine cells were analyzed via immunohistology and qRT-PCR.
Furthermore, the influence on the glia cells and markers (HIF1α, HSP70, iNOS) involved in hypoxic/stress processes were evaluated.
Results: Treatment with $CoCl_2$ resulted in a significant loss of RGCs already after 4 days ($p=0.0002$), which was counteracted by the iNOS-inhibitor ($p=0.021$). After 8 days the $CoCl_2$ group displayed a significant loss in amacrine cells ($p=0.0003$) and downregulation of PVALB mRNA expression (2.8-fold; $p< 0.05$). A drastic reduction in bipolar cells was observed after 8 days ($p=0.0001$), which was prevented by 1400W ($p=0.001$).
A significant decrease of microglia ($p=0.0001$) was found in the $CoCl_2$ group after 4 and 8 days, which could not be prevented by the iNOS-inhibitor. $CoCl_2$ induced a significant increase in the mRNA expression of HSP70 ($p=0.008$), HIF1α, and iNOS ($p=0.045$). Again, this effect was counteracted by the iNOS-inhibitor.
Conclusions: $CoCl_2$ induces strong degeneration in porcine retinae by mimicking hypoxia, damaging RGCs, amacrine, bipolar and microglia cells. Treatment with the iNOS-inhibitor counteracted these effects to some extent and clearly prevented the loss of retinal ganglion and bipolar cells. Hence, the iNOS-inhibitor 1400W seems to be a very promising treatment for glaucoma.

FP09-04-GLA

Decreased macular vessel density measured by optical coherence tomography angiography is associated with a reduced photopic negative response in glaucoma patients

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Purpose: To investigate the association between the photopic negative response (PhNR) and structural/angiographic optical coherence tomography (OCT) parameters in glaucoma patients.
Methods: This cross-sectional study enrolled patients with primary open angle glaucoma (POAG). All patients completed a full ophthalmological examination. One eye per patients underwent optical biometry, OCT, OCT angiography (OCT-A) and, full-field electroretinography to analyze the PhNR. OCT measurements: ganglion cell layer plus inner plexiform layer thickness (GCL+) and circumpapillary retinal nerve fiber layer (cpRNFL). Macular OCT-A measurements: vascular density of the superficial retinal layer (vd-SRL) and vascular density of the deep retinal layer (vd-DRL). Standard automated perimetry (SAP) was also performed.
Results: The study population consisted of 28 POAG patients. The PhNR significantly correlates with GCL++ thickness and vd-SRL ($p=0.02$ and $p=0.01$, respectively) but not with cpRNFL, SAP or, vd-DRL. Multivariate linear regression analysis, while controlling for the potentially confounding effect of age, central corneal thickness (CCT), axial length showed that each 10 µm decrease in GCL+ thickness was associated with a 0.90 µV decrease in the PhNR ($p=0.006$) and that each 1% decrease in vd-SRL was associated with a 0.35 µV decrease in the PhNR ($p< 0.001$).
The multivariate regression also adjusted for the effect of SAP showed that vd-SRL was independently associated with the PhNR ($R^2=0.677$, $p<0.001$). When controlling for the same variables, GCL+ wasn't independently associated with the PhNR ($p=0.143$).
Conclusions: Our study confirms the significant relationship between OCT structural measurements and PhNR. Moreover, we showed a significant association between macular vascular density and the PhNR.

FP09-05-GLA

The increased epiretinal membrane frequency in patients with glaucomatous optic atrophy

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Purpose: To investigate the epiretinal membrane (ERM) frequency in patients with glaucomatous optic atrophy (GOA).
Methods: The medical records of patients with glaucoma were investigated and the records of patients with GOA were recruited.The macular ERM was assessed by using high definition images obtained from enhanced depth optical coherence tomography
(OCT) and classified morphologically based on inner - outer macular thickness, inward projection of outer layers, foveal changes. The mean age, gender, the mean, fragmented retinal nerve fiber layer (RNFL) thicknesses, rim, disc area, mean, vertical cup-to-disc (c/d) ratio, the mean cup volume, the mean, fragmented ganglion cell-inner plexiform layer (GC-IPL) thicknesses measured by OCT and mean deviation, pattern standard deviation were noted.
Results: 88 of 68 patients were recruited. The mean age of 29 female, 39 male patients with GOA were 70,±9,4 years. The history of ocular surgery was present in 55 eyes. 45 eyes (51,1%) was diagnosed as ERM. 15 eyes (17%) were type 1A, 17 eyes (19,3%) were type 1B, 8 eyes (9,1%) were type 1C and 5 eyes (5,7%) were type 2B. The mean, superior, inferior, nasal,temporal RNFL thicknesses were 56±7 µ, 62,29±10,38 µ, 60±10,47 µ, 55,11±9,27 µ, 46,41±11,89 µ, respectivey. The mean, superior, inferior GC-IPL thicknesses were 56,4±9 µ, 57.14±12,09 µ, 55,79±11,56 µ, respectively. The mean MD and PSD were -22,56±5,9 and 10,5±2,36, respectively. The mean cup volume, rim, disc area, mean, vertical c/d ratio were 0,59±0,27 mm^3, 0,6±0,2 mm^2, 2,03±0,38 mm^2, 0,81±0,07 and 0,81±0,08, respectively.
Conclusions: The frequency of ERM in patients with GOA was as 51,1%. This result might be altered by the presence of previous surgeries but less than %10 frequency were reported in patients who underwent cataract surgery. So this frequency is a unique result which should be discussed and was needed further detailed studies.

FP09-06-GLA

The correlation between intraocular pressure and systemic factors in Chinese: population-based study

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Purpose: To investigate the relationships between intraocular pressure (IOP) and Systemic factors, such as age, gender, body mass index (BMI), blood pressure (BP), and metabolic syndrome risk factors in Chinese.
Methods: Data from OneHealth Healthcare Screening Program around China in 2017 were utilized. We recorded the values of all healthy adult aged 18 and over for sex, age, BMI, systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR), fasting blood glucose (FBG), total cholesterol (TC), triglyceride (TG), high-density lipoprotein cholesterol (HDL-C), low-density

lipoprotein cholesterol (LDL-C), glutamic-pyruvic transaminase (GPT), glutamic-oxalacetic transaminase (GOT) and gamma glutamyl transpeptidase (GGTP). IOP was measured by non-contact tonometer and the average value of both eyes was recorded for analysis. Exclusion criteria: IOP is greater than 25mmHg or less than 6mmHg; or IOP difference between both eyes is greater than 5mmHg; glaucoma patients and history of Ophthalmic Surgery. Five groups were divided according to the average value of IOP.
Results: 526,504 individuals, 274,747 male and 251,757 female with mean age of (41.65±11.91) years, met the inclusion criteria of this study. The mean IOP of the subjects was (15.31±3.06) mmHg, and that in the male and female was (15.61±3.08) mmHg and (14.98±2.99) mmHg, showing a statistically significant difference. The IOP of all subjects was approximately normal distribution. Analysis of 345,713 subjects with completed data showed that age, BMI, SBP, DBP, HR, FBG, TC, TG, HDL-C, LDL-C, GPT, GOT and GGTP had significant differences between five groups. Multivariate linear correlation analysis showed that IOP was positively correlated with BMI, SBP, DBP, HR, FBG, TC, LDL-C and GGTP, negatively correlated with age and HDL-C, but not with TG, GPT and GOT.
Conclusions: IOP is correlated with age, BMI, SBP, DBP, HR, FBG, TC, HDL-C, LDL-C and GGTP in Chinese.

FP09-08-GLA

Tetracaine 1% anesthetic effect: randomized clinical trial between eye drops in open eyes and spray in closed eyes

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Purpose: Compare corneal topicaln effect of 1% tetracaine spray in closed eyes and eye drop in open eyes. Study the level of difficulty,practicality and aplanation tonometry accomplishment for each method.
Methods: A controlled, randomized and paired clinical trial was realized in october and november of 2017, involving 100 eyes of 50 patients in an ophthalmological service. They did not have ocular or systemic diseases that compromise corneal sensitivity.Tetracaine eye drop was instilled onto one patient's open eye and vaporization of the same anesthetic was applied to the contralateral closed eye. A Cochet-Bonnet corneal aesthesiometer measured corneal tactile sensitivity before application, 5, 10 and 15 minutes after. One of the authors observed the instillation or vaporization procedures regarding its technical adequacy. After the process, the patient answered pre-formulated questions about the practicality of both methods. Aplanation tonometry accomplishment was evaluaed.
Results: Reduction of corneal esthesiometry was greater in the control group. The esthesiometric differences between the groups were on average: 43% at 5 minutes, 28% at 10 minutes and 24% at 15 minutes. (ANOVA, $p < 0.02$). Despite the reduction, the authors noted that all the vaporized eyes, as well as the ones, which had droplet instillations, performed aplanation tonometry. The difficulty in cooperating to instill topical anesthetics was reported by 12 of the patients, while the difficulty to cooperate with closed-eye vaporization was reported by two patients (McNemar, $p = 0.006$). The mean eye drop instillation time was 12.8 seconds for each eye (dp = 7.5) and the mean spray time was 9.8 seconds (SD = 4.1).
Conclusions: Spray topical anesthetic application in closed eyes was easier, faster and less effective than the instillation of anesthetic eye drop, but vaporization was sufficient for aplanation tonometry accomplishment.

FP09-10-GLA

Acute elevation of intraocular pressure in patient with hyperlipidemic myeloma. A report of a very rare case

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Purpose: Presentation of unilateral elevation of intraocular pressure (IOP) in patient with rare type of myeloma.
Methods: Case-report.
Results: 55years old man with newly diagnosed hyperlipidemic myeloma was sent to our glaucoma department due to problems with left eye: sudden pain, blurred vision, redness and intraocular pressure of 44 torr. We excluded attack of angle closure glaucoma and found whitish elements in the anterior segment of the left eye obstructing the iridocorneal angle. We initiated glaucoma therapy and performed diagnostically-therapeutic lavage of the anterior chamber of the left eye with sampling of the aqueous humour for biochemical and cytological examination. Identification of trace amount of cryoprotein in the samples of humour proved diagnosis of masquerade syndrome. Finding of the hyperviscous retinopathy and nonperfusion of wide peripheral areas of retina in both eyes on fluorescein angiography lead us to laser coagulation of these areas. The patient in the meantime underwent several therapeutic procedures: three times plasmapheresis, four cycles of chemotherapy followed by autologous stem cell transplantation and reached complete remission of the myeloma. There was significant vision improvement and regression of the finding in the anterior segment of left eye as well as on the fundus of both eyes after local and systemic therapy.
Conclusions: The acute unilateral elevation of IOP in the patient with myeloma was caused by the obstruction of trabecular meshwork with abnormal substances. The lavage of the anterior chamber of the left eye verified the diagnosis of masquerade syndrome. Local and systemic therapy contributed to reduction and stabilisation of IOP. The systemic therapy in particular improved clinical condition of the patient.

FREE PAPER PRESENTATIONS
FP10: Paediatric Ophthalmology & Strabismus

FP10-01-PED

Screening for retinopathy of prematurity in very preterm infants: the EPIPAGE-2 cohort study

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Purpose: To determine the prevalence of fundus examination in infants born very preterm and the individual- and center-related factors associated with ROP screening in France.

Method: To do so, data were extracted from EPIPAGE-2, an observational cohort of prematures born in France in 2011. Children born before 32 WG without severe malformation alive at the recommended time for ROP screening were included and analyzed using mixed model.
Results: In total, 2169/3077 (70.5%) of the children eligible for screening underwent a fundus examination (from 96% at 24 WG to 50% at 31 WG). The infant characteristics associated with fundus examination were small gestational age, low birth weight, severe bronchopulmonary dysplasia, severe neurological lesions and a transfer to another neonatal unit at the recommended screening schedule. Odd of screening was increased for infants hospitalized in units using wide-angle imaging (odds ratio [OR] 2.65 [95% confidence interval (CI) 1.17-6.01]). Level of care, administrative status and activity volume were not associated with ROP screening. Among screened children, 1641/2169 (75.7%) were screened on time. Screening performed on time was associated with high gestational age and use of wide-angle imaging (OR 2.20, 95% CI [1.06-4.58]); delayed examination was associated with low birth weight, severe bronchopulmonary dysplasia and necrotizing enterocolitis.
Conclusions: Children the most at risk for ROP were the best screened but often with a delay. The better compliance of neonatal units using wide-angle imaging systems supports its use; sharing processes between neonatal units could lower the cost.

FP10-02-PED

Results of ROP-treatment in the Netherlands from 2010 to 2016

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Purpose: Following the NEDROP-study, a Dutch national inventory on Retinopathy of Prematurity (ROP) (2009), a new screening guideline was introduced (2013) emphasizing the Early Treatment for ROP-criteria (ETROP) advising treatment in earlier stages. The present study was conducted to investigate the influence of the new guideline on the number and outcome of ROP-treatment in the Netherlands.
Method: Retrospective inventory on anonymized data of ROP-treatments between 2010-2016.
Results: Overall 196 infants were included and categorised into group A (A): 57 infants (113 eyes) treated between 1-1-2010 and 31-3-2013 and group B (B): 139 (275 eyes), from 1-4-2013 until 31-12-2016. After correcting for the inclusion-period this shows a 2.1-fold increase in ROP-treatments. Overall gestational age (μGA) and birth weight (μBW) were 25.9 (±1.7) weeks and 772 (±240) grams respectively. The groups were comparable regarding μGA (A: 25.9 (±1.7) weeks, B: 26.0 (±1.7) weeks, p=0.711), μBW (A: 715 (±184) and B: 730 (±205) grams, p=0.967) and neonatal risk factors associated with ROP. At treatment decision, ROP-stage≥3 was found in 49.1% in A vs. 57.6% in B (p=0.680). Laser photocoagulation was the predominant modality of primary treatment (97%), six infants received intravitreal Bevacizumab. In 31 infants ROP recurred and was retreated (A: 10, B: 21 p=0.160). In 19 infants ROP progressed to retinal detachment (A: 6, B: 13 p=0.791) of which 8 bilateral (A: 2 and B: 6, p=0.599) at a mean follow-up age of A: 31.5 (±24.3) and B: 13.3 (±12.6) months.
Conclusions: Since the new ROP-guideline, the number of infants with treatment-requiring ROP and permanent visual impairment has more than doubled. High stages at treatment decision suggest insufficient implementation of the ETROP-criteria.

FP10-03-PED

Is there an Ooportunity to change ROP screening guidelines in Ukraine?

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Purpose: To analyse and review the ROP screening criteria in Ukraine due to the fact that Ukrainian ROP guidelines differ (ophthalmological screening of babies born at GA of 22-37 weeks).
Methods: In the National Pediatric Specialized Hospital"Okhmatdyt" we provide laser treatment for about 70-75% of prematurely born babies in Ukraine.
In 2015 among 139 babies treated with laser coagulation of avascular retina (LCAR) in "Okhmatdyt" 3 babies were with GA of 33 to 34 weeks and BW of 1770 to 2010g.
In 2016 among 115 babies treated with LCAR 6 were with GA of 33 to 35 weeks and BW of 1700 to 2490g.
In 2017 among 111 babies treated LCAR 7 were with GA of 33 to 36 weeks and BW 1600 to 2500g.
In 2018 among 22 babies treated with LCAR till April 3 were with GA of 33 to 35 weeks and BW 1540 to 2100g.
All these babies born with the GA more than 32 weeks and BW more than 1500 g developed aggressive posterior (AP) ROP.
Results: The mean GA of all babies from the group was 34.14 weeks and BW - 1957.69g. Among all babies from the group with AP ROP 17 were successfully treated with laser coagulation, 1 came in the hospital with AP ROP stage 4a and developed total retinal detachment on both eyes despite early vitrectomies due to aggressive hemorrhage; 1 came in with stage 4a OD succefully treated with laser and stage 5 OS successfully treated with vitrectomy at the age of 10 months (retina mostly reattached).
Conclusions: According to the review these days we can't effort decreasing GA and BW criteria for ROP screening in Ukraine to 32 weeks GA and 1500g since there are still premature newborns that may develop retinal detachment if untreated in time.
Along with the fact that they all have received oxygen treatment (some for a short period of time) and taking into consideration possible "golden hour" input we need to emphasize more in cooperation with colleagues from the neonatal service.

FP10-04-PED

First results of ophthalmological screening organized by lions Romania in three regions

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Purpose: to assess objective ocular refraction in an ophthalmological screening project.
Material and methods: Cross-sectional, observational study of 1647 subjects from three geographical regions submitted to objective ocular refraction by portable automated Welch Allyn device, obtained by Lions Romania with an international grant. Both eyes were screened. age, sex, sphere (sph) value and cylinder (cyl) value, cylinder axis of five age groups were evaluated: 6 - 12 months, 12 - 36 months, 3- 6 years, 6 - 20 years and over 20 years (after instrument's rule). Spherical equivalent (SE) was computed.

We compared the differences in average values of sph, cyl and SE between the three different geographical regions, between the right and the left eye, between men and women and between the five age groups.
Results: We evaluated 1647 subjects. In the final statistical analysis we included 1644 subjects (99,81%); we excluded one case with nystagmus, one case with microphthalmia and one uncooperative subject. The average age was 6,77 ± 6,7 years (0,3 - 61 years). There were statistically significant differences between the values of sph, cyl and SE in the RE (0,62 ± 0,96, -0,68 ± 0,62. 0,28 ± 0,92), and in the LE, respectively (p = 0,00). There were statistically significant differences between the values of sph and SE in females (0,58 ± 1,04, 0,28 ± 0,97), and males (0,52 ± 0,82, 0,23 ± 0,80) respectively (p = 0,009).
Conclusions: WelchAllyn refractometer is an easy and rapid method of screening the objective refraction in different age groups.
Keywords: WelchAllyn refractometer, screening, Lions Romania, cross-sectional study

FP10-05-PED

Optic nerve head morphology and development in premature infants

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Purpose: Optic nerve head morphology is an important indicator for the presence of optic nerve hypoplasia and other optic nerve diseases. Premature infants have an increased incidence of double ring sign and more vertically oval discs than their full-term counterparts. This study aims to determine if premature infant optic nerve head morphology develops over time.
Methods: Retrospective review digital fundus images of preterm children who had been screened for retinopathy of prematurity (ROP) were compared across three time points; first ROP examination, final ROP examination, and follow up at five to eight years of age. Pixel measurements of the optic nerve were used to determine the optic disc horizontal to vertical diameter ratio (H/V) and the disc-macula to disc-diameter ratio (DM/DD). Presence of a double ring sign was also noted.
Results: Images of 69 preterm children (mean gestational age 27.5 weeks) were included. At first screening 40% of infants had a double ring sign whilst at long term follow up no child had a double ring sign. Preterm infants had a H/V on first examination of 0.76±0.06 (mean ± standard deviation) increasing to 0.81±0.05, and then to 0.87±0.09 at follow up. DM/DD decreased over time from 3.3±0.3 at final ROP examination to 2.4±0.4 at follow up.
Conclusions: Optic nerve head morphology continues to develop overtime in children born prematurely with a decrease in ovality and the presence of a double ring sign. These differences in optic nerve morphology are important to be aware of if optic nerve hypoplasia or other optic nerve diseases are suspected in a premature infant.

FP10-06-PED

Effects of surgical timing in surgical success and long-term motor and sensory outcomes of infantile esotropia

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Purpose: To investigate the effect of surgical timing on long-term motor and sensorial outcomes in patients with infantile esotropia (IE).
Methods: The medical records of patients who underwent strabismus surgery for IE were reviewed retrospectively. Patients were divided into 3 groups according to their age at the time of surgery: early group (6-11 months), late group (12-17 months) and very-late group (18-27 months). Main outcome measure: final alignment, surgical success rate (the angle of deviation at final follow-up ≤10 prism esotropia and ≤5 prism exotropia and no need for retreatment), stereo acuity, visual acuity and the number of retreatments required during the follow-up.
Results: A total of 79 patients (44 female, 35 male) met inclusion criteria. Surgical success rate was 25.9%, 23.1% and 53.8% in groups respectively (P = 0.035). After a mean follow-up of 96 months, the average number of operations per child was 1.7 ± 0.9, 1.6 ± 0.6, 1.4 ± 0.6 in the groups respectively (P = 0.020). Measurable stereopsis rate was higher in the early group (37% vs. 3.8% and 3.8%, respectively) (*P* = 0.001). Amblyopia rate was similar between groups.
Conclusions: Our results show that performing surgery in late course of life in infants with IE increases the anatomical success rate of surgery. In addition, orthophoria is achieved with fewer surgical operations. However, the maturation of stereo acuity develops at a low level in these infants. Early surgical timing has beneficial effects on the maturation of stereo acuity.

FP10-08-PED

A novel technique for augmented lateral rectus recession in large angle sensory exotropia

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Purpose: Sensory exotropia almost always present with a so large deviation angle that cannot be corrected with the classic unilateral recess resect technique. Same time bilateral surgery is usually refused by the patient. In this study we present a novel technique for unilateral surgery to correct large angle sensory exotropia.
Methods: Our technique implies 7mm resection of the medial rectus muscle. The resected segment of the medial rectus is the used to elongate the lateral rectus muscle. The elongated lateral rectus muscle is then maximally recessed. The correction may be further augmented by temporal conjunctiva recession.
Results: In ten operated cases with this technique; 8 had excellent correction of the deviation angle. Seven cases had free ocular motility in all directions and 3 had slight limitation of abduction in the operated eye.
Conclusions: We find this technique very appropriate for cases with large angle sensory exotropia which cannot be corrected by the classic unilateral recess resect technique

FP10-09-PED

Interventions to prevent myopia progression in children to reduce long-term sight loss: a systematic review and meta-analysis

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Purpose: The prevalence of myopia is rapidly increasing and ocular complications from myopia are associated with loss of vision. We aimed to assess the comparative benefits and harms of different myopia control treatments in children through a network meta-analysis.
Methods: We included randomised controlled trials (RCTs) on interventions to reduce myopia from a systematic search of standard databases from inception to May 2018. A network meta-analysis was not performed because of inconsistency in the results. Instead, we performed a standard pairwise meta-analysis. This review is registered on Prospero CRD42018099503.
Results: We present results from 36 RCTs. The overall quality of the evidence was low or very low for all outcomes. All trials were at a high risk of bias; many were not adjusted for clustering and some had extremely high numbers of post-randomisation drop-outs. For this reason, we performed a per-protocol, rather than intention-to-treat analysis.
Primary outcomes- best corrected visual acuity showed no significant change with any intervention. Adverse events were not consistently reported. No studies reported quality of life or long-term ocular adverse events.
Surrogate outcomes; axial length and refractive change showed atropine reduced myopia progression.
Conclusions: Interpreting the results in the context of the low quality of evidence, high risk of bias, surrogate outcomes and the use of a per-protocol analysis, we do not have sufficient evidence to provide recommendations for treatment choice in clinic.
We recommend that future studies are continued until adulthood to capture longer term ocular adverse events and to focus on clinical, patient centred outcomes.

FP10-10-PED

Effects of bifocals on visual acuity in children with down syndrome: a randomised controlled trial

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Purpose: Children with Down Syndrome (DS) typically have reduced visual acuity (VA) and accommodation lag, but it is unclear if prescribed glasses should correct both distance VA (DVA) and near VA (NVA) due to the lack of RCTs. We therefore conducted a multicentre RCT to compare the effects of bifocals designed to correct both DVA and NVA with distance-correcting unifocal glasses in children with DS.
Method: A total of 119 children with DS, age 2-16, were randomly allocated for bifocal or unifocal glasses (with full correction of refraction error in cycloplegia) in 14 Dutch hospitals and followed during 1 year. VA data were analysed in relation to baseline VA with ANCOVA.
Results: Treatment groups showed no differences at baseline. Shortly after receiving new corrections (~6 weeks), uncrowded NVA and crowded NVA with bifocals were significantly better than at baseline, but these short-term improvements in NVA (uncrowded NVA: bifocals 0.18±0.33 LogMar; unifocals 0.09±0.19 LogMar; and crowded NVA : bifocals (bifocals 0.13±0.36 LogMar; unifocals 0.08±0.33 LogMar) were not significantly different between the two treatments (p>0.151).
The 1-year treatment differences were: significantly larger improvement for bifocals compared to unifocals in both uncrowded NVA (bifocals 0.23±0.29 LogMar, unifocals 0.12±0.30 LogMar, p=0.045) and crowded NVA (bifocals 0.31±0.28 LogMar; unifocals 0.16±0.30 LogMar, p=0.017).
Improvements in DVA were comparable (bifocals 0.07±0.21 LogMar, unifocals 0.08±0.22 LogMar, p=0.565). Children with poor baseline VA improved more. Accommodation lag stayed unchanged when assessed through unifocal glasses or through the distance segment of the bifocals.
Conclusion: After one year, bifocals with full correction of ametropia led to significantly larger improvement of both uncrowded and crowded NVA in children with DS and accommodation lag compared to unifocals.

FREE PAPER PRESENTATIONS
FP11: Oncology & Pathology, Paediatric Ophthalmology & Strabismus

FP11-01-ONC

Frequency and type of eyelid neoplasia in Tuzla region, Bosnia and Herzegovina

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Purpose: Benign and malignant tumors can arise from each of the eyelid layers. Our aim was to investigate the frequency and distribution of the eyelid tumors in tertiary health institution in Tin Bosnia and Herzegovina.
Methods: We analyzed medical records for all the patients treated for eyelid malignancies in University Clinical Center Tuzla, from January 2012 to December 2016. Demographic, clinical, and pathological data were collected and analyzed.
Results: A total of 89 patients were treated during the 5-year period. Forty-seven of the patients were male (52%) and 42 (48%) were female. Patients' age ranged from 11 to 92 years, 66.6 years. The most common eyelid malignancy was basal cell carcinoma (BCC) squamous cell carcinoma (14.29%), Merkel cell carcinoma (3.17%), and melanoma (1.59%).
Conclusions: The annual incidence of eyelid tumors in Tuzla region is about 3.73/100,000 population.
Majority of the malignant tumors were BCC, while melanoma was the least frequent. Most frequent benign lesions were seborrheic keratosis and benign nevi.

FP11-02-ONC

Presentation and management of iris melanoma and suspicious iris naevi in the North Island of New Zealand

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Purpose: In New Zealand (Aotearoa) the incidence of iris melanoma is slightly higher than the estimated European incidence (0.02-0.08/100,000 per year). This study aimed to determine the presentation characteristics, management and outcomes of iris melanoma in a tertiary referral centre in New Zealand.
Methods: Retrospective, clinical case series of subjects with a clinical diagnosis of iris melanoma/naevus managed at Greenlane Clinical Centre and Eye Institute, Auckland, between January 1999 and December 2018. Both facilities are large tertiary referral centres in the North Island of NZ where a significant number of iris melanomas/naevi are referred for management.
Results: Total of 51 patients with a clinical/histological diagnosis of iris melanoma, median age at presentation 58 years. The cohort was predominantly NZ European, (n = 50, 98.0%). No patients were indigenous to New Zealand (Māori) or the Pacific Islands (Pasifika).
The most common iris colour was blue (n = 37, 86.0%). The most frequently observed associated tumour features were ectropion uveae (39.2%); corectopia (37.3%); and cataract (37.3%). Twenty-eight patients (54.9%) were initially observed with serial photography, 7 (13.7%) eventually required another treatment modality.
Fifteen patients (29.4%) underwent iridectomy with 10 (19.6%) also requiring another form of treatment. Enucleation occurred in nine patients (17.6%). Of these, secondary enucleation was required in three patients (5.9%) who had previously undergone another treatment modality. Iridocyclectomy, was performed in four patients (7.8%), plaque radiotherapy in four patients (7.8%), and proton beam radiotherapy in four patients (7.8%).
Conclusions: This study is the first to extensively examine iris melanoma/naevi in New Zealand. It contributes to the international literature and will assist the current and future management of all iris melanoma in NZ - in particular the development of a national uveal melanoma database.

FP11-03-ONC

Additional eye-conserving therapy of uveal melanoma after Gamma Knife radiosurgery

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Purpose: We analyzed our experience of adjuvant therapy for prevention and treatment of "toxic tumor syndrome" and radiation complications after Gamma Knife radiosurgery (GKRS) of the uveal melanoma (UM) for eye and vision preservation.
Methods: 52 patients (24 male, 28 female) between 28 and 79 years of age with centrally located or large UM were irradiated using GKRS with perfect immobilization at a dose of 70 to 80 Gy.
34 patients in the 1st group with relatively large tumors (average height/base size 9,38/13,45 mm - T3M0N0) and permanent macula-off secondary retinal detachment (PMOSRD) were underwent vitrectomy with tumor resection mostly.
18 patients in the 2nd group (average height/base tumor size 4,6/12,3 mm - T2M0N0) without PMOSRD were treated only with GKRS without following surgery.
All patients in both groups regularly received intravitreal injection of angiogenesis inhibitors (AI) for prevention and treatment of radiation neuroretinopathy (RNR). Follow-up period ranged till 60 months (in average 40 months).
Results: Preservation of the eyes without tumor recurrence was achieved in 51 patients (98%) with visual acuity more than 0,1 in 16 patients (47%) in the 1st group and in 14 (77%) patients in the 2nd group. One eye in the 2nd group was enucleated because of tumor recurrence. 4 patients (7,7%) died from liver metastases. The symptoms of RNR with cystoid macula oedema were found in patients with centrally located tumors in the most cases. Injections of AI were effective in all patients with RNR.
Conclusions: GKRS is effective method of treatment of UM with high eye-conserving rate (98%). But adjuvant therapy after GKRS is necessary in the most cases (injections of AI, tumor resection et al). Indication for surgery is the presence of PMOSRD with large UM as a rule. Regular patient›s examinations, close cooperation between ophthalmologists, radiosurgeons, vitreoretinal surgeons, oncologists are also extremely important.

FP11-04-ONC

The effectiveness of interferon therapy and selective intraarterial chemotherapy in combination with xenon photocoagulation and brachytherapy in the treatment of patients with uveal melanoma

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Purpose: to study the effectiveness of interferontherapy (IFT) and intraarterial chemotherapy (SIAC) in combination with xenon photocoagulation (XP) brachytherapy (BT) in the treatment of uveal melanoma (UM).
Methods: IFT with XP and their combination with BT was performed in 324 patients, age (54.3± 0.8)years. By the type of the treatment, the patients were divided into two groups.
The first - 64 patients with prominence (h) of the tumor (3.40+1.13)mm, which underwent XP and IFT (total dose (TD) of 30 million IU).
The control group - 49 patients (h=(3.62 + 1.33)mm), which underwent XP only.
The second - 257 patients (h=(5.83 + 1.73)mm), which underwent XP, BT (TD = 2570.0 + 458.4 Gy) and IFT.
The control group - 140 patients (h=(6.03 + 1.28)mm), who received only XP and BT (TD=2547.1+ 490.0 Gy).
The observation period is 36-60 months. SIAC with XP, BT and IFT was performed in 34 patients (follow-up period 12-36 months). The chemotherapy course consisted of 6-10 intra-arterial infusions of cisplatin into the temporal artery (TD=69.4+12.6)mg.
Results: in 64 patients (XP and IFT) the tumor resorption rate was significantly higher, and a positive result was observed in 90.2%, in the control - in 57.5%. In 257 patients (XP, BT and IFT), the resorption activity was significantly higher compared to the control (KF, BT) and the positive result is 82.6%, in the control - 68.6%. Patients after SIAC in combination with XP, BT

and IFT showed the following results: prominence of the tumor after 4, 12 and 36 months decreased by 41.9%, 61.3% and 56.3% respectively, whereas in the control group - by 13.4%, 30.0% and 38.4%.
Conclusions: inclusion of IFT in the UM treatment (XP and BT) allowed to intensify the tumor resorption and achieve a positive XP result in 90.2% (control - 57.5%), and with a combination of XP and BT - 82.6% (control - 68.6%). The use of SIAC allowed to increase the intensity of tumor resorption after 4 months by 28.5%, and after 36 months by 17.9%.

FP11-05-ONC

Efficiency of radio wave surgery and high frequency electric welding of biological tissues during resection of uveal melanomas of anterior and posterior chambers of the eye

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Purpose: To study the effectiveness of radiowave surgery (RS) and high-frequency electric welding (HFEW) during resection of uveal melanomas (UM).
Methods: Analysis of the results of RS of the iridocyliochoroidal zone was held in 92 patients (age 53.2+14.3 years). In 62 cases the UM was located in iridociliary zone (IC), prominence (h) (3.2+ 1.8) mm, diameter (d) (5.7 + 2.0) mm, in 30 cases - in the ciliochoroidal zone (CC), h=(6.8+1.7)mm, d=(9.8+1.5)mm. In 50 of 62 patients with IC UM visual acuity (VA) before surgery was 0.1-1.0, in 12 - below 0.1. 9 out of 30 patients with CC UM VA was 0.1-1.0, in 21 - below 0.1.
Bimanual endoresection of the UM with the use of HFEW was performed in 10 patients (age 50.5+ 2.9 years) after brachytherapy (6-12 months). H=(6.8+1.9)mm, D=(10.6+3.2)mm. 6 out of 10 patients showed VA 0.1-0.14, other 4 - 0.01-0.06.
At the time of endoresection opposite to the tumor in 4 mm from the limb we adjusted an lighting source, which allowed simultaneously to use vitreotom and endovitreal HFEW probe. Average observation period (27.3+1.5) months.
Results: During RS of IC UM 2 had intraoperative hyphema. There were not any complications in postoperative period, 50 managed to maintain high VA from 0.1 to 1.0. After RS of a CH tumor, intra-and postoperative vitreous haemorrage was observed in 4 patients. 7 patients maintain visual acuity 0.1-1.0.
After HFEW, in all cases, the UM was completely removed without intraoperative complications within healthy tissue. The operation ended with silicone oil tamponade. No haemorrhagic complications were noted in early postoperative period. In one case we observed local preretinal haemorrhage at the edge of surgical chorioretinal coloboma. Retina was attach in all cases. VA after 6 months increase in 7 patients (0.12-0.85), decrease in 3 case (LP - 0,02).
Conclusions: RS and HFEW allowed to reduce the risk of intra- and postoperative complications and maintain high visual functions.

FP11-07-ONC

Retinoblastoma: echography surpassing MRI in defining postlaminar optic nerve invasion - case report

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Purpose: to present indicators of postlaminar optic nerve invasion (PLONI) as defined by echographic standardized A- and B-scan features.
Methods: MRI (Siemens 1.5 T, Avanto; head protocol and dedicated protocol for orbits, without and with contrast), B-scan and standardized A-scan (Aviso S_{TM}, Quantel Medical) echography analysed anterior optic nerve (ON) width and reflectivity in a 7-month-old male with bilateral advanced retinoblastoma.
Results: On initial examination, right eye (RE) MRI demonstrated no PLONI, whilst B-scan depicted massive intraocular tumour "sitting" on the ON with interruption of the globe wall at ON head. B-scan revealed enlarged retrobulbar part of the ON with irregular „interdigitationes" of tumour tissue denting the distended ON sheaths.
After 1st cycle of chemotherapy, RE MRI demonstrated subtle ON signal enhancement. On B-scan, "interdigitationes" disappeared. Instead of normal tissue reflectivity of ON proper of 20-30 %, standardized A-scan displayed high reflective echoes of 72% spike height and maximal arachnoidal diameter of 1.82 mm indicating ON atrophy. Perineural sheath thickening presented with dural diameter of 6.05 mm and internal reflectivity of 82-96%.
Conclusions: Extensive literature search defines MRI as the only standard in assessing PLONI. However, MRI confronts major imaging-histological discordance if neither enlargement nor contrast enhancement are demonstrated. The acoustic hallmark of retinoblastomas is their high reflectivity of 80%-100%. High reflective pattern of optic nerve proper and high acoustic arrangement of perineural sheath thickening clearly differentiate PLONI from normal ON.
On B-scan, the normal ON seen as echo-free tubular structure with smooth borders in the retrobulbar fat tissue is disrupted. In this particular case, echographic findings contrasted sharply to MRI. Although echography cannot replace MRI in assessing PLONI, it can surpass limitations and disprove conclusions of MRI.

FP11-08-PED

The effect of topical atropine 0.01%, 0.125% and tropicamide 0.4% on the ocular biological parameters of children

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Purpose: To explore refractive and ocular parameter changes by using tropicamide 0.4%, atropine 0.01% and 0.125%.
Methods: This study prospectively enrolled 166 eyes of 83 participants and randomly divided into intervention groups or a control group; group A 0.125% atropine(42 eyes), group B 0.01% atropine(54 eyes), group C 0.4%

tropicamide(40 eyes), and control group D(30 eyes). Visual acuity, Spherical equivalent of refractive error (SER), axial length (AL), choroid thickness around the macula (CT), central retinal thickness(CRT), cupping and disc ratio(C/D ratio), retinal nerve fiber layer thickness (RNFL) were measured before and after 30 minutes from instillation of each drugs.
The children were treated with cycloplegic drugs once nightly for myopia control and reviewed by above examinations at 1 week, 1 month, 3 months and 6 months.
Results: Enrolled children had a mean age of 8.23 years (4.1-13.5 years). Of the 166 studied eyes, the mean SE of group A was −3.26 ± 0.53(D), group B was −2.20± 0.30(D), group C was −2.09± 0.67(D) and control group was −0.35± 0.19(D). After 6 months of followed-up, dilated myopia decreased by 0.05 ± 0.09(D) in group A, myopia increased 0.17±0.05(D) in group B, 0.17±0.07(D) in group C and 0.16±0.07(D) in control group.
Only group A showed the significant differences among the other groups. (*P= 0.02 for A&B, P=0.00 for A&C, P= 0.02 for A&D*). The immediate choroid thickness changes after cycloplegic drugs instillation had differences at group A&D(*P=0.02*), B&D(*P=0.001*), B&C(*P=0.001*); Meanwhile, the 6 months follow-up changes had only significant result between group A&B(*P=0.032*). No significant changes were noted in the CRT, IOP and optic nerve parameters.
Conclusions: Our results support that choroidal abnormality may play an important role in the pathogenesis of myopia. Tropicamide 0.4%, atropine 0.01% treatment for myopia control is a relatively safe option for myopia control. 0.125% atropine may be more effective than others.

FP11-09-PED

Tumors of conjunctiva in children-a clinicopathologic study

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Purpose: The purpose of this study is to describe the clinical findings and histopathologic characteristics of conjunctiva tumors.
Methods: 92 children younger than 15 years old with histopathologically confirmed conjunctiva tumors treated at Ophthalmology Clinic Clinical Centre of Serbia,Belgrade during 1996-2005. were subjected to a retrospective analysis. We analyzed: age, gender, clinical features, clinical diagnosis, localization and histopathologic findings. The results were statistically tested with χ^2 test.
Results: Totally 92 patients, 50 boys (54,3%) and 42 girls (45,7%), age 0-15 (Mean 8,73±4,42) with conjunctiva tumors were included. At the time of excision majority were aged 10-12 years 18 (19,56%), 1 year 9 (9,78%), 7 years 9 (9,78%). The most common clinical diagnosis were: naevus conj. 19 (20,7%), lipoma 19 (20,7%), tm.conj.obs. 18 (19,6%), granuloma conj.9 (9,8%), cystis conj. 8 (8,7%), tm. limbi 4 (4,3%), papilloma 3 (3,3%), tm.carunculae lacrimalis 3 (3,3%), tm.conj. tarsi 3 (3,3%).
Tumors were localized on the bulbar conj. (80,43%),p=0,0001, especially on lateral sites (44,56%), less frequently on the limbus and caruncula (19,56%). Histopathologically were confirmed: naevus compositus 27 (29,3%), lipodermoid conj. bulbi 18 (19,6%), lipodermoid limbi 6 (6,5%), cystis epithelialis conj. 6 (6,5%), inflamatio chronica 6 (6,5%), granulationes conj. 5 (5,4%), papilloma squamocellulare conj. 4 (4,3%), granuloma conj. 4 (4,3%), naevus junctionalis 4 (4,3%). Clinical diagnosis is confirmed and precise in 56 children (60,9%).
Conclusions: Naevus conjunctivae is the most common clinically and histopathologically confirmed conjunctiva tumors of children. Most of the tumors were located on the bulbar conjunctiva, especially on lateral sites. Tumors in all cases were benign. Malignant conjunctiva tumors are rare in children.

FREE PAPER PRESENTATIONS
FP12: Education, Neuro-ophthalmology

FP12-01-EDU

Factors associated with poor eye drop administration technique and the role of patient education among elderly population

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Purpose: To evaluate the factors associated with eye drop instillation technique among elderly population, and how patient education may improve the technique.
Methods: Chinese subjects above 60 years old were recruited. Questionnaires assessing the cognitive and executive functions, activities of daily living, and functional status, as well as patient demographics, were used to correlate with eye drop application technique (before and after patient education), which was assessed by 2 investigators blinded to the demographic data and questionnaire scores.
Results: The data from 26 subjects (mean age 72) were analysed. Eye drop instillation technique score improved from 5.42 at baseline to 7.33 after clear instructions. FRAIL score was an independent predictor of baseline score (p=0.003), as well as the improvement after patient education (p=0.012). Age, sex, education level, visual acuity, MoCA score, Barthel index and Lawton's instrumental activities of daily living score were not correlated with eye drop instillation technique, before nor after patient education.
Conclusions: In patients with poor functional status as reflected by FRAIL score, eye drop application is prone to be ineffective. Eye drops should not be prescribed to these patients without provision of education, or assistance should be available to help applying the medication. Clear step-by-step instructions could effectively improve the success of eye drop application, despite initial poor technique.
To the best of our knowledge, at the time of writing, this is the first study evaluating the correlation between functional status and eye drop instillation technique, as well as the effect of patient education.

FP12-02-EDU

Uncorrected refractive error is important cause of visual impairments in Hungary

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Purpose: To examine the prevalence and composition of refractive errors and their consequences on vision in Hungary.
Methods: Data from 2 national data collections were analyzed. The Comprehensive Health Test Program of Hungary 2010-2020 provided spectacle dioptric power and autorefractometry data of 61907 people of all ages above 18 years of age who were visited the nationwide screening between 2011 and 2017 (data A).

The Rapid Assessment of Avoidable Blindness (RAAB) study performed in 2015 provided population based representative data on 3523 people aged 50 years or above (data B).
Results: In all age groups (data A), 72% of females and 67% of males worn glasses and around of 31% of these glasses was found to be possibly not appropriate in dioptric power. The distribution of the refractive errors of the eyes measured by autorefractometry showed Gaussian distribution. In age groups of 50+ (data B), 46% and 76% of females and 35% and 71% of males worn far distance or reading glasses, respectively. The proportion of improper far distance glasses was found 33.1%. The refractive error was found to be the cause of early and moderate visual impairment in 40.7% and 23.9%, respectively.
Conclusions: The uncorrected or wrongly corrected refractive errors (URE) are not rare in Hungary and they contribute in a large amount to the visual impairment. Although several nationwide actions were organized in the last years, still, further improvements are necessary to reduce URE.

FP12-03-EDU

Virtual diabetic retinopathy clinic- an opportunity to teach ophthalmology trainees posterior segment pathology

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Purpose: To determine if a virtual diabetic retinopathy clinic is a beneficial training experience for ophthalmology trainees. In a standard face to face clinic trainees review patients, seeking consultant advice and input as appropriate. However, in a busy clinic there is seldom opportunity for detailed case discussion and teaching.
Methods: A virtual diabetic retinopathy clinic was set up in October 2018, to review return diabetic retinopathy patients. Two trainees and a consultant clinical supervisor review these patients together. The same two trainees and consultant also attended a face to face diabetic retinopathy clinic. The training experience in the virtual clinic was compared to the face to face clinic.
Results: 57 patients were recruited to the in the virtual clinic. 66 patients were reviewed in the face to face clinic. In the virtual clinic trainees and consultant discussed examination findings, and management plans for all patients. Trainees felt this discussion lead to new learning points for 64% of patients reviewed. This was higher for the second-year trainee 70%, compared to the sixth-year trainee 51%.
In the face to face clinic the trainee discussed 29% of patients with the consultant, a learning point was identified in 3% of patients reviewed. There was a statistically significant difference in the trainees self-reported learning points between the virtual and face to face clinics (chi- squared test, $p = < 0.00001$).
Conclusions: A virtual clinic environment allows the trainee and consultant to have an in-depth discussion of every patient, without the time constraints of the traditional face to face clinic. This benefitted both the junior and senior trainee. Virtual diabetic retinopathy clinics have potential to be used as a training opportunity for ophthalmology trainees, in conjunction with face to face clinics.

FP12-04-EDU

Is there any evidence of success of shared and distributed leadership in the context of health care industry?

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Purpose: The study aimed to review the literature in order to find evidence of the success of shared/distributed leadership in the context of health care industry and draw lessons that could be beneficial in understanding the interplay between the type of leadership and team effectiveness.
Methods: A literature search was undertaken to identify all potential "shared leadership" studies in the context of healthcare from 2000 to 2015, which were published in a book or indexed journal. Relevant academic literature and policy documents were also reviewed. The literature was critically appraised. Themes were identified and developed in accordance with the research question.
Results: Shared leadership in healthcare is an emergent concept. Both theoretical and policy drifts towards shared leadership were evident. Shared leadership was found relevant in both clinical and managerial settings in the healthcare due to growing complexity of work and changing work environment. Most studies found a positive correlation between team effectiveness and shared leadership.
The evidence was largely descriptive with little research evidence directly from healthcare. Interestingly, an element of vertical leadership was found in most studies, suggesting that the hybrid model of leadership may be the preferred model.
Conclusions: An Evidence of growing interest in the model of shared leadership was found. Direct causation of service improvement could not always be attributed to change in the model of leadership as it was accompanied with changes made to other interrelated systems. Evaluating the shared leadership model is a difficult task that becomes even more challenging in a complex healthcare setting.
The relationship of the effectiveness of this model of leadership to that all-important "context" makes it even more difficult to interpret. The benefits outweigh the limitations of shared leadership in healthcare context in most studies in this review, but the evidence was not conclusive.

FP12-06-NEO

Pituitary disease with eye manifestations in a Caribbean Island population - 10 year results

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Purpose: To ascertain in a defined population group, the epidemiology, by way of incidence and prevalence; as well as presentations and outcomes of pituitary disease with eye manifestations over a period of 10 years.
Methods: 'Big Data' available by means of the electronic record systems of hospitals and service providers utilised the word - pituitary - for a comprehensive search over a period of 10 years to identify patients for this retrospective study.
Diagnoses categorised as: tumours, inflammatory conditions, hormonal conditions and others.
Ophthalmology, endocrinology, neurology and neurosurgery details from patients' medical record information were analysed.

Results: 110 entries resulted in 95 patients found by the 10 year 'Big Data' analysis.
It determined the epidemiology and demographic profile and made to question the reasons for the increased incidence and prevalence of pituitary tumours, in keep with other epidemiological studies.
This study determined how 28% of these patients primarily presented to Ophthalmology, documenting their symptoms and signs at presentation and what initial assessments were made. In this island population there is diverse ethnicity and varying access to medical care, which possibly could have played a significant role.
The outcome seems to favour reviews by Radiology rather than Ophthalmology, though apparent more expensive health economics, the preferential choice is accessing imaging for comparisons.
Conclusions: The reasons for the increased incidence and prevalence of pituitary tumours remain unclear and justifies further epidemiological study.
The vast spectrum of pituitary disease and differing presentations emphasise the importance of all Ophthalmologists being alert to patients with a life threatening emergency or vigilant that initially some forms of pituitary disease can masquerade as either retinal pathology or glaucoma with progressive visual field loss.
There is still a role for Ophthalmology when reviewing outcome of care.

FP12-07-NEO

Focal loss volume (FLV) and global loss volume (GLV) as novel parameters to assess ganglion cell loss in optic neuritis (ON)

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Purpose: Evaluation of FLV(focal loss of volume) and GLV(Global loss of volume) as novel parameters for assessment of ganglion cell loss on SD-OCT in unilateral optic neuritis
Methods: In this prospective study 16 patients with recent onset (< 2 wk) unilateral optic neuritis were evaluated with fellow eye acting as control. Assessment of BCVA, psychophysical parameters, SD-OCT and pattern VEP was done for 6 months
Results: Mean logMAR BCVA improved from 1.43±0.56 at presentation to 0.06±0.14 at 6 months (p< 0.001). VEP mean P100 latency(ms) improved from 155.63±20.21 to 130±22.96, while mean P100 amplitude(μV) improved from 2.87±1.46 to 6.97±2.15 in affected eyes over 6 months, showing significant residual deficits as compared to fellow eye.
On OCT evaluation, mean RNFL (123μm to 80μm) and GCC thickness (95μm to 75μm) had statistically significant thinning in affected eyes over 6 months (p<0.005 for both). Ganglion cell complex mean FLV(%) in affected eyes increased significantly from 1.29±3.09 to 4.77±3.79 over 6 months (p<0.005). Mean FLV(%) in fellow eyes changed from 0.35±0.32 at presentation to 0.70±0.73 at 6 months (p=0.02). Mean GLV(%) in affected eyes increased significantly from 6.10±4.48 at presentation to 21.19±8.67 over 6 months (p<0.005)
Conclusions: We found statistically significant higher mean FLV and mean GLV in affected eyes at 6 months as compared to baseline. FLV and GLV was also significantly higher as compared to fellow, as well as control eyes at 6 months. This signified that both FLV and GLV can be sensitive tools in measuring ganglion cell loss in patients of ON. Statistically significant inter-eye difference in mean FLV and GLV was first seen at 1 month as compared to inter-eye difference in RNFL thickness that was first seen at 3 months, showing that FLV and GLV are more sensitive parameters in detecting early OCT changes.Even with recovery of VA, there were significant abnormalities in anatomical (OCT) and electrophysiological parameters (VEP)

FP12-08-NEO

Vitamin B12 deficiency optic neuropathy: a case report

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Purpose: Nutritional optic neuropathy is a dysfunction of the optic nerve resulting from improper dietary content of certain nutrients essential for normal functioning of the nerve fibers. Most commonly, it results from folic acid and vitamin B complex deficiency associated with malnutrition or poor dietary habits. Nutritional optic neuropathy is uncommon and characterized by painless, gradually progressing, bilateral and symmetrical decrease in visual acuity, which can be accompanied by the color vision dysfunction.
Methods: A 44-year-old woman presented for a second opinion regarding a gradual decline in her vision over two months. She gave a significant history of suffering from diarrhea for 4 months and stomach ulcer. She had been diagnosed with vitamin B12 deficiency and was prescribed vitamin B12 1000 mcg daily and folic acid 1 mg daily. She was very week and lost weight of 19 kg in last 3 months. Investigations revealed severe vitamin B12 deficiency with very low hemoglobin levels. With subsequent correction of Vitamin B12 IM for several weeks then with oral supplementation along with folic acid has led to improvement in her visual acuity.
Results: This case vitamin B12 deficiency presented as visual abnormalities, and showed it is possible to have vitamin B12 deficient optic neuropathy with no other clinical manifestation and that deficiency can occur in the absence of excessive alcohol and tobacco consumption. When recognized promptly, can be corrected with vitamin supplementation.
Conclusions: Vitamin B12 deficient optic neuropathy is uncommon and early recognition and treatment are important to prevent persistent visual defects. It is usually associated with starvation, malabsorption or excessive alcohol intake. Dimness of vision is the outstanding symptom and is a painless neuropathy and dyschromatopsia. Other aspects of Vitamin B12 deficiency are axonal neuropathy, anemia and encephalopathy.

FP12-09-NEO

A case of photopsia possibly explained by oral methylphenidate: an hypothesis

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Case description: A twenty-three year old female patient presented in the emergency department with photopsias. She had experienced two months of dark floaters which shifted with eye movements. Now she sees a halo around a floater in her right eye. Her superotemporal vision is blurred in her left eye but there is no photopsia.
Recently she has had a lot of stress and frontal headaches. She does not have high myopia. She is not nauseous, nor did she experience a recent trauma. There is no relevant personal of familial history.
She has used Methylphenidate for the past four years during studying (four months of the year).

When examining the eyes, there were no abnormalities. A visual field was also within normal range. The fluorescein angiography of both choroidal and retinal vasculature was unexceptional. Visual Evoked Potentials (VEP) was normal, but electroretinogram (ERG) was electronegative with an interocular amplitude difference. It was especially worse for photopic ERG in the left eye. Different diagnoses like juvenile X-linked retinoschisis, congenital stationary night blindness and melanoma-associated retinopathy were deemed possible but methylphenidate was seen as most likely. The treatment plan was to stop methylphenidate use, watchful waiting and planning a new ERG in three months. During the next visit the patient said the complaints had lessened but the second ERG was also electronegative. A request for genetic advice was put in.

Discussion: Although the excessive use of oral Methylphenidate as a cause for photopsia or blurred vision has not been reported before to our knowledge, it seemes the most likely cause. To date we could not demonstrate any other underlying etiology for the presented complaints. The hypothesized explanation is vasoconstriction which induced temporary non-perfusion of the retina.

FP12-10-NEO

Methanol toxicity, Bangladesh perspective

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Purpose: Methanol intoxication may often cause mortality and ocular morbidity. Irreversible visual loss may occur with in hours to days after ingestion. If treatment is delayed beyond the first hours, permanent damage to optic nerve pathways may occur. We report on some cases of methanol induced blindness treated with steroids and vitamin B-1.

Methods: Patients attending the neuro-ophthalmic clinic of Bangladesh eye hospital between December 2012 to July 2018.

Results: All were male between 25 to 65 years . They came with sudden visual loss after ingestion of huge amount of local alcohol, most of the patient came from the different part of the country after treating in primary healthcare center. Patient came to our clinic as soon as 12 hours to 21 days after ingestion . all the patient irrespective of time of presentation were treated with Intravenous methyl prednisolone 1gm in 500 ml ringer lactate slowly over 2 hours followed by oral prednisolone 1mg/kg for 5days then tapered in 4 weeks. Intramascular hydroxycobalamine 1000 ml twice weekly for 3 weeks and oral pentoxyphyline (400mg) daily for 6 weeks. Presentation within 12 hours was also treated in ICU for metabolic acidosis. For the rest of the case treatment with ethanol or haemodialysis were too late to be effective as the patients acid base balance was normal.

Conclusions: Combination of steroied and vitamine B was highly effective in treating severe methanol optic neuropathy . whether using only one of the drugs might be sufficient or not but as the risk of permanent blindness is high , we use this combination in the event of methanol intoxication.

FREE PAPER PRESENTATIONS
FP13: Contact Lenses, Ocular Surface

FP13-01-COL

Bio-inspired epsilon polylysine (εPL) coated antimicrobial contact lenses

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Purpose: Contact lens usage is one of the major risk factors for microbial keratitis in both developed and developing countries. The objective of this study is to combine the broad-spectrum antimicrobial properties of biosynthetic cationic polymer ε-polylysine (εPL) and material-independent adherent nanocoatings of polydopamine to develop optically transparent durable antimicrobial contact lenses.

Methods: Standardised contact lenses were coated with varying concentrations of εPL and dopamine. The antimicrobial properties of coated and bare lenses were assessed via microbroth growth dilution assays against strains of *Staphylococcus aureus*, Methicillin-resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans* and *Fusarium* species. The coated lenses were exposed to human conjunctival epithelial cells and corneal fibroblasts for 24 hours and the biocompatibility was ascertained by ATP and LDH assays. To confirm that light transmittance through the coated lenses was not significantly altered, ultraviolet-visible spectroscopy tests were performed. In-vivo studies were also conducted over a period of 5 days on rabbit models (n=4 rabbits/group) to monitor for any changes in the intra-ocular pressure (IOP), ocular surface and corneal inflammation. A 45-day durability study was conducted to ascertain the stability of the coatings.

Results: εPL-coated contact lenses displayed ≥2-7 log10 decrease in the viability of various pathogens in comparison to bare lenses. The coated lenses were biocompatible with corneal epithelial and fibroblast cells, as ≥80% viability remained. There was no loss of transparency after coating, no adverse effects observed on the cornea and IOP. Antimicrobial properties were retained (≥ 2 log10 decrease in bacterial viability) throughout the 45-day period.

Conclusions: εPL-coated lenses prove to be optically transparent, biocompatible in-vitro and in-vivo while displaying antimicrobial properties against common ocular surface pathogens.

FP13-02-COL

Outcome of scleral lens fitting for keratoconus with resolved corneal hydrops

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Purpose: To investigate the success and failure of scleral lens fitting for keratoconus with resolved hydrops.
Methods: Retrospective case series of patients with keratoconus who attended the Ophthalmology Department at Antwerp University Hospital, Belgium and developed acute hydrops between January 1, 2015 and June 30, 2018. The exclusion criteria included amblyopia, mental retardation and insufficient follow-up.
Results: Of the 25 keratoconus patients with acute hydrops, 14 patients (16 eyes) were included in this study. Median age was 31 years (range 19-52). Prior to hydrops, median maximal keratometry values of affected eyes was 81.3D (range 66.3-108.3). The acute hydrops was managed medically in 5 eyes (31.3%), by observation in 5 (31.3%), with application of bandage contact lens in 1 (6.3%) and compression corneal sutures in 5 (31.3%). Contact lens fitting following hydrops was unnecessary for 2 patients (2 eyes; 12.5%) due to excellent vision in the fellow eye. Of the remaining patients, 11 (68.8%) were successfully fitted with mini-scleral lenses with a median visual acuity of 0.7 (0.5-0.9; decimal Snellen). Three patients (3 eyes; 18.8%) proceeded to graft surgery due to limited visual acuity with scleral lenses (n=2) or persistent edema (n=1).
Conclusions: Scleral contact lenses are effective at providing satisfactory visual acuity following corneal hydrops in keratoconus. Contact lens trial with scleral lenses is advised prior to listing patients for graft surgery.

FP13-03-OCS

The Schirmer strip: a less invasive alternative for blood analysis?

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Purpose: To test the value of tear analysis as alternative for blood analysis
Method: Schirmer strips wer used to obtain 25 microliter of tears per eye. The samples were analysed by bottom-up and top down proteomics.
Results: modern mass spectrometry units are that sensitive that single samples can be used for detection of about 400 different proteins with bottom-up proteomics without the need for sample pooling.
Top-down proteomics showed that most proteins present in multiple proteoforms (isoforms). These proteoforms appear to determine the biological activity of a protein.
We can find numerous biomarkers of several systemic pathologies in tears.
Conclusion: a simple and not invasive tear sampling with Schirmer strips can give a lot of information of systemic pathology. Predictive biomarkers of pathologies like Diabetes, Cardiac Decompensation, Alzheimer disease and multiple sclerosis can be detected in tears.
This must allow us to develop diagnostic strips like Schirmer strips to detect multiple pathologies in a pre-clinical phase and to follow these disease via the tears of the patient.

FP13-04-OCS

Eyeliner induces tear film instability and meibomian gland loss

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Purpose: To compare the levels of tear film stability and meibomian gland loss of subjects who use eyeliner with those of members of a non-eyeliner-use group.
Methods: This was a cross-sectional study of 42 healthy, volunteer women without dry eye symptoms (excluded by an Ocular Surface Disease Index score < 13) and aged between 18-40 years. Subjects were classified into either an eyeliner group (the regular use of an eyeliner ≥ 3 days/week, with continued use of the eyeliner ≥ 6 months) as the case group, or a non-eyeliner-use group as the control.
A questionnaire for ocular surface symptoms, which utilized a visual analog scale, was administered, and a number of eye tests were performed (conjunctival inflammation, lid margin abnormalities, fluorescein tear break-up time, ocular surface fluorescein staining, Schirmer I test, meibomian gland evaluation, and *Demodex* spp. detection).
Results: The primary outcomes were the fluorescein tear break-up time; meibomian gland secretion, expression, and grading; and meiboscores. All were significantly worse for the eyeliner group ($P<0.001$, $P<0.001$, $P<0.05$, $P<0.05$, and $P<0.001$ respectively).
The secondary outcomes comprised lid margin telangiectasia and conjunctival inflammation, both of which were also significantly worse for the eyeliner group ($P<0.041$, and $P<0.001$, respectively). As to the ocular surface symptoms, the conjunctiva, corneal fluorescein scores ($P = 0.068$), Schirmer's I test ($P = 0.45$), and *Demodex* spp. ($P = 0.542$), the findings for both groups were not significantly different.
Conclusions: From this study, the use of eyeliners induces tear film instability and meibomian gland dysfunction. The meibomian gland abnormalities were demonstrated as secretion changes, orifice obstructions, and meibomian gland loss. Moreover, the incidences of lid telangiectasia and conjunctival inflammation increased.

FP13-05-OCS

The treatment of chronic blepharoconjunctivitis refractory to the conventional treatment

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Purpose: Aim of this paper is to show the new alternatives in treatment of refractory and recurrent chronic blepharoconjunctivitis.
Methods: Chronic blepharitis are frequent, sometimes recurrent eyelid disorders that are very difficult to treat by conventional therapy. The oil from the Australian tea tree proves to be an effective treatment of these blepharites. Why? It is the only one that destroys the demodex. What is demodex? It is a parasite, a mite that lives on people's skin. It is presented in two forms, 0.3-0.4 mm follicular (in eyelashes) and 0.2 to 0.3 mm, brevis (in the Meibomian glands). It seems that 100% of people over the age of 70 are carriers. In the eye it may lead to chronic refractory blepharitis, Meibomian gland dysfunction, dry eyes, intolerance to contact lenses. Specifically is chronic refractory blepharitis with the presence, at the base of the eyelashes, of a cylindrical

sleeve sometimes associated with madarose. These signs are pathognomonic for the clinical diagnosis. Diagnostic certainty is by highlighting, visualizing the parasite by optical microscopy or confocal microscopy.
Results: We will present preliminary results obtained in the clinic by treatment with tea tree oil in resistant and recurrent chronic blepharitis under conventional treatment. We used the tea tree oil treatment at 2.5% concentration or higher concentrations until 100% only under professional supervision.
Conclusions: Tea tree oil it is beneficial in the treatment of chronic blepharoconjunctivitis, and seems that is the single efficient in the destruction of demodex.

FP13-07-OCS

Assessment of tear film optical quality in a young short tear break-up time dry eye

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Purpose: To evaluate the dynamic changes of tear film optical quality in a short tear break-up time (TBUT) dry eye by using a double-pass system.
Methods: Thirty-five short TBUT dry eye patients and 43 control subjects without dry eye were included in this study. The right eye for each subject was analyzed. The objective scatter index (OSI), modulation transfer function (MTF) and strehl ratio (SR) were recorded within a 20-second period with the subjects asked to blink freely, and 10 successive seconds of non-blinking immediately after a blink was recorded to analyze the tear film OSI. The mean tear film OSI in 10 successive seconds, ΔOSI and ΔOSI/time were evaluated. The correlation between tear film OSI and MTF, SR was also analyzed.
Results: Short TBUT dry eye patients showed significant deterioration of MTF and SR compared to control subjects. The mean tear film OSI in 10 successive seconds was significantly higher in dry eye patients than in control subjects. The mean OSI of the tear film (0-5s) and the mean OSI of the tear film (6-10s) were significantly higher in dry eye patients than in control subjects. Moreover, the ΔOSI was significantly higher in dry eye patients than in control subjects. The tear film OSI was significantly correlated with the MTF and the SR.
Conclusions: The tear film OSI of short TBUT dry eye patients is significantly increased in the early stage. Tear film instability in short tear break-up time dry eye patients has a significant effect on optical quality.

FP13-08-OCS

Treatment of epidemic keratoconjunctivitis with povidone-iodine 0.5% and Dexamethasone 0.1% eye drops in premature newborns

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Purpose: To evaluate safety and efficacy of Povidone-iodine 0.5% and Dexamethasone 0.1% eye drops in treatment of Epidemic Keratoconjunctivitis in premature newborns.
Methods: 80 patients (60 premature newborns and 20 mothers aged from 26 to 31) with clinical signs of keratoconjunctivitis were selected in the study in Neonatology Unit, University Clinical Center of Kosova, where the outbreak took place from October 2017 to December 2018. Patients were diagnosed with clinical signs and PCR testing. Clinical signs included redness of conjunctiva, epiphora, chemosis, eyelid edema, nummular keratitits, subconjunctival hemorrhages and pseudomembranes. First, we removed pseudomembranes and then applied eye drops. In the first group Povidone-iodine 0.5% four times a day, Dexamethasone 0.1% three times a day and artificial tears four times a day, and in the second group Prednisolone 1% + Neomycin three times a day and artificial tears four times a day.
Results: PCR results from conjunctival swab were positive for Adenovirus. All patients were examined every week for 5 weeks. Therapy of the first group with Povidone-iodine 0.5%, Dexamethasone 0.1% and artificial tears reduced adenoviral patient infected days and in the second group the PCR was positive for Adenovirus even one month after the patients were symptom free.
Conclusions: Adenovirus is a common cause of conjunctivitis that can be spread very fast and cause epidemic keratoconjunctivitis at hospitals. Treatment of premature newborns and adults with povidone - iodine 0.5 % and dexamethasone 0.1 % is safe, effective, reduces infected days and is very important in preventing the spread of the virus to cause epidemic outbreaks at hospitals.

FP13-09-OCS

A prospective comparative study on suture less and glue-free versus sutures for limbal conjunctival autografting in primary pterygium surgery

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Purpose: To determine the outcome of sutureless , glue-free conjunctival autografting for primary pterygium surgery as a safe, effective and economical alternative to other techniques, and also document efficacy and complications of this technique for the management of primary pterygium.
Methods: A prospective interventional study was carried out in 50 consecutive eyes from July 2017 to June 2018. Patients with recurrent pterygia were excluded from the study. Simple excision under local anaesthesia was performed followed by closure of the bare sclera by sutureless and glue-free conjunctival autograft in 25 patients (group 1) and by the conventional method of suturing conjunctival autograft using interrupted 10-0 nylon sutures in 25 patients (group 2). Surgical time was recorded for both the techniques. Details of clinical examination including visual acuity at initial presentation and after operation were recorded. The patients were followed up for 6 months. During follow up, graft-related complications and recurrence, if any, were noted.
Results: Of a total of 50 patients, there were 32 (64%) males and 18(36%) females. Mean surgical time for group 1 (21.24±1.25 minutes) was significantly less compared to group 2 (32.27±1.87 minutes); ($p< 0.001$). Postoperative symptoms of discomfort were seen in fewer patients and were of shorter duration in group 1 as compared to group 2 with 92% patients having symptoms lasting for 4 weeks; ($p< 0.001$). At 6 weeks postoperatively, 48% of the patients achieved normal visual acuity 6/6 in both groups, compared to 32% and 28% of patients with normal visual acuity preoperatively in groups 1 and 2 respectively. Recurrence rate and conjunctival granuloma formation rate for group 1 is 0% and for group 2 around 8% patients which were statistically insignificant.
Conclusions: Sutureless and glue-free conjunctival autograft technique is easy, safe, effective, fast, comfortable and economical technique compared to sutured limbal autograft.

FP13-10-OCS

Features of the eye pathology and tear cytokine levels in workers of petrochemical industry of Azerbaijan in the field "Oil Rocks"

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Purpose: define features of eye pathology and cytokine (TNF-α and IL-1β) levels in tears (CT) of workers of petrochemical industry in the field "Oil Rocks".
Methods: Analysis of eye pathology was performed in 136 workers (272 eyes) of petrochemical industry of Azerbaijan. All the workers were divided into 2 groups:1st group consist of 62 workers in contact; 2nd control group included 74 workers without contact with petrochemical products. In 34 workers CT (1st group -17, 2nd group - 17) were revealed.
Results: The eye pathology was revealed in 55 (88,7±3,1%) workers in main group and in 44 (59,5±5,7%) workers in control group (p< 0,001). Early cataract was diagnosed in 8 (2,9±1%) workers, the difference between groups was not statistically significant. The mean TNF-α and IL- 1β levels in the 1st group were: 3,57±0,33 pg/ml and 2,98±1,24 pg/ml; in the 2nd group - 2,74±0,75 pg/ml and 1,79±0,84 pg/ml.
Conclusions: The detailed features of eye pathology and CT in workers of petrochemical industry in the field "Oil Rocks" were presented. The eye pathology incidence is higher in workers in contact with petrochemical products. The mean TNF-α and IL-1β levels in the tears of workers in contact with these products were also higher.

FREE PAPER PRESENTATIONS
FP14: Cornea

FP14-01-COR

Intralamellar strengthening keratoplasty (ISK)

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Purpose: to evaluate the efficacy of the new technique Intralamellar strengthening keratoplasty (ISK) in the management of keratoconus.
Methods: In 138 eyes with progressive kc, after formation of ring-shaped intra corneal pocket using femtosecond laser, segment of modified ring-shaped stromal transplant collected from donor's eye, also created by fs-laser is inserted into the corneal pocket. Uncorrected visual acuity (UCVA), best spectacle corrected visual acuity (BSCVA), slit lamp examination, corneal topography and anterior segment optical coherence tomography (OCT) were evaluated before and up to 54 months after surgery.
Results: Corneal thinnest point was 408 ± 70 µm. Mean preoperative uncorrected visual acuity (UCVA) and mean best spectacle corrected visual acuity (BSCVA) were 0.09 ± 0.07 and 0.42 ± 0.18, respectively. Mean UCVA and BSCVA 3 months after surgery improved to 0.46 ± 0.12 and 0.53 ± 0.12, respectively. During the period of follow-up, no signs of progression of kc were detected, corneal thickness and refractive values also remained stable.
Conclusions: Intralamellar strengthening keratoplasty for management of keratoconus is safe and effective. ISK resulted in stabilization of kc and significant increase in UCVA and BSCVA.

FP14-02-COR

Characteristics of preoperative and postoperative astigmatism in patients undergoing Descemet membrane endothelial keratoplasty

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Purpose: To evaluate the characteristics of preoperative and postoperative astigmatism in patients undergoing Descemet membrane endothelial keratoplasty (DMEK).
Methods: 53 eyes of 45 patients with Fuchs' endothelial dystrophy (FED) were included. Measurements were obtained using a Scheimpflug camera (Pentacam AXL, Oculus) preoperatively, at 3 and 12 months postoperatively. Values of front and back astigmatism and total astigmatism of the central 4 mm diameter zone (TCA4) were analyzed.
Results: In patients with FED, the prevalence of TCA4 above 1 diopters (D) is considerably higher (79%) and astigmatism with-the-rule is less frequent than in the healthy population. TCA4 correlated with anterior astigmatism preoperatively and postoperatively ($P < 0.001$), as well as with posterior astigmatism at the 1-year follow-up ($P < 0.01$).
Although, no correlation was found between preoperative and 1-year results for anterior ($P = 0.12$), posterior ($P = 0.35$), and total corneal astigmatism ($P = 0.47$), difference in vector analysis between both measurements was only 0.01 at 109° for anterior, 0.03 at 98° for posterior, and 0.02 at 157° for total corneal astigmatism.
However, the higher the preoperative TCA3-TCA5-discrepancy, the more corneal astigmatism decreased.
Conclusions: The percentage of eyes with corneal astigmatism above 1 D is higher pre- and postoperatively in patients with FED compared to a healthy population. Predicting postoperative astigmatism based on preoperative results is not possible but in eyes with a high discrepancy between TCA3-TCA5 a reduction in corneal astigmatism after DMEK is likely.

FP14-03-COR

The "Joghurt Technique" in DMEK graft harvesting: a quick and safe method for both inexperienced and senior surgeons

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Purpose: DMEK graft dissection techniques are diverse and feature different strengths and weaknesses. The aim of this study was to describe and evaluate the efficacy and safety of a novel technique to harvest DMEK donor grafts utilizing a newly designed partial thickness hinge trephine.
Methods: After the donor corneoscleral disc is secured with vacuum on the cutting block and stained with trypan blue, a partial thickness trephination with a 200µm-guarded trephine is performed avoiding rotational movements. The novel trephine has a circular guarded blade missing one clock-hour, creating an uncut hinge on the donor cornea. Additionally, two straight cuts are made by the trephine perpendicular to the edge of trephination towards the trabecular meshwork in the hinge area. Descemet's membrane is lifted from the Schwalbe's line of the hinge area and DMEK graft is unpeeled after desired marking without further preparation.

Results: 3 surgeons of different experience level on endothelial keratoplasty (senior surgeon, independent surgeon, fellow) have applied the new technique in 24 donor corneas, divided in equal groups and all the graft preparations were recorded and further analyzed. 1 failure in graft preparation was noted defined as radial tears extending more than one quarter of the graft diameter. The mean preparation time was 6.21 ± 2.17 minutes, varying between 5.78 ± 1.93 minutes (senior surgeon) and 7.23 ± 2.32 minutes (fellow). No statistical significant differences were noted in preparation success rate, duration and endothelial cell loss between surgeons (p>0.05).
Conclusions: This new graft preparation technique, by means of a guarded hinge trephine simulating opening a cup of joghurt seems to be a safe and efficient way of harvesting donor corneas for Descemet membrane endothelial keratoplasty providing a shorter preparation time and low rate of preparation failure independently of the surgeon's experience level.

FP14-04-COR

OCT guided, femto assisted micro-thin DSAEK graft: a high precision endothelial keratoplasty

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Purpose: To evaluate the safety and effectiveness of the novel technique of real time OCT guided, Micro-Thin Descemet's Stripping Automated Endothelial Keratoplasty using femtosecond lasers and to compare with UT DSAEK, DMEK and DSAEK.
Methods: A prospective,single arm clinical trial using historical controls. Donor cornea was subjected to deep stromal dissections for a Micro-Thin posterior corneal graft (Posterior stroma with endothelium) under 2SOCT guidance using femtolasers. A 7.75-8.25 mm graft was transplanted using endothelial glide and attached with air in cases of Fuch's dystrophy, Pseudoexfoliation and pseudophakic corneal decompensation without fundus pathologies. Pre and post operative vision in LogMAR, CCT in microns & specular microscopy, in addition to AS-OCT for graft thickness and interface studies at 1 day, 1 week, 1 and 6 months were compared with historical cohorts of DSAEK, UT DSAEK and DMEK.
Results: 19 eyes were enrolled. At 6 months, BCVA improved to 0.11 (p< 0.0001), comparable to DMEK & UTDSAEK and better than DSAEK (depending on graft thickness 164 & 234 microns 0.39 & 0.74 LogMAR respectively).CCT was 554.32+/-11.40mic,comparable to DMEK & UT-DSAEK, better than DSAEK 641.39+/-38.75.
Graft thickness by day 1 was 68.47+/-8.52 mic (58-88) and 67.26+/-8.61 (P=0.02) in 6 months, comparable to UT DSAEK (63+/-29), better than 164-234 mic in DSAEK. Spherical error was -0.10+/-0.47D and cylindrical error was -0.51+/-0.85D, (no hyperopic shift unlike DSAEK). No intraoperative graft loss, postoperative detachments, immunological reactions noted and all had excellent graft host interfaces.
Conclusions: OCT guided Femtolaser assisted Micro-Thin, high precision DSAEK technique is found to be effective, easily reproducible in donor of any age with very good visual outcomes, better than conventional DSAEK and comparable to UT DSAEK and DMEK with excellent interface properties, and without technical difficulties associated with DMEK.

FP14-06-COR

Comparison of efficacy and safety of CA-CXL and HPMC-CXL in keratoconus with thin corneas

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Purpose: To evaluate and compare the efficacy and safety of Contact lens-assisted CXL(CACXL) using iso-osmolar riboflavin 0.1% in 20% dextran and iso-osmolar riboflavin 0.1% in Hydroxy-propyl Methyl Cellulose(HPMC)-assisted CXL in keratoconus in thin cornea.
Methods: A prospective interventional study in which 40 eyes with progressive keratoconus with thin corneas(pachymetry < 440um) were randomly divided into two groups. Using Dresden protocol, priming was done with iso-osmolar riboflavin in 20% dextran in CACXL; and iso-osmolar riboflavin in HPMC in HPMC-CXL group. 90µm thick contact lens was put post priming in CACXL throughout the UVA irradiation. Intra-operative pachymetric changes were measured using ultrasonic pachymetry. Post-operative outcomes were measured at 6months between the groups.
Results: Mean pre-operative corneal thickness was 424.75±9.94µ in CACXL and 425.7±8.23µ in HPMC-CXL group which reduced to 374.85±10.1µ and 373.75±11.56 post epithelial removal. Intra-operative functional corneal thickness increased significantly by 98.2±9.9 and 88.6±20.07 in CACXL and HPMC-CXL groups, respectively. A significant decrease in steep keratometry was seen post-operatively in both groups(p0.0001 in HPMC-CXL; p0.004 in CACXL). Demarcation line was comparable between the two groups(245.75±25.91µ in CACXL;247.3±31.15µ in HPMC-CXL). No significant decrease in endothelial cell density noted at 6 months in either group. Significant improvement in BCVA seen in HPMC-CXL group at 6 months(p0.04).
Conclusions: Intra-operative functional corneal thickness increased significantly in both the CXL procedures. Demarcation line was seen at an adequate depth with no significant decrease in endothelial count in either group, suggesting that both procedures are safe and effective for thin corneas of upto 370µ(with epithelium). However, in terms of visual outcome and flattening of cone, HPMC-assissted CXL may be preferable procedure over CACXL in keratoconus with thin corneas.

FP14-07-COR

Clinical outcomes of keravio using violet light emitting glasses and Riboflavin for corneal ectasia: a pilot study

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Purpose: In the current standard corneal collagen crosslinking, the epithelial debridement can cause severe pain and visual loss during the first few days after treatment. We developed the novel technology of violet light (VL) emitting glass which has the potential to prevent the progression of corneal ectasia without epithelial removal. We also defined the combination of VL irradiation and riboflavin treatment as KeraVio. To evaluate the clinical results of KeraVio in patients with progressive corneal ectasia.
Methods: Patients with a history of progressive corneal ectasia were recruited in this prospective case series study. Eyes exposed to VL (peak wavelength: 375 nm, irradiance: 310 µW/cm^2) emitting glasses for 3 hours daily for 6 months, during which riboflavin solution (flavin adenine dinucleotide 0.05%) was simultaneously repeated 6 times during the VL irradiation under epitheli-

um-on cornea. We compared the results at 6 months after KeraVio treatment with those from the baseline as well as the trend of changes over the 6-month study period.
Results: The study enrolled 8 patients. Anterior maximum K (Kmax), posterior average K values, thinnest corneal thickness, as well as visual acuity and cylindrical refraction remained stable over the 6-month follow-up (ANOVA, p≥0.870). No significant decrease in endothelial cell density was observed and corneal and lens transparency remained unchanged. The mean increase in Kmax over the preceding 1 year before baseline and the during 6-month observation period was 2.67 ± 2.23 diopters (D) and 0.31 ± 1.41 D (p=0.031). Similarly, the mean change in corrected distance visual acuity over time was 0.14 ± 0.19 logMAR and -0.06 ± 0.15 logMAR, respectively (p=0.214).
Conclusions: Based on our results, daily treatment of progressive corneal ectasia with KeraVio can halt disease progression, without raising any concern for safety. KeraVio may be another minimally invasive treatment option for patients with corneal ectasia.

FP14-08-COR

Topographic, keratometric, refractive and wavefront changes attributable to epithelial removal in keratoconus

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Purpose: To compare the topographic, keratometric, refractive and aberrometric features of the corneal epithelium and Bowman layer in eyes with moderate to severe keratoconus before and after epithelial debridement.
Methods: Prospective interventional case series. Corneal topographic, keratometeric, refractive and wavefront variables were measured in patients with keratoconus undergoing corneal crosslinking - immediately before and after epithelial debridement using a third-generation combined corneal topographer, autorefractor and aberrometer.
Results: The study comprised 30 eyes of 30 patients. Following epithelial debridement, there were significant changes in anterior axial average keratometry in the 3rd central mm ring (+0.81D) and 5.0 central mm ring (+0.36D), asphericity (-0.64) and spherical equivalent (-1.37D). The mean difference in the magnitude of epithelium-induced astigmatism in the 3rd, and 5th central millimeter rings was 0.44 ± 3.20 D × 8 and 0.43 ± 2.75 D × 21 (positive cylinder) respectively. Corneal astigmatism shifted toward the against-the-rule orientation after epithelial debridement.
There were no significant changes in any corneal higher order aberration parameter following epithelial debridement.
Conclusions: In eyes with moderate to severe keratoconus, the topography of Bowman layer was significantly steeper than that of the epithelium. Epithelial debridement increased the magnitude of anterior corneal keratometry and prolateness and tended to increase myopia and against-the-rule astigmatism. Our data support the notion that the corneal epithelium smooths underlying Bowman layer irregularity in keratoconus.

FP14-09-COR

Effectiveness and safety of collagen cross-linking in ectatic cornea

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Purpose: To study the effect of collagen crosslinking
Methods: All the medical records of ectatic eyes undergone collagen cross-linking were retrospectively reviewed. General characteristics, visual acuity (logMAR), refraction (spherical equivalent) were studied. Type of ectatic cornea were categorized into oval, nipple, PMD-like and astigmatic patterns. Corneal tomography : Kmax, Kmean, corneal astigmatism, Q-value, corneal thickness, higher order aberrations (HOA) and corneal densitometry were analyzed and recorded. All the one-year data were analysed to elaborate the statistically significant change by p< 0.05 at 3 months, 6 months and 1 year. Sub-group analysis was undergone using Amsler-Krumeich classification. All complications were noted.
Results: With a total of 155 patients (185 eyes), 76.2% were male. Mean age was 23.43 (range 11 to 51). 57.8% of the patients were below 24 years old. 39% were Amsler-Krumeich stage 1 followed by stage 2 (32%), stage 4 (23%) and stage 3 (7%). 57% of eyes were topographically oval followed by astigmatic, PMD-like and nipple type. UCVA and BCVA began to improve at 3 months and remained stable. MRSE was slightly more myopia early after the procedure but tended to be less myopia and returned to baseline value over time. Kmax started to decrease at 3 month and decreased by 2 D at 1 year. Kmean slightly increased at 1 month and significantly decreased at 6 months and 1 year. Q-value showed less prolate at 1 year. HOA began to decrease at 1 year. Corneal densitometry significantly increased and reached its maximum at 1 month and then slightly decreased thereafter. However, at 1 year there was increase in corneal density compared to baseline. Corneal haze was earliest found in 1 week and reached its maximum at 1 month and decreased overtime. Corneal haze was found only 4 % at 1 year.
Conclusions: Corneal collagen cross-linking were safe and effective. VA, Kmax, Kmean, Q-value, corneal densitometry and HOA were significantly changed.

FP14-10-COR

Results of Intrastromal corneal ring segments and collagen cross linking

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Purpose: To report the outcomes of Keraring implants combined with corneal cross linking in the management of keratoconus.
Methods: This is a retrospective review of 27 eyes with IntraLase® FS 150 kHz (AMO) assisted Keraring implantation by the same surgeon, that was followed by epi-off corneal cross linking after six weeks. . Visual acuity, spherical equivalent and Oculus Pentacam® scans were obtained and compared at pre-intervention(s) and at least six month‘s post-operatively.
Results: 89% of participants showed an improvement in UCVA and 82% had a better post operative BSCVA. There was an average reduction on 1.19 D of myopic spherical equivalent, and 1.78 D reduction in total corneal cylinder. The Steepest K-value had an average of 2.9 flattening.

In this study, eyes that showed the best visual improvement, also had the most reduction in KMax and Total Deviation values.
Conclusions: Corneal ring segments and cross linking provide a viable and less invasive option in treating Keratoconus. Patient satisfaction was high. The need for keratoplasty can be delayed or eliminated by such interventions.

FREE PAPER PRESENTATIONS
FP15: Oculoplastics, Refractive Surgery

FP15-01-OPL

Re-excision rates of periocular basal cell carcinoma

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Introduction: Basal cell carcinoma (BCC) is the most common malignant tumor of the eyelid. Although it rarely metastasizes, BCC can cause clinically significant local destruction. The mainstay treatment and prevention of recurrence for BCC is by complete excision.
Purpose: The main aim of this study is to determine the number of patients requiring re-excision, their reasons and to determine how many were unnecessary.
Methods: Retrospective study of 119 patients with a histological diagnosis of Periocular BCC between 2016 -2018 in the Ophthalmology Department, Stepping Hill Hospital. List of patients was obtained from the histopathology lab.
Results: Of the 119 patients from October 2015 to October 2018, 66 were female and 53 were male. The youngest patient is of age 26 and the oldest 98 years old; with the mean age of 71.3. The most common site is the lower lid followed by canthus, brow and finally upper lid. The most common histological subtype is nodular (n=58) and the rarest being nodulocystic (n=2). 89 patients had staged excisions locally, 27 patients were referred for Moh's micrographic surgery in Salford Royal Infirmary Hospital and the remaining 3 had biopsies only.
Of the 89 patients with staged excisions, 15/89 (17%) required a re-excision. Reasons for re-excision include tumour extending to nearest margin (8/15) and a narrow margin (7/15). Amongst patients with re-excision, majority were lateral canthal lesions with infiltrative nodular histological subtype. Only 1 patient with staged excision had a recurrence (1/89). The recurrence was an infiltrative nodular right lower lid BCC with a nearest margin of 0.25mm. No recurrence following Moh's micrographic surgery was noted in this patient group.
Conclusions: Re-excision is more common in BCC with an infiltrative histological subtype. Majority 13/15(87%) of the surgical re-excision is tumour free. It is recommended that patients with infiltrative BCC referred for a MMS.

FP15-02-OPL

Unintended ocular consequences of vismodegib in the treatment of locally advanced or multicentric basal cell carcinoma: a case series

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Purpose: To report on the unintended ocular consequences of vismodegib in the management of locally advanced or multicentric basal cell carcinoma.
Methods: We present three patients with biopsy-confirmed locally advanced or multicentric BCC treated with vismodegib at 150 mg daily. Locally advanced or multicentric BCC can present a treatment challenge due to the cancer extent or location. In cases where surgery or radiotherapy is implausible or has failed, vismodegib, a hedgehog pathway inhibitor, has been used as medical therapy.
Results: The first patient presented in mid-2016 with left cheek and right orbit and lateral canthus multicentric BCC. She started vismodegib and experienced tumor regression. Tumor involution led to significant fibrosis of the right eyelids and orbit, with worsening right exposure keratopathy. She eventually required a right evisceration. As the BCC involuted, she experienced significant cicatrix of the left cheek and required left ectropion repair and radical excision of the remaining left cheek lesion with placement of an Integra graft, followed by radiation therapy and split thickness skin graft.
The second patient presented in early 2017 with extensive involvement of the left centrofacial region, including the lower lid. He was started on vismodegib, but within days of initiating treatment, he was diagnosed with cecal adenocarcinoma and subsequently small cell lung carcinoma. Vismodegib was stopped and he was temporarily lost to follow up. He returned with ectropion for which he underwent left permanent tarsorrhaphy.
The third patient presented in mid-2017 with locally advanced BCC extending from the temporal to the mandibular region, with extensive CN VII palsy and ectropion. He started vismodegib with tumor involution noted within days. He promptly underwent permanent tarsorrhaphy to address exposure and experienced significant tumor size reduction.
Conclusions: Anticipating the effects of vismodegib may allow eyes to be saved.

FP15-03-OPL

A comparison of four combined procedures for correction of involutional lower eyelid entropion

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Purpose: To evaluate four combined techniques for entropion repair which address the horizontal laxity by either lateral tarsal strip (LTS) or Bick's procedure (BP) and the vertical laxity by everting sutures (ES) or lower lid retractor plication (LLRP).
Methods: Retrospective, comparative consecutive case series. A total of 261 procedures were performed on 227 patients. Patients were divided in the following groups based on the procedure type: Group 1: LTS + ES (n=115), Group 2: LTS + LLRP (n=77), Group 3: BP + ES (n=25) and Group 4: BP + LLRP (n=44).
Results: The study cohort included 132 males and 95 females. The mean age was 76.2 ± 8.3 years. The mean follow-up was 13 months (range 3-58). At last follow-up, the cure rate was 92% in the LTS+ES and 90% LTS+LLRP

groups, in contrast to 100% in BP+ES and BP+LLRP groups (p=0.035). Overcorrection was observed in 2 cases from LTS + ES and 5 from LTS + LLRP group.
There was no statistically significant difference in terms of symptoms outcomes among four groups. Complications were relatively minor with no statistically significant difference between the two groups (p=0.13). The reoperation rate was 7% and 6.5% in groups 1 and 2, respectively to none in groups 3 and 4 (p=0.018)
Conclusions: Bick's procedure in conjunction with either ES or LLRP, provides a quick, simple and effective means for addressing the main pathogenic factors of involutional entropion. Our study found a lower recurrence rate and consecutive ectropion formation in Bick's compared to LTS groups.

FP15-04-OPL

Evaluation of a novel accordion suture technique in aponeurotic ptosis repair

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Purpose: To report a novel approach to the external levator advancement that utilizes an accordion suture technique and evaluate one surgeon's results with this technique.
Methods: A retrospective review of data from 67 patients who underwent bilateral accordion suture levator advancement for aponeurotic ptosis from January 01, 2015 - December 31, 2017 was carried out in order to determine the efficacy of this technique. The accordion suture technique is described briefly as follows:
(1) A single suture is passed three times, medial to lateral, through the levator aponeurosis;
(2) The suture is secured;
(3) Using the same suture, a single elongated pass is taken, medial to lateral, through the superior tarsal plate;
(4) The suture is secured.
Results: The mean preoperative margin-to-reflex distance 1 (MRD1) was 1.17mm (SD = ±0.53mm; range = -1.00mm to 2.00mm) while the mean postoperative MRD1 was 2.52mm (SD = ±0.36mm; range = 1.50mm to 3.00mm) (P < 0.001). Four patients underwent revision (6%) and 5 patients experienced postoperative complications that were resolved with treatment (7%). A successful outcome on the basis of inter-eyelid symmetry ≤ 0.5mm, MRD1 ≥ 2.0mm and ≤ 4.0mm, satisfactory contour, and absence of revision was achieved in 62 patients (92%).
Conclusions: The accordion suture levator advancement is a simple and effective approach to aponeurotic ptosis repair. Based on the evidence presented, we suggest that surgeons consider adopting this technique in order to further improve outcomes.

FP15-05-OPL

No flap external dacryocystorhinostomy: by by flaps

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Purpose: Retrospective study to assess the success of no flap External DCR with 0.4mg/ml Mitomycin c syringing by measuring post-operative osteum size changes, patency of osteum using nasal endoscope and improvement of symptoms.
Methods: 2768 patients were included in this study qualifying inclusion criteria. All the patients were operated by single surgeon from September 2011 to March 2018.In all the patients no flap technique with Mitomycin c syringing on 5 th post oprative day. Osteum size changes were measured on One month, two months, three months, six months and one year
Results: osteum size shrinkage was marked in first three months , after that it's nearly stable and found 4-5 mm oval/round in shape at one year with success rate with 98.67%(2131).
Conclusions: Results were analysed and compared with results available for various techeniques . Results were analysed and compared with results available for various techniques . It was found that „ No Flap method" is easy to perform with a reliable, comparative result and is less cumbersome.
The success rate in this study was 98.6% (95% CI: 98.1-99.1%). The success rate among published researches varies from 70% to 100%. The sample sizes of the various studies published ranged from 19 to 176.The sample size of this study was 2768 patients. Hence the success rate of this study is significantly better than the previously published reports. This may be due to the large sample size of the current study.

FP15-06-OPL

Personal health condition of the patients after ocular prosthetics

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Purpose: To study personal health condition by estimation and comparison of quality of life (QL) and psychological assessment of personality type after ocular prosthetics.
Methods: 128 patients, 75 men and 53 women have participated in the research, average age is 49 years. For assessing of QL of patients after ocular prosthetics the questionnaire of „SF-36" was used. For assessing the influence on the social status of the patient, situation in society was estimated by Serdyuk's questionnaire. MMPI-short form was used for estimating of personality type after ocular prosthetics.Data collection was carried out by questioning patients directly.
Results: The research has shown that removal of an eyeball is a severe psychological, moral and physical injury for patients, especially for women (p< 0,05). A physical and psychological components of health are decreasing in comparison with healthy people (p< 0,05). Signs of social disadaptation are revealed almost to a half of the patients. The research is revealed the pathological sensitive and disturbing profile of the personality such properties as hypochondria, emotional lability, nervousness, anxiety, tearfulness, tension, tendency to sharp experience of failures of 46% of the patients. Patients are inclined to development of psychosomatic disorders.

Conclusions: To increase efficiency of rehabilitation of the persons who have ocular prosthetics and for the solution of a wide range of the problems of psychological and social contents arising in connection with enucleation/an evisceration and having an artificial eye, it is reasonable to combine medical treatment with the methods of psychological correction and psychotherapy. The obtained data can be considered as „targets" or „points of application" for psychotherapeutic influence in the course of medical and social rehabilitation for each patient individually.

FP15-07-OPL

Fungal orbital infections: presenting features, management and outcomes at a referral center in Egypt

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Purpose: Fungal infections of the orbit are relatively rare and can mimic other infectious, inflammatory and neoplastic conditions of the orbit, thereby delaying the diagnosis in some cases. Till now fungal infections still life and sight threatening. The purpose of this study is to describe the clinical presentations and diagnostic features of fungal infections of orbit. our regimen in dealing with this serious infection together with its outcome are presented
Methods: Medical records of all cases of biopsy proven fungal infection of the orbit presented to Tanta University Eye Hospital between Jan 2000 and June 2017 were retrospectively reviewed. Orbital imaging was done in all patients. Diagnosis was achieved in all cases by histopathological and/or microbiological examination of orbital or sinus biopsy material. Management protocol based on early diagnosis, early correction of the metabolic state, Amphotericin B IV and local nasal irrigation combined with repeated debridement.
Results: Tthirty five patients with fungal orbital infections 20 male and 15 female. Age of the patients was 45 years with a range of 9 to 78 years. Thirty-two were unilateral and 3 had bilateral affection. In 5 patients, the presentation was acute resembling acute bacterial orbital cellulitis. In 25 cases was insidious orbital apex yndrome. Predisposing conditions included uncontrolled diabetes (68%), periorbital trauma (11%) and chemotherapy (9%). With our treatment regimen only 2 cases died, 3 cases ended with excentration, 3 cases regained useful vision all the other cases the infection was controlled and the eyes preserved.
Conclusions: As fungal orbital infections still carry a poor prognosis it is important to recognize the disease early and institute appropriate treatment to minimize the morbidity and mortality. Keeping high index of suspension is mandatory. Our regimen markedly reduced the mortality rate but still recovery of useful vision is still unsatisfactory.

FP15-08-OPL

The problems of the combined treatment of patients with various etiologies symblepharon

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Purpose: Identify problems associated with surgical treatment and post-op rehabilitation of patients with symblepharon.
Methods: There were 26 patients. Standard ophthalmological examination, Shirmer test type I (ST I) and break-up time (BuT) were performed pre-op and every 3 months post-op. In 19 cases symblepharon was local (gr 1) and in 7 cases — total (gr 2). The bulbar conjunctiva was replaced by a split-thickness oral mucous graft and the palpebral conjunctiva was replaced with full-thickness oral mucous graft. U-shaped stitches and compression plates (CP) ("Reper-NN", Russia) were used for reconstruction of conjunctival fornix. Temporary blepharoraphia was performed for 14 days. Stitches and CP were removed at the same period for all patients. Continued post-op treatment with the same antiseptics drops and Dexamethasone for a month. All patients in post-op period were prescribed with drops of Cyclosporine for 3 to 6 months. All patients used tear replacement eye drops non-stop.The follow-up period was 1.5 to 3 years.
Results: Pre-op ST I was 0-1 mm/5 ˙ and BuT was less than one sec for all patients. After the removal of stitches and CP all reconstructed conjunctival fornix and cavity, persisted throughout the follow-up period. In the post-op period the ST I were 3-5 mm/5 ˙ and the BuT were 1-3 sec for patients of the gr1.
However, in the post-op period patients of the gr 2 had the same ST I and BuT. Tear-replacement eye drops didn˙t allow to stop the symptoms of DED. This problem didn˙t allow to recommend optical keratoplasty to any of the patients in gr 2.
Conclusions: The proposed method of surgical treatment and postoperative rehabilitation allowed to completely restore the conjunctival fornix and cavity in all cases. Combined surgical and conservative treatment allowed almost fully rehabilitate patients of the gr 1 with the local symblepharon. However, the presence of DED didn˙t allow to fully rehabilitate patients of the gr 2 with the total symblepharon.

FP15-10-REF

Refractive outcomes after surgical correction of astigmatism during phacoemulsification of cataract using the VERION system

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Purpose: To compare the results of manual limbal relaxing incisions (LRIs) with those of femtosecond laser arcuate keratotomies during the phacoemulsification of cataracts using the VERION system.
Methods: Phacoemulsification was performed in 46 patients with cataract and concomitant corneal astigmatism greater than 1.25 diopter. Patients of the group 1 (25 eyes) — conducted femtosecond laser arcuate keratotomy (Femto LDV Z8), group 2 (21 eyes) — manual LRIs. The calculated parameters in

both groups: the mutual location of the main incision, paracentesis, arcuate cuts and IOL on the system VERION. The depth of the arcuate incisions was set at 80% or 90% of the initial thickness of the cornea, the diameter - 8.0 mm. To exclude cyclotorsion and localization errors in both groups, preoperative marking of arcuate incisions was applied using intraoperative navigation system VERION. One month after treatment, the uncorrected distance, spherical equivalent, corneal and refractive astigmatism were compared between groups. Correlation between targed-induced astigmatism (TIA) and surgically induced astigmatism (SIA) were also compared between the groups.

Results: The reduction of the initial astigmatism in all groups was statistically significant. The topographical location of the corneal arcuate incisions corresponded exactly to the planned one. Stabilization of keratometric parameters in all patients of groups 1 and 2 occurred within 3-6 months. Uncorrected visual acuity were in group 1 - 0,59 ± 0,14 and in group 2 - 0,49 ± 0,18, complete corneal astigmatism correction in group 1 was achieved in 73%, SIA to 0.75 ± 0.11 D and 42% SIA to 1.15 ± 0.25 D respectively. The correlation between TIA and SIA was greated in group1.

Conclusions: Topographically oriented and calculated on the VERION system femtolaser arcuate keratotomy allows to achieve a planned compensation of the initial corneal astigmatism and the maximum visual acuity.

RAPID FIRE PRESENTATIONS
RF01: Education, Glaucoma, Retina

RF01-01-EDU

Literature review - 3D printing in Ophthalmology

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Purpose: 3D printing has shown utility in many fields of medicine, including ophthalmology. Here we show how it is an expanding area of development for education, optics, pre-operative and intra-operative procedural work.
Methods: We conducted a literature search on PubMed for "3D printing in Ophthalmology", and found 17 articles.
Results: 3D printed copies of orbital dissections showed a range of features to study anatomy for trainees [1], as well as generating a model to simulate the eye as a tool in fundus viewing research [2].
It has been used to generate glasses from computerised blueprints [3], customised spectacles for patients with facial deformities [4], and used to generate eyelid crutches for patients with blepharoptosis [5].
3D printing has also been used to simulate improved fitting of rigid gas permeable contact lenses (RGPCL)[6,7]
Custom ocular prostheses can be used to fill an anophthalmic cavity [8], to generate orbital implant templates used in secondary orbital reconstructions [9] and orbital implant templates for orbital wall reconstruction matching the 3D structure of the orbit [10]. These are superior to techniques relying on visual inspection of the fracture and eye measurements to fashion the implant [11].
Uses also include the production of intraocular devices [12]; a customisable transconjunctival vitrectomy trocar-cannula system [13] and generation of smart storage glides (SSG) for Descemet stripping automated endothelial keratoplasty [14].
It has been used for delineation of orbital cysts for cystectomy [15], and in irradiation treatment of intraocular tumour [16] and uveal melanoma [17] using stereotactic radiosurgery.
Conclusions: 3D printing has shown utility in being applied to many dimensions of practice. Ranging from education, optics, pre operative planning and intra-operative techniques, the application of 3D printing is limited only by the imagination of practitioners.

RF01-02-EDU

Lessons learned and innovations following multiples cycles of patient feedback audits, patient reported outcome measures (PROMs) at Moorfields Eye Hospital

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Purpose: We developed PROMs in General Ophthalmology (GO) to assess patient satisfaction and experience of clinical care. We used this tool to monitor, report and enhance the performance of our clinics.
Methods: A questionnaire was used to assess severity of symptoms, improvement after treatment and patient experience at first and last visit. The data were analysed and used to compare and benchmark performance between similar sites over successive years. We also measured waiting time and number of visits.
Results: In the latest cycle a total of 327 patients were surveyed. Overall 193 patients (59%) described their presenting symptoms as bad or very bad. Patient satisfaction is measured by patients reporting better or much better. Trust wide 254 patients (77.7%) reported improvement compared to 72% in previous year.
We are scrutinising patients reporting worse/much worse to check if something else can be done to improve their eye condition.
The waiting time was assessed and in general it was very quick/quick/acceptable in most centres except some reporting long waiting periods during their initial visit at busy centres like City Road and Croydon (32%, 23% respectively). The average number of visit was found to be low (2 visits) in 64% of the patients seen across the Trust. There were a higher number of follow ups at Bedford & Croydon that identified a need to recruit new consultants.
Conclusions: We demonstrated a patient centric approach in evaluating performance at 7 sites. Most clinics performed well with an average of 77.7% satisfaction in the latest cycle.
Service improvements include setting a minimum 80% annual satisfaction target, central analysis and using results as evidence to support service expansion and recruitment.
We are innovating to simplify data collection by straight-through processing and to create a further survey for patients discharged at their first visit which are around 50% of cases seen. The results continue to validate this approach.

RF01-03-GLA

Needlings: XEN vs trabeculectomy

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Purpose: To analyze the efficacy and safety of bleb *needling* in glaucoma patients, previously submitted to XEN implant or trabeculectomy.
Methods: Retrospective, observational and comparative study. Included the patients followed in Ophthalmology Department with a XEN gel implant or trabeculectomy surgery between July 2016 and December 2017. Mitomycin C augmented bleb *needling* was performed in the operating room. The last *follow-up* was six months after *needling*. To evaluate the efficacy we decided to use intraocular pressure and medication before procedure and in the last *follow-up*. The complications were studied. Complete success was defined as a decrease in intraocular pressure (IOP) $\geq 20\%$ and ≤ 18 mm Hg, in the absence of medication. Statistic analysis was performed using SPSS, version 24th.
Results: 143 procedures were performed (106 XEN implant and 37 trabeculectomy). In XEN implant, 27.4% needed *needling* after 3.2 ± 2.7 months, intraocular pressure decreases 11.5 ± 2.7 mmHg ($p \leq 0.05$). In trabeculectomy, 18.9% was submitted to *needling* after 1.9 ± 1.2 months, intraocular pressure decreases 6.0 ± 19.5 ($p > 0.05$). There were no complications associated. At the last *follow-up* (9.7 ± 6.1 months after *needling*), complete success was achieved in 40% with XEN implant and 14% with trabeculectomy.
Conclusions: *Needling* was more frequent and earlier after XEN implant than trabeculectomy, revealed similar intraocular pressure decrease and a safety profile procedure.

RF01-04-GLA

PEX and Pseudoexfoliation glaucoma. Criteria of choice of surgical method of treatment

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Purpose: PEX is one of the most common reasons of open-angle glaucoma development. Determined, that patients with PEX have lowering of the intraocular liquid flow and changes in the anterior segment of eye (decrease of the anterior chamber volume and increase of the crystal lens size). Solitary phacoemulsification can decrease of IOP, but it is not systematically. The aim of our work is to determine the main criteria of the methods of surgical treatment of PEX-associated glaucoma.
Methods: During 3 years we examined 78 patients with PEX-associated glaucoma on different stages of its development (21 patients with mild glaucoma (I), 34 patients with moderate glaucoma (II) and 23 patients with severe glaucoma (III)). All patients were divided on three groups. 1st group - no glaucoma development, IOP compensated without drops. 2nd group - glaucoma compensation, IOP stable on 1-2 types of drops. 3rd group - uncompensated glaucoma, it is necessary to do antiglaucoma operation.
Results: In the first group there were mostly patients with I and II stage of glaucoma, with less than 2 types of glaucoma drops before surgery, with narrow anterior chamber depth (2,67±0,29) and with big size of crystal lens (5,27±0,31). In the third group there were mostly patients with severe glaucoma (69%) and that patients, who needed more than 2 types of drops before surgery and small changes of the anterior segment of eye (crystal lens size was 4,88±0,49; anterior chamber depth was 2,89±0,47).
Conclusions: Solitary phacoemulsification is effective method of IOP lowering and glaucoma compensation in PEX-associated glaucoma patients. Effectiveness of phacoemulsification is higher in patients with early stage of glaucoma, lower quantity of glaucoma drops and more developed of changes of the anterior segment of eye (narrow of anterior chamber depth and big size of crystal lens).

RF01-05-GLA

Can participation in virtual patient simulation improve glaucoma diagnosis and management?

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Purpose: Determine if a virtual patient simulation (VPS) continuing medical education (CME) intervention could improve performance of ophthalmologists diagnosing and managing glaucoma
Methods: An online CME-certified VPS-program allowed learners to assess a patient case, choosing from a database of diagnostic and treatment possibilities matching scope and depth of actual practice. Instantaneous clinical guidance (CG) employing guideline and faculty recommendations was provided after each decision made, with revisions post-CG allowed, if desired. Each user's baseline (pre-CG) decisions were recorded and compared to their post-CG decisions, using a 2-tailed paired t-test to determine p-values (P< .05 significant). CME launched 13/04/18; data to 06/06/2018
Results: 336 ophthalmologists met the participation criteria completing the program during the study period. Learners improved significantly in successfully diagnosing exfoliative glaucoma on patient presentation, history and test results (36%* absolute improvement, 32% pre vs 68% post-CG) setting a target for intraocular pressure (19%* abs. improvement, 59% pre vs 78% post-CG) utilising maximum medical therapy, defined as 4 agents/2 bottles (12%* abs.improvement, 10% pre vs 22% post-CG) and improving patient education on disease (26%* abs.improvement, 42% pre vs 68% post-CG) and adherence (21%* abs.improvement, 52% pre vs 73% post-CG). Main rationales using latanoprost/timolol plus brimonidine/brinzolamide formulations were better efficacy, preference for fix-dose combinations and better 24h-control. CG= Clinical Guidance, *pre (%) vs post-CG (%) P< 0.001
Conclusions: Accredited online VPS-programs engaging clinicians in an authentic, practical learning experience can improve performance and aid guideline implementation for diagnosing, treating and managing glaucoma patients and provide real world insights. Further education is needed on glaucoma subtype diagnosis, IOP targets and tailoring treatment to improve outcomes.

RF01-07-GLA

Selective laser trabeculoplasty for treatment naive patients with ocular hypertension or primary open angle glaucoma - initial results

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Purpose: To investigate clinical efficacy of Selective Laser Trabeculoplasty in the management of Primary Open Angle Glaucoma/ Ocular Hypertension
Methods: All newly diagnosed patients with either Primary Open Angle Glaucoma or Ocular Hypertension (open angle evidenced on gonioscopy) were offered the choice of having SLT as initial treatment. 13 patients opted for this management. Intraocular pressure was recorded before and 6-8 weeks after the procedure.
Results: 26 eyes were treated.
Demographics: age between 61-84 years, sex ratio m:f 10:3.
Before treatment IOP - Average 25 mmHg, Maximum 32 mmHg, minimum 19 mmHg, Standard deviation 3.6 mmHg.
IOP after treatment with SLT - Average 19.2 mmHg, Maximum 30 mmHg (one patient), minimum 15 mmHg, Standard deviation 3.5 mmHg.
Decrease in IOP (%) -Average = 22.9%, Maximum = 38.5%, minimum =0.0%, standard deviation = 10.0%
6-8 weeks after the SLT treatment 12 out of 13 initial patients were drop free. One patient was prescribed topical treatment with prostaglandine analogs.
Conclusions: Selective Laser Trabeculoplasty is efficient in achieving clinically significant reduction of IOP in treatment naive patients with Glaucoma/ OHT.

RF01-08-GLA

The influence of ocular perfusion pressure and intraocular pressure phasing in patients with ocular hypertension and glaucoma suspects

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Purpose: To evaluate the correlations between ocular perfusion pressure (OPP) and the risk of conversion to glaucoma for primary open glaucoma (POAG) suspects and for patients with ocular hypertension (OHT).
Methods: This was a retrospective study (January 2013-August 2018) comprised of 134 patients divided in four groups: treated/untreated OHT (64 eyes/ 75 eyes) treated/untreated POAG suspect (18 eyes/ 93 eyes). All patients underwent an active monitoring of the intraocular pressure (IOP) and blood pressure (BP) for 14 hours at an interval of 2 hours. For each one the C/D ratio, pachymetry and pattern standard deviation (PSD) was registered. Also, we calculated the mean arterial pressure (MAP) and mean ocular perfusion pressure (MOPP).
Based on results from the Ocular Hypertension Treatment Study (OHTS) and the European Glaucoma Prevention Study (EGPS) the risk of conversion to glaucoma was obtained. ANOVA and Pearson correlation tests were performed, with $p < 0,05$ considered statistically significant.
Results: There was no significant difference between groups regarding age, gender and pachymetry. The mean C/D ratio was higher in POAG suspect group than in OHT group (0,61 vs. 0,39 respectively, $p < 0,05$). The mean risk in untreated OHT was 11,69, whereas in treated OHT group it was 12,98. The linear regression model revealed that C/D ratio, pachymetry, PSD and age influence the risk in approximately 67% of patients.
The IOP phasing showed a higher IOP in the morning in all groups. MOPP and risk were independent parameters in both the untreated OHT group ($r = +0.080$; $p = 0.505$) and the treated OHT group ($r = +0.067$, $p = 0.655$).
Conclusions: This study combines the vascular and the fluctuation theories to reveal that a continuous monitoring of the IOP can lead to a more accurate diagnosis of glaucoma and that the OPP could have a minor role in our clinical judgment.

RF01-09-GLA

Effect of topical Trehalose/Hyaluronic acid on oct image quality in glaucoma patients

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Purpose: The tear film, can be affected by IOP lowering medications. Its integrity is important for generating reproducible OCT images and for the assessment of disease progression. OCT built in quality indexes (IQIs) are accepted as objective measurement of image quality. Several lacrimal substitutes are currently used to mitigate the effect of anti-glaucoma drops in symptomatic patients. It has been shown that Trehalose/Hyaluronic acid (TH) has a protective effect on corneal and conjunctival epithelial cells. Our aim was to compare the OCT IQI before and after the topical application of TH in glaucoma patients.
Methods: 100 patients treated with prostaglandin analogs have been assessed using OCT before and 5 minutes after instillation of TH eye drops (Thealoz Duo®, Thea, Clermont-Ferrand, France). OCT Posterior Pole scan was used for the analysis. Average image quality was extrapolated from the built-in OCT software and compared before and after TH application. All data are expressed as mean ± SD. $P < 0.05$ was considered as significant.
Results: A significant improvement of the IQI was observed after TH application ($p < 0.001$). Automatic layer segmentation also improved after TH application(1.45% VS 0.5% of errors). All other parameters did not show significant differences. Main reason for recurrent segmentation error was due to lens opacity.
Conclusions: This study shows for the first time that topical TH improves OCT IQI and reduces layer segmentation errors. It is known how important these two parameters are for accurate and reliable glaucoma progression analysis. We propose that TH has a direct effect on conjunctival and corneal epithelial cells, over and above its lubricating properties. Although, this study was conducted using one specific lacrimal substitute and no head-to-head comparison was performed, we believe that corneal lubrication should be considered as a standard procedure before OCT scans. Further long-term studies are needed to confirm our results.

RF01-10-GLA

Implantation of iris-claw IOL in patients with coexisting glaucoma

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Purpose: The iris-claw IOL is one of the option in some complicated cases such as ectopia lentis, postoperative aphakia or dislocation of IOL-capsule complex, which often coexisting with increased intraocular pressure (IOP) or secondary glaucoma. Moreover, majority of alternative surgical techniques, e.g. scleral-fixated IOL, anterior chamber IOL or implantation of in-the-bag IOL with CTR, have also these as post-op complications. The aim of our studies is to assess the effectiveness and safeness of iris-claw IOL implantation in patients with coexisting glaucoma.
Methods: The retrospective analysis of 40 patients who had implanted Artisan iris-claw IOL at our Department during 2015-2018 with min. 6-month post-op observation. The anterior (17,5%) or retropupillar (82,5%) fixations were used mainly combined with ppV.
Results: Glaucoma or increased IOP were observed with the same frequency in all three indication groups for iris-claw IOL implantation ie. ectopia lentis (reason in 37,50% of patients), dislocation of IOL (32,5%) and postoperative aphakia (30%). During observation period 15 patients (37,5%) required glaucoma eye drops, among them 11 (73,3%) were previously diagnosed with different kinds of glaucoma. In 4 cases increased IOP was detected for the first time after the surgery (mean 14 days post-op) and glaucoma eye drops were applied temporarily. It was not required to perform peripheral iridotomy or iridectomy because of suitable shape of the Artisan IOL. However we had one case of acute glaucoma due to the pupil block, treated by Nd:YAG iridotomy. One patient, with open-angle glaucoma, after iris-claw IOL implantation had glaucoma surgery (Ex-press shunt).The PEX syndrome was found in 20% of patients.
Conclusions: Implantation of iris-claw IOL is the safe method in patients with glaucoma. We did not observed long-term IOP increase after surgery. Therefore ,in comparison to others surgical techniques, iris-claw IOL seems to be one of the best choice.

RF01-11-GLA

Endocrine hormones and primary open angle glaucoma a literature review

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Purpose: A systematic review and meta-analysis to investigate the relation of endocrine hormone pathology and primary open angle glaucoma and postulate a hypothesis of pathophysiology.
Methods: The literature research was conducted in MEDLINE/PubMed, EMBASE, Cochrane Library and google scholars.
Results: 841 papers were identified, 20 met the inclusion criteria and analysed for connection of endocrine hormones and primary open glaucoma and normal tension glaucoma.
the current studies suggest a potential relationship between the thalamus, Hypophysial axis hormonal disorders and the risk of developing glaucoma.
Estrogen and endothelin 1 vasoactive peptide were linked with retinal ganglion cell layer apoptosis. Glaucomatous visual field loss may influence the circadian rhythm and consequently disturb the balance of the thalamus hypothalamus axis.
Conclusions: endocrine hormonal disorders of the thalamus hypthalamus axis could be associated with primary open angles glaucoma pathyophysiology. More research is needed to better elucidate the complex relationship between endocrine hormones and glaucoma

RF01-12-GLA

Anticoagulant related postoperative suprachoroidal haemorrhage after ab-interno Xen gel stent surgery - the risk still exists with MIGS

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Aims: To describe a case of suprachoroidal haemorrhage after insertion of the ab-interno Xen gel stent.
Background: Trabeculectomy remains the gold standard for the surgical management of glaucoma however, minimally invasive glaucoma surgery (MIGS) is proving to be safer, less invasive and more predictable in reducing intraocular pressure (IOP). Though the Xen stent has been shown to have a better safety profile than trabeculectomy, we describe a case of suprachoroidal haemorrhage following Xen stent insertion.
Case description: An 86 year old male on oral anticoagulant medication with a progressive glaucomatous field deficit on 4 glaucoma agents underwent routine Xen stent surgery. At Day 1 he was found to have an IOP of 8mmHg with a shallow anterior chamber (AC), choroidal effusion and hypotonous maculopathy. He was started on Atropine 1% twice a day and at Day 5, he presented with perception of light vision and was found to have a suprachoroidal haemorrhage. Viscoelastic was injected into the AC and Cyclopentolate 1% nocturnally was commenced for 2 weeks. He eventually regained vision of 6/9 four months postoperatively with complete resolution of the suprachoroidal haemorrhage.
Conclusions: We describe a case of a potentially devastating complication following routine Xen surgery and emphasize the importance of informing patients of the risks of MIGS appropriately.

RF01-13-RET

The correlation between delay in presentation, patient knowledge and treatment outcome in rhegmatogenous retinal detachment

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Purpose: Rhegmatogenous retinal detachment symptom onset and surgery time are crucial to achieve best functional results. In our clinical practice patient self-referral is often delayed. The purpose of this study was to find delay reasons and correlation between patient symptom onset, knowledge about the disease and postoperative outcomes.
Methods: Patients diagnosed with retinal tear and/or rhegmatogenous retinal detachment from May 2018 until October 2018 answered an original 13 question questionnaire. Questions included: symptom onset, type, reasons in case of delayed referral and patient knowledge about the disease. All patients were divided into two groups: retinal tear and retinal detachment. Retinal tear patients received laserphotocoagulation or cryopexy of the tear, retinal detachment patients underwent pars plana vitrectomy (PPV), pneumatic retinopexy or scleral buckling. 1 month after the intervention patients came for a follow-up visit.
Results: Overall 61 patients answered the questionnaire. 51 patients came for a follow-up. Retinal tear patients were quicker to refer than retinal detachment patients. Referral time did not have a correlation with final best-corrected visual acuity (BCVA) in retinal detachment group ($p>0.05$). There was no correlation between macular status and referral time ($p>0.05$). A statistically significant difference in final BCVA between macula-on and macula-off detachments was found ($p< 0.05$). 63.9 % patients did not know what retinal detachment or retinal tear symptoms are. The reason of the delayed presentation in 40.9 % of cases were because patients believed that symptoms would disappear.
Conclusions: The main reason of delayed presentation is poor patient information about rhegmatogenous retinal detachment and tear symptoms. Although we did not find correlation with symptom onset and functional outcomes, patient education is needed to prevent delayed referral of macula-off detachments.

RAPID FIRE PRESENTATIONS
RF02: Retina

RF02-02-RET

Optical coherence tomography angiography in retinal artery occlusion

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Purpose: To evaluate the retinal capillary ischemia findings of nonarteritic retinal artery occlusion (NA-RAO) with optical coherence tomography angiography (OCT-A).

Methods: Patients who were diagnosed with NA-RAO between April 2013 and February 2018 were retrospectively included. Demographic characteristics of patients, central macular thickness (CMT) and peripapillary retinal nerve fiber thickness (RNFL) measurements made using spectral-domain optical coherence tomography (SD-OCT); flow area, vascular density and foveal avascular zone (FAZ) area measurements of superficial capillary plexus (SCP) and deep capillary plexus (DCP) slabs and radial peripapillary capillary (RPC) density measurements made using OCT-A were recorded.
Results: The study included 32 eyes of 16 patients (16 affected and 16 healthy eyes). Hyperbaric oxygen therapy was applied to 7 patients (43.8%). In the affected eyes, compared with the healthy eyes; it was found that the vessel density of RPC and DCP were decreased, area of FAZ in the SCP and DCP slabs were increased, CMT and RNFL measurements were decreased ($p < 0.05$ for all). There was no statistically significant difference in the decrease in flow area between SCP and DCP, whereas the decrease in vessel density was significantly higher in DCP ($p < 0.01$). In the eyes that were treated with hyperbaric oxygen therapy, the flow area and vascular density of SCP and DCP slabs were measured lower in comparison to untreated eyes ($p < 0.05$). There was a statistically significant correlation between RPC and RNFL measurements in eyes with NA-RAO ($r = 0.76$, $p < 0.01$).
Conclusions: In this study, it has been shown that OCT-A allows the evaluation and detailed measurement of changes in blood flow and vascular density in capillary plexus of different layers of retina in NA-RAO. It is thought that OCT-A, which is a noninvasive, easily applicable method, will be important in the current practice in the diagnosis and follow-up of retinal vascular diseases.

RF02-03-RET

Novel technique of staining internal limiting membrane in eyes with retinal detachment

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Purpose: To describe a novel technique of staining the internal limiting membrane (ILM) in eyes with retinal detachment using perfluorocarbon liquid (PFCL).
Methods: The technique was used in 10 eyes. Following posterior vitreous detachment (PVD) induction, PFCL was gently injected using silicon soft tip cannula pointing towards optic disc. Brilliant blue G dye (BBG) was then injected, under PFCL bubble using silicon soft tip cannula. ILM peeling was completed under PFCL.
Results: ILM stained instantaneously in all eyes with BBG using this technique. There was no requirement to wait for BBG to stain the ILM. With PFCL in vitreous, there was adequate counter-traction for ILM peeling in detachment retina. ILM peel was completed successfully in all eyes.
Conclusions: Practical advantages over current staining techniques:
• Decreases the surgical time - as no need to wait for 30 - 60 seconds for the ILM to stain.
• PFCL provides counter-traction (third hand) for peeling the ILM in detached retina
• This technique can also be used to stain fast with minimal dye in attached retina
• Lesser amount of dye used - lesser toxic effects
• In the presence of Epi-retinal Membrane (ERM) - the dye aids in visualization and peeling of the ERM as well.

RF02-04-RET

The results of diagnostic and treatment of patients with diabetic retinopathy and age-related macular degeneration at a diabetes type 2

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Purpose: Explore the changing clinical, functional and morphological changes of the retina, biochemical parameters of tear, as well as the correlation of ophthalmic and biochemical indicators against the background application of antiangiogenic therapy in patients with diabetes type 2 with comorbidity fundus: DR and wet (AREDS4) AMD.
Methods: In the main study group included 30 patients (30 eyes) with type 2 diabetes with combined fundus pathology DR and AMD: DR without DME+wet AMD (n=12) and DR with DME+AMD (n=18). All patients before and after ranibizumab was assessed visual acuity (VA), macular thickness (MT, μm) and morphology on OCT, the retinal sensitivity (RS, dB) and levels of VEGF and MCP-1 in tear. The control group study included 30 healthy people.
Results: Comparing the main group with the control was revealed that VA in the main group was significantly lower than in the control (0,8±0,01, $p < 0.05$); RT was significantly higher in the main group (0,27±0,05), and the RS was significantly lower. On the background of ranibizumab all patients with DR and AMD had significantly increase in VA on average by 37 %, a significantly reduction of MT an average of 32.6 % and increase RS by 24 %. The correlations were found between VA and MT, as well as between VA and RS, before treatment $r = -0,26$, $p < 0.01$ and $r = 0,7$ $p < 0.01$, after treatment with $r = -0,14$, $p < 0.01$ and $r = 0,64$, $p < 0.01$. The biochemical analysis of tear showed a marked increase in the levels of VEGF-A (6-fold) and MCP-1 (17-fold) in patients with DR and AMD.
Conclusions: In the presence of AMD AREDS 4 (CNV, DPE) in combination with DR, anti-VEGF therapy has a positive effect, a decrease in CNV according to FAG and OCT is observed, visual functions improve after the first injection of ranibizumab, after 12 months of VEGF and MCP-1 concentration in tear approaching the norm, but the complete restoration morphological and functional paramerts can not be achieved.

RF02-05-RET

Surgical treatment of macular holes with the use of platelet-rich plasma

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Purpose: To evaluate the 12 months results of surgical treatment of idiopathic macular holes (IMH) with the use of autologous platelet-rich plasma (PRP).
Methods: Sixty-two consecutive IMH patients (66 eyes) operated with PRP by two highly skilled surgeons formed the main group. The control group consisted of 165 patients (173 eyes) operated by the same surgeons without PRP.
Results: The compared groups did not differ in age, sex, axial length of the eye, hole duration. Parameters of the IMH and foveal region were significantly worse in the main group compared to the control group: the minimum diameter of the hole was 445±184 μm vs. 376±149 μm. Despite this, the anatomical and functional results of the treatment in the main group were significantly better than in the control group.

In all patients of the main group, it was possible to achieve complete closure of the hole, while in the control group the hole was not blocked in 14 eyes (P=0.013). Twelve months after surgery, the median increase in visual acuity was almost nine ETDRS letters greater in the main group (P=0.012).
One month after surgical treatment of IMH with the use of PRP, optical coherence tomography demonstrated in the region of hole the area of increased optical density and the defect of the ellipsoid zone of photoreceptors, which by 12 months decreased in size. In the eyes with IMH of minimum diameter less than 360 μm, the normal structure of the retina was restored up to 3-12 months.
Conclusions: The use of PRP significantly improves the anatomical and functional results of treatment of IMH, including IMH of large diameter and with an unfavorable prognosis for standard surgery.

RF02-06-RET

The anti-angiogenic effect of anthocyanin oligomer in a mouse model of retinopathy of prematurity

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Purpose: Anthocyanins belong to the group of phytochemicals known as flavonoids. The purpose of the present study was to determine the anti-angiogenic effect of anthocyanin oligomer (extracted from grape skin) in a mouse model of retinopathy of prematurity.
Methods: ICR neonatal mice were exposed to 75% oxygen from postnatal day (P)7 until P12 and returned to room air (21% oxygen) for five days (P12 to P17). Mice were subjected to daily intraperitoneal injection of anthocyanin oligomer (10 mg/kg, 50 mg/kg) and vehicle from P12 to P17. Retro-orbital injection of FITC-dextran was performed and retinal flat mounts were viewed by fluorescence microscopy. Central avascular area was quantified from the digital images in a masked fashion using image analysis software (NIH ImageJ). Neovascular tufts were quantified by using SWIFT_NV and neovascular lumens were quantified from histologic section in a masked fashion. Immunohistochemistry and Western blot analysis were also performed to demonstrate the anti-angiogenic activity of this compound *in vivo*.
Results: In the retina of anthocyanin oligomer injected mouse (50mg/kg), the central non-perfusion area was significantly decreased compared to the vehicle injected group (1.98±0.42 vs 2.78±0.73, P< 0.05). In vehicle-injected group, 29.43 ± 4.89% of the total retinal area was avascular, whereas the retinas of pups treated with high-dose (50 mg/kg) tectorigenin showed avascular retinal areas of 18.31 ±4.21% (P< 0.05). High dose of anthocyanin oligomer also significantly reduced the number of vascular lumens in the histologic section. Anthocyanin oligomer (50 mg/kg) significantly reduced the expression of VEGF, matrix metalloproteinase-2 (MMP-2), MMP-9, and angiotensin II compared to the vehicle injected group.
Conclusions: Our results show that anthocyanin oligomer possesses anti-angiogenic properties and can attenuates new vessel formation in the retina after systemic administration.

RF02-07-RET

Changes in area of foveal avascular zone after intravitreal injection of Bevacizumab in eyes with retinal vein occlusion

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Purpose: To investigate the effect of an intravitreal bevacizumab on the foveal avascular zone in eyes with retinal vein occlusion.
Methods: This retrospective, consecutive study included 88 eyes of 88 patients with macular edema secondary to central retinal vein occlusion in 38 patients and branch retinal vein occlusion in 50 patients. The comprehensive ophthalmic examinations were performed before and after the intravitreal bevacizumab (1.25mg/0.05mL) in every patient. The area of foveal avascular zone (FAZ) was manually circumscribed on the early-phase image of fluorescein angiography by Heidelberg Eye Explorer software. The central macular thickness (CMT) and the integrity of the foveal photoreceptor layer were detected by optical coherence tomography (OCT). The diameter of retinal veins was measured by fundus photography.
Results: The FAZ area of BRVO patients measured 0.62±0.39 and 0.81±0.35 mm^2 (before and after injection, respectively), and were 0.73±0.39 and 0.99±0.48 mm^2 in CRVO patients (before and after injection, respectively). After injection, the FAZ area was significant enlarged in both BRVO and CRVO (P< 0.01), and the diameter of veins had a significant reduction in both BRVO and CRVO (P< 0.05).
The correlation between the FAZ area and the BCVA had statistical significance in CRVO (r=0.56, p< 0.001). In the Spearman's correlation analysis, the diameter of veins was significant correlated to the larger FAZ area in non-occlusive veins of BRVO (r=-0.36, p=0.005) and in super-temporal branch veins of CRVO (r=-0.47, p< 0.001).
Conclusions: The area of FAZ is enlarged and the retinal vein diameter is reduced after intravitreal bevacizumab, while these changes are demonstrated to be transient. The BCVA is also affected by the FAZ area after applying bevacizumab. Intravitreal injection of anti-VEGF reagents will lead macular ischemia status to become more severe in the short-term.

RF02-08-RET

Comparative observation of multi-spectral fundus imaging and traditional multi-mode fundus imaging in the diagnosis of patients with choroidal osteoma

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Purpose: To compare the diagnostic value and significance of multi-spectral fundus imaging and traditional multi-mode fundus imaging in patients with choroidal osteoma.
Methods: Four eyes of 4 patients diagnosed with choroidal osteoma were enrolled in the study. All patients underwent multispectral fundus imaging (MSI) and traditional multimodal fundus examination, including optical coherence tomography (EDI-OCT) and fundus autofluorescence (AF). Fluorescein fundus angiography (FFA), comparative analysis of choroidal osteoma patients in multi-spectral fundus imaging and traditional multi-mode fundus imaging, comprehensive evaluation of multi-spectral fundus imaging for the diagnosis of choroidal osteoma.

Results: 1. The tumor contour was the clearest at the MSI wavelength of 600~620nm, and the lesion area was light gray as a whole, showing uneven pigment accumulation and loss. 600nm~620nm mainly showed middle and deep retinal structure and retinal pigment epithelial layer, which is consistent with the local deletion and accumulation of RPE layer expressed by EDI-OCT.
2. Point-to-point analysis on AF and FFA in the retina of MSI with pigment translocation and loss, found to be unevenly low fluorescence on AF (caused by decreased RPE cell number), and mottled-like strong fluorescence on FFA (The RPE loss is strong fluorescence, the RPE transition aggregation is fluorescent shielding), and there is no leakage in the late stage. The three are corresponding.
3. MSI is unclear for patients with choroidal osteoma at long wavelengths, so the observation of choroidal structure is lacking; and MSI is only the observation of the fundus of the coronal plane. It is necessary to combine the EDI-OCT tomography to comprehensively observe the lesion.
Conclusions: MSI has the most obvious effect on RPE loss and accumulation in choroidal osteoma. It has certain value for its diagnosis, but due to its limitations, it needs to be combined with traditional multi-mode fundus imaging.

RF02-09-RET

Outcome of endodrainage via posterior retinotomy in pars plana vitrectomy in rhegmatogenous retinal detachment

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Purpose: To evaluate the results of posterior retinotomy (PR) for subretinal fluid endodrainage in patients who underwent pars plana vitrectomy (PPV) due to rhegmatogenous retinal detachment (RRD).
Methods: The medical charts of patients who underwent PPV for RRD between November 2014 and April 2018 were retrospectively reviewed. Patients in whom PR for subretinal fluid endodrainage was performed, were included. Following complete vitreous removal and excision of bands and membranes, if any, retinotomy was created with endodiatermy applied in the detached area close to the optic nerve and fluid-air exchange was performed with silicone tipped cannula until the retina was fully reattached. Retinal breaks and the retinotomy site were sealed with laser photocoagulation and then air - silicone oil (SO) change was administered. The clinical outcome and complications were assessed.
Results: Twenty-five eyes of 25 patients (19 male, 6 female) were included. The mean age of the patients was 55±15.8 (16-71). Preoperative best corrected visual acuity (BCVA) was logMAR 1.9±1.1 (0.00-3.1) and postoperative BCVA logMAR was 1.3±0.9 (0.2-3.1) (p= 0.27). The time between the onset of the symptoms and the surgery did not have any effect on the BCVA gain (p = 0.27). Eleven (%44) patients had proliferative vitreoretinopathy (PVR) at admission. Postoperatively, 4 patients had localized residual retinal detachment and 21 patients had total retinal reattachment. In the follow-up, 13 patients had SO removal. Of these, in 5 PR was performed because perfluorodecaline liquid failed to reattach the retina intraoperatively; in 8, PR was applied primarily. These two did not differ by means of attached retina following SO removal (p=0.26). The patients were followed up for 583.7±760.4 (55-3550) days.
Conclusions: Posterior retinotomy is a safe and efficient method to achieve retinal reattachment in RRD patients who underwent PPV.

RF02-10-RET

Prevention of premacular hemorrhage in patients with PDR during posterior vitrectomy

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Purpose: to learn the possibility to protect the macular area from the hemorrhage during posterior vitrectomy
Methods: 12 patients with PDR and traction RD at the age of 48-72 years and VA ≤ 0.02 were operated using the PV with membrane peeling, cautery, laser and gas-fluid-silicon oil exchange. At the final stage it was injected 0.2 ml of sodium hyaluronate (Healon® OVD. Abbot, USA) directly on the macula surface of retina before silicone tamponade. The duration of fallow up - 6 months.
Results: Analysis of features of operations testified the achieving complete reattachment of the retina and in the absence of any severe bleeding in all cases. However, during silicone oil injection in two eyes and on the first day after surgery in three eyes there were noticed the appearance of a small amount of blood on the retina surface around the Healon bubble. At the same time, in any case the blood did not spread on the macula and fovea during all period of fallow up examination. The duration of blood resolution was 5-7 days and the duration of healon bubble resorption was about 7-14 days.
Analysis of the eye in the remote postoperative periods showed the satisfactory condition of the retina, the absence of the clearest signs of proliferative processes in the macular area of the retina and a stable state of retina attachment. Visual acuity during 6 months after surgery significantly gradually increased till 0.08-0.3.
Conclusions: The proposed manipulation of droplet shielding of retina during PV resulted in long-term protection against the spread of blood on to the macula surface and the development of postoperative traction retinal syndrome in the central retinal zone.

RF02-11-RET

Similarities and differences of vascular densities: choriocapillaris and whole choroid

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Purpose: To analyse the relationship between vascular densities (VD) in the whole choroid and in choriocapillaris when being analysed with optical coherence tomography angiography (OCTA).
Methods: Young healthy individuals between 18 and 35 years old and with an axial length (AL) shorter than 26 mm were enrrolled. Subjects with any ocular pathology or previous treatment were excluded. A macular area of 6x6 mm was analysed using Triton DRI OCTA (Topcon) at the same day time. From a same examination, colour pictures were obtained both for choroidal and choriocapillaris VD. Afterwards, these pictures were codified into numbers using a specifically designed software. Thus, pictures were transformed into series of 900 numbers which represented the quantification of VD.
Results: 102 eyes of 51 patients were enrolled. Mean age was 27.32±3.94 years, mean intraocular pressure was 18.07±2.38 mmHg, mean AL was 23.71±0.66 mm, and mean spherical equivalent was -1.43±1.85 D. The highest choroidal VD was in the yuxtapapillary area, followed by fovea. The lowest was located in superior and inferior macular regions. The highest VD of choriocapillaris was located in fovea and it was rather uniform all over the

macula. No statistical differences were found between VD of choriocapillaris and choroid in superior and inferior macula. There were mild and moderate positive direct correlations in nearly all the macula, but specially in fovea and the temporal-inferior region.
Conclusions: In young healthy individuals, VD of the whole choroid and the choriocapillaris differ, except for superior and inferior macula. Foveal VD is very high in both layers, but the one of choriocapillaris is higher than choroidal. However, in the yuxtapapillary area, the VD of the whole choroid is very high but much lower in case of the choriocapillaris. Finally, both VD are not homogeneously linked all over the macula. The highest correlation is found in fovea.

RF02-12-RET

ABCA1 rs1883025 gene polymorphism association with exudative age-related macular degeneration

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Purpose: To determine frequency of ABCA1 rs1883025 genotype and alleles in the patients with exudative age-related macular degeneration (AMD) and control subjects.
Methods: The study enrolled 303 patients with exudative age related macular degeneration (AMD) and 873 random samples of the population as control group. The genotyping of ABCA1 rs1883025 was carried out using the real-time polymerase chain reaction method. Statistical analysis was performed using SPSS 20.0
Results: The analysis of ABCA1 rs1883025 gene polymorphism did not reveal any statistically significant differences in the distribution of rs1883025 C/C, C/T, and T/T genotypes between patients with exudative AMD and control group (53.8%, 38.3%, and 7.9% vs. 55.0%, 37.5% and 7.6%, p=0.934, respectively)
Conclusions: ABCA1 rs1883025 gene polymorphism had no predominant effect on the development of exudative AMD development.

RF02-13-RET

6-month follow-up of an Occult clinical case

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Purpose: Acute Zonal Occult Outer Retinopathy (AZOOR) is characterized by an acute zonal loss of outer retinal function with minimal ophthalmoscopic changes in one or both eyes of predominantly young women. The aim of this work is to report a deferred diagnosis of AZOOR and to highlight its clinical suspicion.
Methods: A 31-year-old woman was referred to retina subspecialty with a prompt diagnosis of Left-eye (LE) peripheral vitreoretinal traction. Patient complained of 7 days duration, light worsening, LE photopsia and also a dark blind spot in her left temporal visual field. Ophthalmology examination disclosed a LE Best Corrected Visual Acuity (BCVA) of 0.8 (decimal scale). Refraction found myopia in both eyes. No biomicroscopic or dilated fundoscopy abnormalities were found.
Results: Even LE Retinography revealed no meaningful changes, automated perimetry revealed a LE blind spot enlargement along with a left temporal visual field (VF) defect. Spectral Domain-OCT disclosed a LE attenuation of photoreceptor's ellipsoid line, close to the optic disc. No Fundus Autofluorescence or Fluorescein Angiography abnormalities were found. Electroretinography (ERG) and Electrooculogram (EOG) revealed LE reduced amplitude responses and subnormal LE Arden ratio, respectively. Neuro-ophthalmology ruled out *Susac* Syndrome. After 6 months of follow-up, patient's LE BCVA improved to 1.0 and symptoms subsided. However, residual LE infer-temporal VF defect persisted.
Conclusions: AZOOR is a rare condition with subtle and vague presenting signs and symptoms that, sometimes, can recur and progress to severe functional or anatomical damage. Multimodal imaging, perimetry and electrophysiology studies distinguish AZOOR between the group of unknown etiology retinopathies. ERGs and EOG are especially helpful when retinal tissue manifestations are not yet apparent. Understanding AZOOR and its clinical variability allows for suspicion, timely referral and diagnosis.

RF02-14-RET

Evaluation of the effectiveness of the developed technology of combined laser treatment in patients with the initial stages of the idiopathic epiretinal membrane

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Purpose: to evaluate the clinical and functional results of subthreshold "grid" laser photocoagulation (LP) and the developed combined laser treatment technology in patients with the initial stages of idiopathic epiretinal membrane (iERM).
Methods: This study included three groups of patients - 30 patients (30 eyes) after subthreshold "grid" LP, 32 patients (32 eyes) after the combined laser technology (subthreshold "grid" LP and subthreshold micropulse LP (3 sessions 1 time per month)) and control group (30 patients (30 eyes)) which hadn't any treatment. The assessment UCVA, BCVA, central retinal thickness (CRT) and central retinal sensitivity (CRS) was performed. Laser treatment was performed on the IRIDEX 577 nm. The follow-up period was 5 years.
Results: In the first group up to 3 months UCVA, BCVA, CRS increased from 0.44 ± 0.26 to 0.47 ± 0.27, from 0.85 ± 0,16 to 0.86 ± 0.15 and from 26.3 ± 1.57 dB to 26.6 ± 1.68 dB, respectively. 12 months post op there was increasing of CRT with decreasing of clinical and functional parameters until the end study. In the second group a combined laser treatment showed maximum visual results in the period from 3 to 12 months - increased UCVA (from 0.45 ± 0.31 to 0.61 ± 0.31), BCVA (from 0.9 ± 0.13 to 0, 94 ± 0.1), CRS (from 26.1 ± 1.9 dB to 26.7 ± 1.68 dB), with stabilization of results until the end study. In the control group, a slow decrease of UCVA (from 0.64 ± 0.23 to 0.43 ± 0.28), BCVA (from 0.87 ± 0.14 to 0.68 ± 0.24), CRS (from 27.1 ± 1.52 dB to 25.4 ± 1.88 dB) and an increasing CRT from 301.4 ± 44.8 to 349.7 ± 49.1 nm was observed.
Conclusions: The developed combined laser technology in the treatment of iERM in comparison with subthreshold "grid" LP demonstrated the best visual-functional results in the long-term period, expressed in increasing both UCVA and BCVA, as well as a decrease in the average CRT. Safety in relation to the structures of the sensory retina is reflected in increasing CRS at long-term follow-up.

RAPID FIRE PRESENTATIONS
RF03: Cornea, Ocular Surface, Oculoplastics

RF03-01-COR

The research of antimicrobial efficacy and cytotoxicity of modern quaternary ammonium compound antiseptics

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Purpose: to study antimicrobial effectiveness of the quaternary ammonium compound (QAC) antiseptics ophthalmodec (OD, contains decamethoxin 0,02%) and okomistin (OM, contains miramistin 0,01%) and their influence on the DNA fragmentation and cell cycle of the anterior corneal epithelium (ACE).
Methods: Minimal inhibitory and microbicidal concentrations of OD, OM against clinical strains of the microorganisms were determined (serial double dilution method). *In vivo* cytotoxic effect of OD, OM on the ACE cells was investigated after 2-week daily instillation of these QACs into the eyes of male rats, a *Vistar line*. The flow cytometric parameters of epithelial cell cycle, DNA fragmentation, apoptosis under the influence ophthalmic QAC antiseptic agents were analysed.
Results: The high antimicrobial effect of OD and OM against a wide spectrum of the pathogens (*S.aureus*, *E.coli*, *E. faecalis*, *Enterobacter spp*., *A.baumannii, K.pneumoniae*) was proved.
After OD instillations, flow-cytometry parameters indicated minimal signal changes on DNA histograms of ACE cells, the insignificant (1.3 times) decrease of their proliferation index, low increase of their apoptosis index (0.68%) and no difference of their mitotic activity, in comparison with intact eyes ($p>0.05$). The prolonged use of OM resulted in the significant increase of cells in the G0G1 phase comparably to cells managed with OD and intact ones (4.63%; 3.69%, respectively); significant increase of DNA fragmentation in the nuclei, 1.3 times decrease of proliferative activity, and no significant difference between the content of ACE cells (4.12 ± 0.57)% in the S-phase in comparison with intact eye ($p< 0.05$) were proved.
Conclusions: OD is proved to provide 1.8-6.0 times higher antimicrobial effect against a wide list of pathogens of infectious complications than OM ($p< 0,001$); OD possesses no cytotoxic and pro-apoptotic effects on the corneal epithelium ($p< 0,05$).

RF03-02-COR

Corneal sustained release antimicrobial implants: a novel therapy for posterior corneal infections

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Purpose: To demonstrate the efficacy of implantable intra corneal sustained release antimicrobials in posterior corneal infections and abscesses.
Methods: A Prospective interventional non-comparative clinical trial. Cases with posterior corneal infections, documented clinically and by AS OCT were enrolled. 6mm Whatman-3 filter paper wafers were autoclaved into which 20µl of antimicrobial working solution was loaded, dried in an incubator & used. A deeper corneal plane was fashioned either manually or by Femtosecond lasers with 1-2 incisions, through which antimicrobial implants were positioned. Results were analyzed using AS OCT and slit lamp photography each day. Implants were removed in 3-5 days and re-implanted if required. Implantable antimicrobials were used in the interface during therapeutic lamellar keratoplasties also.
Results: 10 cases were enrolled, clinically 7 were primary deep corneal infections, and 2 were implants used in therapeutic DALK interfaces, 1 was a segmental infection in a Post DALK case. Aetiologically 4 were fungal, 5 were bacterial, 1 was nocardial. Healing started in 1-3 days, In 2 cases re-implantation was required & healed subsequently. All cases required reduced or no topical antimicrobials. No surface toxicities were seen.
Conclusions: Intrastromal corneal sustained release antimicrobial implants have a promise in deep corneal infections in terms of effective & sustained drug bio availability at infectious foci and reduced surface toxicities.

RF03-03-COR

Brevundimonas diminuta induced keratitis: a case report

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Purpose: Brevundimonas diminuta is rarely causing human infections. This non-fermenting Gram-negative bacteria is opportunistic pathogen that affects patients that are suffering with underlying medical conditions and diseases. There is only one documented report of secondary caused keratitis of this bacillus.
Methods: A 28-year-old healthy male complained about severe pain, photophobia and tearing in left eye for 1 day. Patient admits overnight 16 hour long soft contact lens use in military training in woods. He did not report any history of contact lens complications or ocular illnesses in past. First day slit-lamp examination revealed 1,71mm x 1,15 mm large central epithelial defect. OCT-AS confirmed 1032 µm large corneal swelling and 367 µm deep corneal infiltrate. Visual acuity was reduced to hand motions in 15 cm.
Immediately, patient received hourly doses of 0,5% Levofloxacin eye drops, 1 time per day 0,1% Dexamethasone/ 0,2% Chloramphenicol ointment and systemic S.Vancomicin 1,0 and S.Cefasolin
Results: Microbiology laboratory identified a rare, gram- bacillus, B. diminuta. After 1 week there were no corneal edema and no noticeable corneal staining but reveal light corneal opacity with blurred edges. After 1 month there is 79 µm epithelium above 142 µm deep stromal scar with noticeable edges. In 4 month follow-up revealed same findings and BCVA =0,8 (Snellen chart).
Conclusions:
1. B.diminuta can cause a keratitis even for young healthy patients.
2. Fast B.diminuta keratitis treatment can lead to good visual outcome.

RF03-04-COR

Effect of OTX-101, a novel nanomicellar cyclosporine formulation, on corneal staining after 3 months of treatment in keratoconjunctivitis sicca patients: a pooled analysis of 2 studies

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Purpose: This pooled analysis evaluated improvements in total corneal fluorescein staining (CFS) and individual zonal CFS after 3 months of treatment with OTX-101 0.09% vs vehicle in a phase 2b/3 and a phase 3 study.
Methods: In these randomized, vehicle-controlled studies, patients received 1 drop OTX-101 or vehicle in both eyes twice daily for 84 days. CFS was performed at baseline and common study days 28, 56, and 84. Five individual corneal zones were evaluated per eye, on a 0- (no staining/clear) to 4- (severe diffuse stain) point CFS scale. Total corneal staining was scored on a 0- to 20-point scale per eye (sum of all 5 individual zones) and averaged over both eyes. A mixed model for repeated measures was fit to obtain adjusted effect sizes. Pooled safety assessments included adverse event (AE) monitoring and reporting.
Results: Mean total CFS (standard deviation [SD]) at baseline was 4.16 (2.52) for OTX-101 (n = 523) vs 4.34 (2.64) for vehicle (n = 525).
On day 28, the mean change from baseline (SD) in total CFS for OTX-101 vs vehicle was −0.84 (1.97) vs −0.54 (1.84); −1.22 (2.07) vs −0.89 (2.02) on day 56; and −1.38 (2.24) vs −0.96 (2.30) on day 84 (max $P = 0.0013$).
At day 84, the mean change from baseline (SD) for the inferior zone was −0.39 (0.74) vs −0.22 (0.78, $P < 0.0001$) for OTX-101 and vehicle; −0.24 (0.56) vs −0.20 (0.57, $P = 0.0367$), −0.28 (0.60) vs −0.21 (0.61, $P = 0.0050$), −0.33 (0.67) vs −0.18 (0.65, $P < 0.0001$), and −0.13 (0.43) vs −0.15 (0.52, $P = 0.8436$) in the lateral, central, medial, and superior zones, respectively. The most common treatment-emergent AE was instillation site pain (21.8% vs 4.0% for OTX-101 vs vehicle, respectively).
Conclusions: Treatment with OTX-101 led to greater overall improvements vs vehicle in corneal surface staining as early as 4 weeks and maintained through the 12 week treatment period. OTX-101 was well tolerated in patients with KCS.

RF03-05-COR

Specific features of the superficial corneal lesions in patients with Cytomegalovirus infection

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Purpose: To describe the character clinical signs of chronic corneal lesions in patients with Cytomegalovirus keratitis.
Methods: 120 patients were included in this study. All patients had a history of one-side recurrent keratitis. Etiology of the disease was confirmed by the immunosorbent immunoglobulins M, G assay. As the next step all 120 patients had undergone polymerase chain reaction for Herpes Simplex Virus and Cytomegalovirus. According to the results of PCR,83 patients were selected: 16 patients with isolated Cytomegalovirus infection,20 patients with equal titers between HSV 1,2 and Cytomegalovirus and 47 patients with the prevalence of Cytomegalovirus titers. In this group descriptive study of the clinical features was done. Method of treatment included local and systemic antiviral therapy (Gancyclovir eye gel 0,15% and Valcyclovir pills 500mg. by standard scheme) in combination with anti-inflammatory and reparative treatment.
Results: The prevalence of positive PCR and immunosorbent assay results leaded to conclusion of Cytomegalovirus nature of treated keratitis in this group of patients. Therefore the following characteristic features of Cytomegalovirus superficial corneal lesions were found: the presence of few non connected lesions in several sectors, often correlating with a history of disease recurrence, defeating of all cornea sectors equally, prevailing superficial damage to the cornea, often not deeper than the epithelium, but with a possible endothelium edema in the same zone, the development of primary inflammation occured in the deeper layers of the epithelium does not necessarily lead to the erosion, rather often pigment deposition in the epithelized lesion area, the neovascularization formation of one or several aggressive large central vessels, going into the affected area.
Conclusions: There was shown the potential dominant role of Cytomegalovirus infection in keratitis with superficial corneal damage in cases of unusual clinical picture.

RF03-06-COR

Clinical efficacy of platelet-rich plasma in the treatment of neurotrophic corneal ulcer

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Purpose: The aim of this study was to evaluate the efficiency of autologous platelet-rich plasma in the treatment of neurotrophic keratopathy.
Methods: The study group consists of 25 patients with nonhealing corneal ulcers due to herpes simplex or herpes zoster infection, facial nerve or trigeminal nerve paralysis as a result of a neurosurgical operation caused by a tumour or stroke. The patients were given PRP drops five times a day, additionally preservative-free artificial tears and a vitamin A ointment at night for maximum 3 months. The following were evaluated: best corrected visual acuity (BCVA), healing of corneal surface, subjective symptoms, changes in corneal thickness with the use of anterior segment optical coherent tomography.
Results: BCVA before the treatment was 0.10 ± 0.14, after the treatment 0.3 ± 0.27 (p=0.001). Improved visual acuity and less subjective symptoms were observed in all patients. Complete healing of the ulceration was observed in

80% patients. 16% of patients experienced considerable improvement of their clinical condition (reduced size and depth of the ulceration and inflammatory state: smaller conjunctival injection and swelling, improved visual acuity, and less subjective symptoms). In one of the patients, an amniotic membrane was transplanted due to the lack of improvement of his local condition. In all patients, the progression of corneal thinning was stopped. An average corneal thickness in its thinnest point was 322.3 ± 125.8um before the treatment, and 404.5 ± 118.7um ($p < 0.05$) after the treatment. None of the patients reported general or local side effects of the treatment.
Conclusions: Autologous platelet-rich plasma is a blood-based product which seems efficient in the treatment of neurotrophic keratopathy.

RF03-07-COR

Descemetorhexis without endothelial keratoplasty (DWEK) - a simple solution for selected cases

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Purpose: Descemetorhexis - or stripping of the Descemet membrane - consists in the selective surgical removal of the Descemet membrane and endothelium. It is the initial procedure of lamellar posterior keratoplasty techniques (DMEK, DSAEK), but only recently has been considered as a stand-alone procedure to address endothelial disease. This technique, most frequently designated as Descemet Without Endothelial Keratoplasty (DWEK) or Descemet Stripping Only (DSO), has been popularised in the setting of localised central endothelial disease of initial-to-moderate stages.
Methods: Case report of a 60-year old female who presented to the Ophthalmology clinic for bilateral (OU) progressive visual acuity decrease. Her best-corrected visual acuity (BCVA) was 20/50 in the right eye (OD) and 20/40 in the left eye. Slit-lamp exam revealed central guttata on the posterior cornea, and cataract OU. Specular microscopy was unable to calculate central endothelial cell density (ECD), and confirmed the presence of more preserved peripheral endothelial cell population. The patient was submitted to combined cataract surgery and DWEK of the central 4-mm OD.
Results: In the first day postoperative, it is expected diffuse corneal oedema. However, at week 6, BCVA OD was 20/25 with a clear non-edematous cornea. Specular microscopy readings at 6-months postoperative revealed central ECD of 1299 cel/mm^2. Clinical status was maintained at last follow-up.
Conclusions: DWEK seems a valid approach for Fuchs endothelial disease of predominant central involvement.

RF03-08-OCS

Application of modified Schirmer tests for salivary and lacrimal glands hypofunction in non-Sjögren patients

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Purpose: The aim of this study was to first demonstrate an successful application of the modified Schirmer tests for salivary gland hypofunction. Subsequently, to compare and correlate the results achieved from the eye Schirmer test and modified Schirmer tests in non-Sjögren patients.
Methods: Study group consisted of 642 patients with or without subjective or/and objective symptoms of dry eye or mouth who did not fulfill the criteria for diagnosis of Sjögren syndrome. Patients were divided on the basis of history and examination into the different groups. The eye Schirmer test (ST) and the modified Schirmer tests were performed (MST1 was put on the floor of the mouth, MST2 in front of the parotid gland duct). The results were recorded after 1 minute (MST1a), 3 minutes (MST1b, MST2) and 5 minutes (ST).
Results: The eye ST and modified Schirmer tests scores were considerably higher in the healthy group than in other, ($p< 0,001$ for each group combinations). Similarly, the results of MST1a, MST1b and MST2 decreased with the appearance of subjective and objective symptoms, $p< 0,001$. The differences between the results obtained by ST and MSTs between the groups were highly significant ($p< 0,001$). There were positive correlations between ST and MST, MST1a and MST1b outcomes between the groups, ($p< 0,001$).
Conclusions: This is the first report comparing the Schirmer test results in eye and mouth simultaneously performed in non-Sjögren symptomatic patients vs asymptomatic healthy individuals. According to the achieved results, the modified Schirmer tests seem to be rapid, convenient and reliable objective screening tools for salivary gland hypofunction in non-Sjögren patients.

RF03-10-OCS

Non-contact meibography in diagnosis and treatment of meibomian gland dysfunction in patients wtih dry eye syndrome - report of three cases

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Purpose: To evaluate the extent of anterior and posterior blepharitis caused by meibomian gland dysfunction in patients with symptoms of dry eye using non-contact meibography and to determine proper diagnosis-based treatment of dry eye syndrome.
Methods: Anamnesis including OSDI and clinical assessment of three patients with dryness despite of using hialuronian lubricative drops were performed. These included: slit lamp examination looking for signs of anterior and posterior blepharitis (hyperemia, lid margin swelling, lid magin abnormalities), noninvasive tear breakup time (NIBUT), superficial punctate keratopathy (SPK), Schirmer test, non-contact meibography and tear osmolarity of eye. Proper lid hygiene and antiinflammatory treatment according to meibomian gland dysfunction was applied and one month follow up was performed.

Results: Lid margin signs of blepharitis, Schirmer test and SPK were moderate, while shortening of NIBUT, change in meibography dropout, meibomian gland distortion and shortening as well as high pH rate of tear osmolarity were present in all three patients. At the follow-up after 4 weeks of treatment expressibility of the meibomian glands on meibography improved and the expressed meibom oil was more clear.
Conclusions: Non-contact meibography can be a helpful non-invasive diagnostic method for the evaluation of the extent of the anatomical damage in patients with meibomian glands dysfunction, particularly if clinical examination is not obvious This may help in choosing the appropriate treatment which results in diagnosis-based treatment approach.

RF03-11-OPL

En-block resection versus resection after evacuation and suction of the content of isolated intraorbital optic nerve glioma causing visual loss and unacceptable proptosis

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Purpose: Is to evaluate the postoperative results of the two techniques in management of glioma confined to the intraorbital part of the optic nerve and causing visual loss and un-acceptable proptosis
Methods: This prospective, comparable, clinical intervention case study included 11 patients with isolated intraorbital optic nerve gliomas with visual loss and un-acceptable proptosis. Cases with extension of the mass to the intra-cranium, optic chiasm or beyond are excluded. In all cases, lateral orbitotomy was performed to expose the mass. In 5 cases (Group A), the mass was resected in-block, while in 6 cases (Group B), the wall of the mass was incised, the content was evacuated and suctioned and followed by resection of the markedly reduced mass in size under good visualization. The follow up period was ranged from 3 to 12 years in the 2 groups.
Results: In Group A, the age of the patients was ranged from 6-18 years with an average of 11 years. Three were females and 2 were males. The pre-operative visual acuity was No light perception in 4 cases and light perception in one case. Post-operatively, paralytic ptosis and limited eye movements were reported in 4 cases while neurtrophic keratitis in one case. In Group B, the age of the patients was ranged from 8-17 with an average of 10 years. Four were females and 2 were males. The pre-operative visual acuity was No light perception in 4 cases, light perception in one case and hand motion in one case. Post-operatively, no one case developed paralytic ptosis, limitation of eye movements or keratitis. In both groups no phithis or tumor recurrence was reported in the follow-up period.
Conclusions: Reduction of the size of an intraorbital optic nerve giolma by evacuation and suction of the content before resection is highly recommended. This makes the surgical field during resection more visible which minimizes the possibility of damage to other motor or sensory nerves.

RF03-12-OPL

Correlation between clinical diagnosis and histopathological diagnosis for ocular adnexal and periocular lesions

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Purpose: To correlate the accuracy between clinical and histopathological diagnosis of these lesions.
Methods: The clinical notes were reviewed to determine the clinical diagnosis made prior to surgery and this was compared with the histological report post-operatively. A number of notes were reviewed retrospectively and the study is currently going on prospectively, to be completed within next few weeks.
Results: Whereas in majority of lesions, there was a close correlation between clinical and histological diagnosis, some atypical and recurred lesions showed histological results different to the clinical diagnosis. The data is still being collected on an on going prospective basis, so the exact figures will be provided later.
Conclusions: It is important to be aware of characteristic morphological features of these lesions in order to make a correct clinical diagnosis, but a histological confirmation should always be sought as sometimes the clinical diagnosis may not be entirely accurate and this may have a bearing on long term management and quality of life for the patients.

RF03-13-OPL

Efficacy of Mini Monoka stents for the treatment of severe punctual stenosis: a prospective case study

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Purpose: To establish the efficacy of Mini Monoka stents insertion for the treatment of severe punctual stenosis
Methods: It was a prospective study in which the patients were carefully selected on the basis of inclusion and exclusion criteria previously decided. These patients with severe punctal stenosis underwent insertion of Mini Monoka stents under topical or local anaetheisa and there symptoms related to epiphoria were evaluated post-operatively.
Results: A total of 30 patients (12 males, 18 females) ranging from 17 to 73 years of age had 52 Mini Monoka insertions in all, some of them being bilateral. Post-operative symptoms reviewed at 3 weeks, 3 months and then 6 months post-operatively. Symptomatic improvement was noticed in 49 eyes and was maintained even after removal of stents in 36 of these eyes. 13 eyes needed reinsertion of stents with improvement in symptoms regained. A simultaneous study was also done on patients understanding of the procedure, comfort during and after the procedure.
Conclusions: Insertion of Mini Monoka stents in carefully selected cases of severe punctual stenosis is a quick, effective, non-invasive, reversible and well tolerated procedure.

RAPID FIRE PRESENTATIONS
RF04: Cataract, Oncology & Pathology, Refractive Surgery, Uveitis

RF04-01-CAT

Auckland cataract study III: practical implementation of cataract risk stratification to reduce intraoperative complications

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Purpose: To assess intraoperative complications of phacoemulsification surgery in public teaching hospital settings in New Zealand using a modified preoperative risk stratification system.
Methods: Preoperative risk stratification of 1000 phacoemulsification cataract procedures using the New Zealand Cataract Risk Stratification (NZCRS) scoring system. Recommended allocation of higher-risk phacoemulsification procedures to experienced surgeons in public teaching hospital setting. The NZCRS was implemented by a single investigator (500 cases) with high-risk cases allocated to senior surgeons (Phase 1).
Following this, the day-to-day practicability of the NZCRS was assessed, wherein surgeons were advised to use NZCRS without intervention from investigators (Phase 2: 500 cases). Main outcome measures; intraoperative complications relative to adherence to stratification recommendations, day-to-day practicability of NZCRS.
Results: In phase 1, the NZCRS classified 192 cases (38%) high-risk, recommended for Fellows or Consultants. Overall rate (N=500) of any intraoperative complication was 5.0%. In 'non-adherence' cases where registrars operated on high-risk cases, the complication rate nearly doubled (n=52, 9.6%). Implementation of the NZCRS was associated with overall reduction in intraoperative complications by 40% from baseline (8.4% to 5%). Preliminary data from NZCRS phase 2 suggests favourable outcomes with a maintained reduction of intraoperative complications, and adherence to the NZCRS surgeon recommendations in 495 cases (Non-compliance 1% i.e. registrars operating on high-risk cases).
Conclusions: The NZCRS system aids identification of high risk cataract cases, provides objective guidance for appropriate case-to-surgeon allocation, and may increase surgeon awareness of risk factors. Cataract risk stratification in day-to-day practice appears to significantly reduce intraoperative complications in a public teaching hospital setting.

RF04-02-CAT

Anterior segment optical coherence tomography imaging in late capsular bag distension syndrome

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Purpose: Late capsular bag distension syndrome (CBDS) is a rare complication of the cataract surgery. Anterior segment optical coherence tomography (AS-OCT) was used to establish the correct diagnosis.
Methods: A two-year retrospective review of 9 cases was undertaken. Patients showed signs of late CBDS in the period of 4-9 years after uncomplicated phacoemulsification with intraocular lens implantation into the capsular bag.
Results: All 9 patients presented with a turbid fluid collection within the distended capsular bag without raised intraocular pressure or a shallow anterior chamber. AS-OCT was used to confirm the diagnosis, and a hyper-reflective material was seen in the space between the posterior chamber intraocular lens and the distended posterior capsule. Aspiration of the milky fluid with 26 gauge needle followed by capsular bag lavage was performed. Aspirated fluid was examined.
Conclusions: Our study showed that AS-OCT is quick and useful method of imaging the anterior segment to differentiate this condition clearly from posterior chamber intraocular lens opacification and posterior capsule opacification. Awareness of the manifestations of CBDS and choice of the correct imaging modality may lead to regular diagnosis, successful treatment and avoidance of the unacceptable results related to mismanagement. Management with aspiration of the milky fluid and lavage of the capsular bag is technically safe and effective procedure. It has the advantage of microbial and pathological testing of the fluid.
Due to possibility of an infectious component in the aetiology of the syndrome, choosing Nd-YAG laser posterior capsulotomy in the management of late CBDS bears risk of spread of potential infection to the vitreous and cause endophthalmitis.
CBDS is referred to as the rare complication, but our study showed that it is more common than it is reported and an increased awareness will reveal additional cases.

RF04-03-CAT

Injector episiotomy - a retrograde cartridge relaxation technique

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Purpose: To elaborate the uncommon but not rare cataract procedure complication of IOL haptic entrapment within the injector and a newer technique to successfully salvage the IOL without damages.
Methods: A new surgical technique demonstration of salvaging IOL when the IOL haptic was stuck within the injector-cartridge complex. IOL haptic entrapment within the injector happens accidentally if loading process was faulty or as a surprise without any reasons. Most often it is the trailing haptic that gets entangled within the cartridge and can result in fracture of the concerned haptic which depresses the surgeon and demands alternatives like IOL explanation and implantation of a newer IOL, or a reverse optic capture fixation in the bag. The stress on the surgeon may force him to pull the haptic off the stuck zone which may again lead to fracture of haptic and damages the cornea.
Results: A newer technique of retrograde cartridge-injector relaxations with scissors (injector episiotomies) would be demonstrated that releases the IOL haptic without any damage to IOL or the cornea in a video based learning course.
Conclusions: Retrograde cartridge-injector relaxations (injector episiotomies) is one of the most effective rescue measure in complicated situations of trailing IOL haptic entrapment to the injectors.

RF04-04-CAT

Evaluation of possible risk factors for late intraocular lens dislocation after cataract surgery

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Purpose: Although cataract surgery is the most common eye surgery practised in ophthalmology department with predictable outcome, there is still a possibility of rare complications, for instance, IOL dislocation. The development of cataract surgery technique and the evolution of implanted IOL have reduced the incidence of spontaneous IOL dislocation. Still the frequency of late dislocated IOL ranges from 0,2 - 1,8 % of all surgically treated cataract patients. Therefore, it is necessary to determine possible risk factors for late IOL dislocation.
The aim of the study was to evaluate the possible risk factors for late IOL dislocation and detect the mean time between routine cataract surgery and late IOL dislocation.
Methods: Retrospective case study included 40 eyes of 39 patients (mean age: 74,95 ± 9,11 years; range: 31 - 88 years), who underwent routine cataract surgery and had a late IOL dislocation. Data were collected at the retrospective analysis of medical records of the patients who underwent pars plana vitrectomy surgery for removal of dislocated IOL in Pauls Stradins Clinical University Hospital between 2017 and 2018. As a late IOL dislocation was classified IOL dislocation that had occurred at least 3 months after cataract surgery.
Results: The mean time between routine cataract surgery and spontaneous late IOL dislocation was 115,05 ± 74,02 (SD) months. History of ocular trauma was detected in 9 cases (22,5%) and it was considered as the main predisposing factor. Other main risk factors associated with the spontaneous late IOL dislocation were uveitis in 7 cases (17,5%); myopia in 5 cases (12,5%) and prior vitreoretinal surgery in 5 cases (12,5%).
Conclusions: 1. IOL dislocation occurred on average 9,6 years after routine cataract surgery with phacoemulsification. 2. History of ocular trauma was the most common risk factor for IOL dislocation. 3. Prior uveitis, myopia and prior vitreoretinal surgery increased the risk of IOL dislocation.

RF04-05-CAT

Planning phacoemulsification cataract surgery in compromised cornea with uncontrolled diabetes

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Purpose: To plan cataract surgery in patients with uncontrolled diabetes who are more prone to endothelial cell loss and macular edema
Methods: 42 patients with cataract of grade 3 and uncontrolled diabetes from March to December 2018 were included in the study. Patients with cataract above grade 3, prior history of uveitis, vein occlusion, on topical prostaglandins were excluded from the study. Patient underwent specular microscopy and optical coherence tomography (OCT) of macula pre operatively. Patients with decreased endothelial cell count and cystoid macular edema were noted. Repeat specular microscopy and OCT of macula was performed on post op day 1, day 7 and day 21. Same surgeon operated all patients. Endothelium protection was ensured by using sodium hyaluronate and chondroitin sulphate in all patients whose blood sugar levels were 200mg/dl and below at time of surgery.
Results: Of the 42 patients from March to December 2018 with uncontrolled diabetes 11 had decreased endothelial cell coubnt and 8 had macular edema.
Conclusions: Extra care needs to be taken in planning cataract surgery in patients with uncontrolled diabetes.

RF04-06-CAT

OLPrimary in the bag I implantation in persistent fetal vasculatur (PFV) syndrom congenital cataracts

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Purpose: To analyze clinical feathers & work out the technique of primary IOP implantation in cataract surgery complicated by PFV.
Methods: Surgery technique: limbal tunnel incision with lateral paracentesis; persistent pupillary membrane destruction, anterior capsulorhexis, phacoaspiration residual cortical mass, circular endodiathermy retrolental membrane vessels; cartridge in-the-bag IOL implantation; semicircular temporal retrolental membrane incision on previously coagulated line; a. hyaloids visualization, endodiathermy & cutting; final retrolentale membrane resection & removal; dry vitrectomy, IOL centration, viscoelastic removal, incisions suturing.31 children 6 mo/o - 9 y/o with PFV monocular congenital cataracts were under supervision.
Results: Eye condition - 10 eyes moderate microphthalmus, 7 eyes - microcornea, 7 eyes - persistent pupillary membrane. Lens condition - from membrane to semiresolved with slight sublucxation nasally & growth together with extended cilliary processes. The eyes fundus without red reflex in all cases. Leicocoria, squint, high ambliopia. Ultrasound scanning revealed a. hyaloidea in the vitreous body attached to the lens posterior pole & optic disc, local retinal detachment - in 2 eyes, secondary hypertension - 2 cases. Visual acuity (VA) - light perception - 0.01.Operation & p/op as usual. Cataract removal was performed in all children, among them primary in the bag implantation realized on 19 eyes (61.3%) - in cases with a remainder capsular bag volume was saved. VA on pseudophakic eyes raised to 0.08-0.12.
Conclusions: Modern surgery technique allows to prevent difficult complications during congenital cataract surgery in PFV syndrome; in the bag IOL implantation was possible in 61.3% of cases. Obtained low visual results determined by initial pathology heaviness.

RF04-07-ONC

Brachytherapy for uveal melanomas: outcomes in hospital of Lithuanian University of health sciences ophthalmology department

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Purpose: To evaluate the results of brachytherapy in the management of uveal melanoma.
Methods: In this retrospective study, patients treated with Ruthenium-106 plaque brachytherapy for uveal melanoma from 2008 to 2016 were analyzed. Following data was collected: demographic (age, gender, symptoms and their duration), ophthalmic (best corrected visual acuity, intraocular pressure before

and after brachytherapy every 3-6 months), tumor (shape, location, concomitant signs, ultrasound measurement of apical height and diameter before and after brachytherapy every 3-6 months), radiation (type of plaque, radiation dose to tumor apex and sclera, radiation dose rate to tumor apex, duration of implantation), outcomes (complications, tumor recurrence, enucleation, systemic dissemination).
Results: 37 patients with median age of 65 years at diagnosis were enrolled. Median follow-up was 20.4 months. Decreased visual acuity (63.9%) and visual field defect (19.4%) were the main symptoms. The duration of symptoms in 67% of patients was less than 3 months. The median uveal melanoma thickness and diameter before brachytherapy was 5.78 mm (range 2.48-9.5) and 13.15 mm (range 5.52-18.55). The median radiation dose to tumor apex and to sclera were 100 Gy (range 17,90-100) and 774 Gy (range 75-1020). Mean tumor height and diameter reduction 20-24 months after brachytherapy was 2.71 mm and 3.4 mm. Tumor recurrence was evident in 5 (13.5%) patients. 7 (18.9%) patients developed metastases. Radiation retinopathy was the main complication in 37.8% of patients. Local tumor control and eye preservation was achieved in 86% of cases.
Conclusions: Ruthenium-106 plaque brachytherapy is an effective treatment for middle sized uveal melanoma. However this type of treatment should be carefully evaluated in cases with a tumor height more than 7 mm.

RF04-08-ONC

Ciliary body melanoma with metastases to an extra-ocular muscle of the contralateral orbit

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Purpose: To report a rare case of a contralateral orbital metastasis of a ciliary body melanoma 3 years after enucleation.
Methods: Observational case report and survey of past literature.
Results: A 55-year-old man presented to the emergency department with decreased visual acuity (VA) of the left eye. On examination, visual acuity was 20/25 in his right eye and CF in his left eye. Anterior segment exam demonstrated an irregular pupil, conjunctival hyperemia with dilated inferior conjunctival vessels. Fundus exam demonstrated a large inferonasal orange mass. A UBM and B-scan confirmed a ciliary body mass with a base diameter of 17.5mm and height of 9.14mm. A diagnosis of a ciliary body melanoma was made, and an enucleation was performed. The diagnosis of a left uveal melanoma arising from the ciliary body was confirmed by pathology. Oncologic work-up showed no evidence of systemic disease. Postoperatively the patient remained stable until 3years later, when he again presented to the emergency department with a headache. A CT head-imaging revealed an enhancing mass within the right medial rectus muscle measuring 19x13mm. He underwent an orbitotomy and open biopsy which confirmed metastatic melanoma. Further systemic workup showed metastasis to the lungs, liver, adrenals and lymph nodes. The right medial rectus mass was treated with radiation and later by debulking surgery to relieve pressure on the orbital apex. Chemotherapy was then instituted and later Pembrolizumab was added because of progression. Unfortunately, the patient passed away from his metastatic disease two years later.
Conclusions: This case describes an interesting and rare disease, and also highlights possible occurrence of a contralateral orbital metastases years after treatment of the primary tumor. Literature review showed that choroidal melanoma metastasizing to the contralateral orbit is exceedingly rare and even more exceptional from a ciliary body origin.

RF04-09-ONC

Safety and efficacy of fractionated stereotactic radiation therapy for optic nerve sheath meningioma

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Purpose: To report random diagnosis of optic nerve sheath meningioma and to assess case evolution over 18 months after treatment.
Methods: A 53 year-old male, professional driver, complaining of not seeing the car dashboard while driving, with a prescription for distance spectacles, requires progressive lenses. Right eye (RE) distance visual acuity (VA) was 0 Log MAR whereas left eye (LE) corrected VA was 0.4 Log MAR. During near visual testing of the LE, the medical team noticed the patient's tendency to laterally move the eye chart, thus performing a visual field test. Slit-lamp examination of anterior and posterior segment was normal. OCT examination of optic disc and macula showed retinal nerve fibre layer and ganglion cell complex within normal limits.
Results: LE Humphrey visual field 120 degrees test revealed central and paracentral scotomas. MRI exam detected a nodular, well defined, homogeneous 1 cm mass, located at the left orbital apex, compressing the optic nerve, suggestive for optic nerve sheath meningioma. The patient was then referred to a specialised clinic where stereotactic radiotherapy treatment (SRT) was delivered with 3 daily fractions of 6.5 Gy, with a favourable response. Antero-posterior tumour diameter increased by 2 mm at 3 months post-treatment as a consequence of necrosis, but then progressively diminished in size. LE corrected VA increased to 0.3 Log MAR and the visual field had slight improvements over the 18 months of follow-up.
Conclusions: The particularity of the case is due to the accidental discovery of the tumour, following a request for an eyeglass prescription. Also, the therapeutic decision to perform SRT at a VA of 0.4 Log MAR is controversial and the presented case provides additional arguments to those in literature on the safety limits of this treatment for the preservation of optic nerve function and implicitly VA and visual field.

RF04-10-REF

Refractive surgery for treating ambliopia from anisometropia

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Introduction: Anisometropia is the difference in refraction between two eyes, generally more than 3 diopters. When undiscovered and untreated with the right correction, it can leads to several grades of amblyopia. Normally the cerebral cortex, trying to avoid confusion between two unequally images arriving from two eyes, will suppress the distorted image which comes from the most ametropic eye leading to amblyopia. If diagnosed before 3- 4 years the standard and effective treatment is the occlusion of the healthy eye. But still today, it is not rare, in our country, to discover the amblyopia in later age (18 or more) after the amblyopia is installed.

The treatment option is based on maximizing the remaining visual acuity using glasses or contact lens. Another option is refractive surgery: corneal (LASIK, LASEK, PRK)
Methods: Full ophthalmologic examination is require to decide the best surgical treatment, including: UCVA and BCVA (before and after cyclopegia), careful slit lamp examination to exclude any accompanying pathologies (if presented), 3D corneal topography to measure corneal thickness and anterior chamber depth, A/B ultrasound to measure axial length and OCT.
Results: Patients between 18 to 45 years old, presenting anisometropia from myopia +/-astigmatisms and amblyopia, with appropriate parametres for corneal surgery were treated with PRK. BCVA and comfort after surgery was better than glass correction.
Conclusions: Discovering the amblyopia in adult age is always a trauma for the patient. First treatment is always oriented to full optic correction.The difference >3 D between the two eyes, is not well tolerated with glasses correction, leading to visual discomfort and headache. Also contact lens are not always tolerated from the non-collaborative patients. In this case refractive surgery,can be an appropriare choice. Making the correction on the surface of the eye,offers a better binocular comfort BCVA(vertex effect).

RF04-11-REF

Surgical induced astigmatism in cataract surgery - resident trainees versus staff surgeons

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Purpose: The aim of this study is to evaluate the induced astigmatism during cataract surgery, and to analyze whether it varies according to the surgical experience of the surgeon.
Methods: Randomized study with 46 patients undergoing uncomplicated phacoemulsification. Exclusion criteria were need for corneal suture, corneal pathology or other that decreased visual acuity. The main incision was made by a 2.2mm scalpel, located at 11-o'clock, between 110-120º. The accessory incision was performed using a calibrated 20G scalpel at 1 hour. No astigmatic corrections were made. Surgeries were performed by 4 groups (implant-refractive surgeon, staff-surgeon with 2-years of experience, senior resident, and resident in early training). Autokeratometry was made, evaluating the corneal preoperative and surgically induced astigmatism. The best corrected visual acuity (BCVA) was determined with the use of Snellen tables.
Results: 21.7% of surgeries were performed by implant-refractive surgeon, 23.9% by staff-surgeon, 28.3% by senior resident and 26.1% by beginning resident. Surgically induced astigmatism was -0.01±0.42D by the implant-refractive surgeon, -0.12±0.52D by the staff-surgeon, +0.25±0.40D by the senior resident and +0.03±0.33D by the beginning resident, without significant differences between groups (p=0.191). BCVA after surgery was 0.93±0.09. Postoperative BCVA did not relate to the differentiation of the surgeon (p=0.752).
Conclusions: All surgeons obtained good visual results, with no significant differences in surgically induced astigmatism. Although the implant-refractive and staff surgeons reduced corneal astigmatism, while resident surgeons induced a slight increase, this difference was not significant. In addition, induced astigmatism is not greater in the left eye (strain in surgical technique due to the proximity to the nose), or in patients with a low preoperative BCVA.

RF04-12-UVE

Rare case of lymphocytic vasculitis associated with ocular manifestation of Wegener's granulomatosis

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Purpose: Early detection and diagnose of the disease for establishing most effective therapeutic management of the lesions.
Introduction: The patient treated was a 54 years old female presenting with unilateral anterior uveal reaction, diffuse inflammation of the sclera, conjunctival chemosis, proptosis, elevated IOP and nasolacrimal duct congestion. At the beginning, the lesions were treated with local and systemic antibiotics, antiglaucoma drops, antiviral therapy and corticosteroids, but with no significant improvement.
When the histopathology result confirmed Lymphocytic vasculitis, Atypical conjunctival and scleral hyperplasia, the immunosuppressive drug Imuran was given Ex juvantibus, resulting with a big improvement of the medical condition.
Methods: Past medical records of the patient presenting with the illness were reviewed and a wide spectrum of analysis were done (CBC, SE, RF, HLA typing test, Antinuclear Antibodies, HSV, VZV, EBV, orbit MRI, CT of the head and paranasal sinuses, Chest X-ray, ultrasound of eye and abdomen).
Conjunctival and scleral biopsy was also performed and the samples given for histopathological analysis were stained with HE, PAS, Giemsa and immunohistochemical staining for CD68, CD20, CD3, iqD, Ki67, bcl2, kappa, lambda, PAS, CD56, CD57. In between, specific local, systemic and oral therapy was assigned.
Conclusions: The diagnosis of this disease is a multidisciplinary problem and its resolution requires for medical consultation with Rheumatology, Hematology and Pathology specialists. Finally, besides the sophisticated methods of examining, a large part of this disease remains unclearly diagnosed and yet, the treatment has to start on time.

RF04-13-UVE

Diffuse chorioretinitis - a diagnostic and therapeuthic chalenge

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Purpose: Diffuse chorioretinitis is vision threatening disease of diverse etiology. We present a challenging case of bilateral diffuse chorioretinitis.
Methods: Patient underwent examination including medical history, visual acuity assessment, applanation tonometry, slit lamp examination, indirect ophthalmoscopy, OCT and fluorescein angiography (FA). Serology for HSV, VZV, CMV, HIV, T.gondii, B.burgdorferi, T.pallidum were taken. Additional consultations included pulmology, immunology and infectology specialists.
Results: In January 2017, a 48 year old lady who was a lab techician was admitted with complaints of bilateral, painless vision loss that progressed for 2.5 years. Visual acuity of right eye (RE) was 0.4 and left (LE) 0.5. Intraocular pressure of both eyes was 16 mmHg. Anterior segment had normal findings. On both fundi, diffuse pigmented chorioretinal scars with new infiltrates in posterior pole were seen. FA showed wide hypofluorescent zones of choreio-

retinal atrophy and new lesions with hyperfluorescent borders. OCT revealed retinal atrophy. In laboratory findings leukocytosis and elevated ESR were seen. Immunology and serology were unremarkable. Chest radiography had normal findings. PPD probe was positive (induration of 20 mm). Chest CT showed changes in apex of both lungs, and positive Quantiferon gold test, with negative sputum and urine findings for BK. Pulmologist diagnosed old specific TB lung disease with active eye disease. Antituberculous treatment was initiated with four drugs for three months, which was slowly tapered and lasted for ten months. After treatment remission was achieved. Patient was monitored for 15 more months. Final visual acuity was RE 0.5 and LE 0.6, due chorioretinal scars in posterior pole.

Conclusions: Patients with diffuse chorioretinitis remain diagnostic and therapeutic challenge. Ocular TB in non endemic areas of the world is rare and if untreated disease has progressive course especially in immune suppressed patients.

RF04-14-UVE

Retrospective case series - cardiac involvement in patients diagnosed with ocular sarcoid

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Purpose: Sarcoidosis is a multi-system disorder typified by aberrant development of non-caseating granulomata within affected organs. Lung disease is the most common manifestation. However, other organs such as the eyes and heart may also be affected. Heart disease is the greatest cause of mortality in Sarcoidosis, as atrioventricular block can cause sudden death. We aim to explore

1) Whether cardiac symptoms are considered on initial history taking.
2) Whether an electrocardiogram is carried out on work-up.
3) Whether there is a positive correlation with later development of cardiac sarcoidosis.

Methods: This retrospective case series reviews the records of 17 patients referred to Uveitis clinic in 2012-2017, worked-up in clinic and subsequently diagnosed with ocular sarcoidosis. The initial diagnoses, examination findings, baseline investigations and category of certainty were recorded. Documentating exploration of cardiac symptoms (palpitations, chest pain, baseline ECG and subsequent referral to cardiology were recorded.

Results: 17 patients were diagnosed with definite (biopsy-confirmed) or presumed (presence of bihilar lymphadenopathy and uveitis but no biopsy). All patients underwent a Chest CT. Questioning of cardiac symptoms on systems review took place for 10 of 17 patients (58.8%). One patient (5.8%) had an electrocardiogram as a baseline investigation due to palpitations on clinic assessment. Four of 17 patients (23.5%) were later diagnosed with cardiac sarcoidosis. One patient (5.8%) required an automated implantable cardioverter defibrillator for ventricular tachycardia.

Conclusions: Almost a quarter of patients diagnosed with ocular sarcoid later developed cardiac complications. As these are the greatest cause of mortality, medical ophthalmologists may have a vital role in screening. Arranging a baseline electrocardiogram can be a potentially life-saving baseline investigation prior to referral to chest or cardiac medicine.

RAPID FIRE PRESENTATIONS
RF05: Contact Lenses, External Eye, Neuro-ophthalmology, Paediatric Ophthalmology & Strabismus

RF05-01-COL

The efficacy of samfilcon A and lotrafilcon B silicone hydrogel bandage contact lenses after photorefractive keratectomy

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Purpose: To compare the efficacy of Samfilcon A and Lotrafilcon B bandage contact lenses after photorefractive keratectomy (PRK)

Methods: In this study, patients with bilateral PRK were assigned for the fitting of lotrafilcon B lens and Samfilcon A lens. The patients were examined on the day of surgery, and on postoperative days 1, 2 and 3. Slit biomicroscopy was performed to assess epithelial defect size in the postoperative examinations. The subjective evaluation of pain and visual symptoms was recorded on postoperative days 1, 2, and 3.

Results: Analysis was made of 68 eyes of 34 patients who fulfilled the criteria and had PRK for correction of low to moderate myopia/astigmatism. On postoperative days 1 and 2, pain and epiphora scores were significantly lower in eyes with Samfilcon A lens ($p< 0.001$ for all), and on postoperative day 3, the differences were not significant ($p=0.414$ and $p=0.180$ respectively).

There was no significant difference between the two lenses in respect of the levels of photophobia. The difference in epithelial defect size was statistically lower in eyes with Samfilcon A lens compared to Lotrafilcon B on day 1 (16.89 mm2 versus 21.07 mm2 ; $p=0.003$) and day 2 (1.49 mm2 versus 2.46 mm2 ; $p<0.001$). The difference was not significant on day 3. (0.05 mm2 versus 0.05 mm2 ; $p=1.000$).

Conclusions: The Samfilcon A lens is superior to the Lotrafilcon B lens in reducing postoperative pain and accelerating re-epithelialization.

RF05-02-EXT

Case report of live fleshfly larvae in the caruncle of the eye seen in the UK

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Purpose: To bring awareness of the possibility of larvae developing on the ocular surface even in developed countries when exposed to vegetative matter.

Methods and results: 68 year old male presented to our eye casualty at Kettering General hospital, Uk with a history of throbbing pain and redness in the corner of the left eye for a week. He is a tree surgeon by occupation and gave a history of extensive tree cutting in the warm countryside of spain recently and says he had dust and vegetative matter go into his eyes a few times.

On examination of his eye, there was conjunctival congestion and three larvae were found to be wriggling from his caruncle of the left eye. The larvae were removed with the forceps and sent to lab at tropical diseases, London for analysis. Rest of the eye examination including dilated fundus was normal.

Photos and videos of the procedure was obtained after consent. Lab report showed 2 live fly larvae of fleshfly genus Sacrophaga.

Conclusions: It appears that the flesh fly eggs were laid in the caruncle and they developed into larvae in-situ. This report shows larvae infestation of the eye in a healthy individual in a developed country and calls for clinicians to be aware of the possibility.

RF05-03-NEO

Optic nerve head drusen: the relationship between intraocular pressure and optic nerve structural and functional damage

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Purpose: To determine if at the time of diagnosis, the intraocular pressure (IOP) in patients with optic nerve head drusen (ONHD) correlates with the perimetric mean deviation (PMD) and the mean retinal nerve fiber layer (RNFL) thickness.
Methods: This retrospective study included patients older than 12 years with definitive diagnosis of ONHD. Exclusion criteria were unreliable Visual Field (VF), use of IOP-lowering therapy, and visually significant ocular comorbidities, incapacity to do VF or OCT (absence of collaboration). Data as IOP, method of diagnosis of ONHD, mean RNFL thickness on optical coherence tomography (OCT), and PMD were collected on the first Neuroophthalmological examination.
Results: 44 eyes met inclusion criteria. Mean best corrected visual acuity was 0,9 (0.6-1.0); Mean IOP was 15.6 mm Hg (range: 10-23 mm Hg). Mean RNFL thickness was 90,5 µm (range: 49-129 µm). Average PMD was −4.20 dB (range: −23,6 to +1.31 dB). 61,4% had VF defects, which 85,2% corresponded to nasal defects (nasal step).There was a statistically significant association between IOP and PMD (P=0,014) and between IOP and RNFL thickness (P=0,049).
Conclusions: Some authors suggest that lowering IOP can be useful to slow optic neuropathy progression. In our study, we observed that in normotensive eyes, in the first evaluation, an increased IOP is associated with a greater functional loss in the VF and with a reduction in the RNFL thickness. This allows us to conclude that, in normotensive eyes with ONHD, IOP reduction may be beneficial in decreasing the progression of optic neuropathy.

RF05-04-NEO

Neuromyelitis optica spectrum disorder: a paraneoplastic syndrome?

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Purpose: To present a neuromyelitis optic spectrum disorder (NMOSD) case and review the recently described entity of paraneoplastic NMOSD
Methods: We report the case of a 64 year old Chinese female with two episodes of severe optic neuritis and positive serum anti-aquaporin 4 antibodies, occurring in a clinical context of breast cancer. Her case was reviewed as a possible paraneoplastic NMOSD and compared to the current data in the literature.
Results: The patient was diagnosed with optic neuritis prior to her breast cancer. Resection of the breast tumour was followed by spontaneous visual improvement, in absence of specific treatment (steroids or plasma exchange). Paraneoplastic NMOSD is an emerging entity, being so far described in 41 patients. Its age of presentation is typically more advanced (average 55 years old) than in classical NMOSD, in patients who present more often with longitudinally extensive transverse myelitis (46%) than with optic neuritis (20%), the latter being often bilateral. The review of the literature suggests that in paraneoplastic NMOSD, underlying malignancy is diagnosed prior to NMOSD in a third of cases, and after in 25%, within variable time windows, up to 6 years. The most common malignancies are lung cancer (26.7%) and breast cancer (15.6%). Majority (78.0%) of cases are seropositive for anti-aquaporin 4 antibodies, and the expression of aquaporin-4 was demonstrated on the tumours in some reports.
Conclusions: NMOSD may occur as a paraneoplastic disorder, but there are currently no firm diagnostic criteria or screening recommendations for underlying malignancy. Older age at NMOSD presentation seems to be more frequently associated with underlying cancer. Further studies are needed to establish firm causality between NMOSD and malignancy.

RF05-05-NEO

To establish the relationship between structural and functional parameters in idiopathic intracranial hypertension (IIH)

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Purpose: To quantify the relationship between optic nerve head tomography with visual acuity, perimetric sensitivity, amplitude and latency in visual evoked response (VER) and within 2 degrees radius of the multifocal electroretinography (mfERG) field in acute and established cases of papilledema in IIH at their presentation and at 6 months follow up.
Methods: 15 patients (28 eyes) with recently diagnosed papilledema in IIH were evaluated using logMAR chart, SD - OCT (Spectral Domain optical Coherence Tomography), standard automated perimetry (Humphrey visual field 30-2 sita standard) and mfERG field using Metrovision patented technology.
Results: At presentation, visual acuity did not show any correlation with any of the structural parameters. A negative correlation between disc height and mean deviation at baseline (r= - 0.37) and RNFL and mean deviation (r = -0.36) with $p < 0.05$ were noted indicating worsening of visual field with increase in disc height and RNFL thickness. A positive statistically significant correlation was noted between latency of VER and disc height (r= +0.39;) and between disc height and RNFL (r = + 0.55) .At 6 months follow up, visual acuity had a positive correlation with disc height (r=+0.38;p< 0.05) reflecting the poorer visual outcome in patients with persisting disc swelling. A strong positive correlation between disc height and RNFL (r= +0.57.p=0.002) and between amplitude of mfERG values and disc height (r=-0.61;p= 0.003) indicated the compromised inner retinal function with persisting disc swelling. Statistically significant difference between baseline and 6 month follow up values were noted in all parameters (p< 0.001).
Conclusions: Structural parameters did not correlate with presenting visual acuity.Therefore, visual acuity is not the best indicator to judge the extent of damage to optic nerve in IIH. Tomographic parameters along with mfERG are better indicators to assess the damage to optic nerve head in IIH.

RF05-06-PED

Optical coherence tomography and autofluorescence in children with infantile nystagmus syndrome and early-onset retinal dystrophy

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Purpose: to compare morphological retinal differences in children with infantile nystagmus syndrome (INS) and early-onset retinal dystrophies (EORD) with healthy controls in order to evaluate the diagnostic value of optical coherence tomography (OCT) and autofluorescence (AF) in these children.
Methods: In 26 children (mean age, 10.0 years) with INS and EORD OCT and AF imaging were prospectively performed and compared with 36 controls (mean age, 7.2 years). 6 children had Leber congenital amaurosis (LCA), 5 congenital stationary night blindness (CSNB; 3 complete, 2 incomplete), 6 achromatopsia, 1 S-cone monochromatism, 7 cone-rod and 1 rod-cone dystrophy.
Results: OCT imaging was completed in 17/26 (mean age, 9.7 years) and AF in 15/26 (mean age, 11.1 years) children with EORD. OCT imaging was completed in 29/36 (mean age, 8.9 years) and AF in 15/19 (mean age, 8.7 years) control children.
In children with LCA photoreceptor layer abnormalities were indicated in the peripheral retina, but macular images could not be obtained. In 5/5 children with CSNB retinal thinning was found in all regions, except fovea. In 2/6 children with achromatopsia, ellipsoid zone disruption with macular thinning was seen. In 1/1 child with S-cone monochromatism macular thinning was indicated. In 5/5 children with cone-rod dystrophy outer retinal signal intensity was decreased.
In 2/3 children with complete CSNB, slight foveal hypoautofluorescence was indicated. 1/4 children with achromatopsia showed a central hyperautofluorescent ring. In 1/1 child with S-cone monochromatism foveal hypoautofluorescence was indicated. 2/7 children with cone-rod dystrophy showed central hyperautofluorescent ring and, in 1/7 a macular hypoautofluorescence in one eye and an additional patch of hyperautofluorescence centrally in other eye were found.
Conclusions: The study demonstrated OCT and AF as a valuable, uninvasive and fast diagnostic tool also in children with nystagmus.

RF05-07-PED

OCT-angiography and fluorescence angiography in children with active retinopathy of prematurity

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Purpose: to reveal the informative value of OCT-angiography (OCT-A) and fluorescence angiography (FA) in children with active retinopathy of prematurity (ROP).
Methods: 14 patients (28 eyes) with different stages of ROP 31-38 weeks of post-conceptual age were studied.
Stage 3 of classic ROP in zone I was revealed in 3 patients, in zone II - in 1 patient, 4A stage in zone II - in 4 children.
Aggressive posterior ROP were diagnosed in 7 children, in 3 - at the stage of early clinical features, in 4 - at the stage of manifestation (A. Tereshchenko's classification, 2010).
Results: In children with 3 and 4A stages of active ROP in the zone II, OCT-A revealed no pathological changes in the capillary bed in the central zone of the retina. FA revealed pathological leakage in the extraretinal proliferation area, multiple collaterals and shunts in the area of extraretinal proliferation.
In patients with 3 stage of active ROP in zone I plots of epiretinal neovascularization was defined within the foveal region by OCT-A. FA revealed numerous small hyperfluorescent foci located on the entire vascularized retina surface and collaterals network in the avascular retina.
At the stage of early clinical features of AP-ROP, intraretinal neovascular complexes and multiple arterio-venous shunts were visualized in the superficial vascular plexus in all segments within the perifovea. FA showed angiographic signs of severe ischemia and proliferative activity: massive hyperfluorescence over the vascularized retina area, capillary nonperfusion.
At the stage of manifestation of AP-ROP a gross disturbance of the architectonics in the superficial and deep vascular plexuses was determined, dilated and tortuous vessels of the upper temporal vascular arcade were revealed, during which multiple intra- and epiretinal neovascular complexes were spread.
Conclusions: OCT-A and FA are valuable methods in infants with active ROP. Identified pathological changes require further clinical research.

RF05-08-PED

Modern imaging techniques in the diagnosis and results of treatment of vitreoretinal complications of retinopathy of prematurity

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Purpose: to analyze frequency, clinical manifestations, informative methods of diagnosis, and results of treatment of late vitreoretinal complications in patients with favorable outcomes of retinopathy of prematurity (ROP).
Methods: The examination involved 517 patients (999 eyes) with 1-3 stages of ROP, aged 6 months - 16 years. Except standard ophthalmological methods, we used RetCam, SD-OCT, fluorescent angiography, registration of full-field ERG, and oscillatory potentials (OP).
Results: Development of late vitreoretinal complications in eyes with the favorable outcomes of ROP was revealed in 18,5% (185/999 eyes) of patients aged 2-16 years (average 11,5 years): peripheral retinal dystrophy were detected in 66,5% of patients with complications, retinal detachment - in 33,5%. The most frequency of complications was in eyes with 3 stage of ROP (29,8%). The use of SD-OCT, fluorescent angiography has made it possible to reveal retinal changes, that are invisible in ophthalmoscopy. The elongation of the latency of the b-wave of full-fields ERG and the index of the OP were found in 68% cases with the peripheral retinal dystrophies.The laser treatment in eyes with the peripheral retinal dystrophies was effective in 98,4%, The good anatomical and functional results of surgical intervention at the retinal detachment were achieved in 85%.
Conclusions: With the purpose of timely and effective detection, prediction, and treatment of late vitreoreninal complications of ROP, it is necessary to monitor patients with ROP dynamically using modern, highly informative methods of diagnosis and visualization.

RF05-09-PED

Management of acquired Brown syndrome associated with orbital trauma

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Purpose: Brown syndrome is an ocular motility disorder characterized by impaired elevation in the adduction of the affected eye. It is believed to be secondary to restriction of the superior oblique muscle in the trochlea/tendon complex that causes a tethering of the muscle when the eye is adducted. Acquired browns syndrome have been reported from a wide variety of causes, including autoimmune inflammatory conditions, infections, and orbital trauma.
Methods: Here we describe four cases of acquired Browns syndrome following orbital trauma and its management and resolution
Results: In the 1st cases the patient sustained depressed skull fracture of the frontal and nasal bones. Correction of the fracture with open reduction, and internal fixation of frontal and nasal bone fractures led to improvement in the Browns syndrome. The second and third cases followed orbital floor blow-out fracture and repair, and motility improved over 1-3 months. The 4th cases followed left orbital injury on falling on a wine glass leading to canalicular injury. The diplopia and improved over 4 months without surgical intervention
Conclusions: Acquired brown syndrome following orbital trauma has been described following superior oblique entrapment in fracture and superior oblique entrapment during medial wall repair
Here we describe the management of acquired Browns syndrome following orbital trauma. In our experience conservative management is sufficient in managing the diplopia. Reduction of fracture and avoiding entrapment is key, and in our experience surgery on extraocular muscle had not been needed in the management of acquired Browns syndrome following trauma

RF05-10-PED

Stereovision acuity in low-anisohypermetropic monofixation patients

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Purpose: To determine the acuity of stereovision in low-anisohypermetropic monofixation patients.
Methods: In this study, 52 patients with low-anisohypermetropia (+1.0D< spherical equivalent< +2.0D in cycloplegia) have beed retrospectivly analysed: cycloplegic refraction interocular difference (IRD-confirmed by ARK Shin-Nippon),central supression scotoma with peripheral fusion (Worth 4-dot, cover-test),best corrected visual acuity interocular difference (IAD on ETDRS test) and near stereovision acuity (SA- on stereo test-circles with polarised glasses).
Results: In this group of low-anisohypermetropic monofixation patients, central supression scotoma has been proved in 65% patiens. The average values of mentioned items have been determined as: IRD=1.44Dsph (sd=0.25,se=0.07), IAD=0.26 lines on logarithm of minimum angle of resolution (sd=0.13,se=0.03). Amblyopia has been found in all patiens, while the mean value of SA=135 arc sec(sd=60,se=23).
Conclusions: In monofixation low-anisohypermetropic patients,there is great risk of central supression scotoma formation with lesser stereovision acuity and more amblyopia.

RF05-13-PED

Efficiency of optical correction and occlusion therapy for management of high hyperopic anisometropic amblyopia in older children

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Purpose: To compare the visual outcomes and evaluate the effectiveness of maximum optical correction, and occlusion therapy (patching) in patients whose amblyopia was detected after the age of 8 years and treated only with glasses before this age.
Methods: The information about 32 isoametropic patients with amblyopia aged between 8-11 (Group I, n=20), and 13-15.5 (Group II, n=12) years were retrospectively evaluated. Improvement of visual acuity for two or more lines during therapy was considered as success. Treatment success has been compared between 2 age groups. The effect of depth of amblyopia, the cause of anisometropic amblyopia and the prior usage of glasses on treatment success were evaluated.
Results: Success rate was 100% in Group I, and 66,7% in Group II. The positivity rate in patients especially with severe amblyopia was better in Group I, in comparison with moderate amblyopia between all patients.
Although a statistically significant differences was detected between both of groups at the positive results of patients with the severe amblyopia (p = 0,021). The success rate for vision acuity in Group I (0,42±0,03 (0,3-0,6)) was significantly higher than in Group II (0,31±0,04 (0,09-0,5)) (p = 0,021).
It was established, that the success ratio was better in patients with hyperopia in comparison with patients with astigmatism in both groups. The success ratio was even better in patients, who did not previously wear glasses; no statistically significant difference was observed in both of groups (p=0,207).
Conclusions: Despite the fact that the maximum optical correction and occlusion in adolescent group is not as effective as the early corrective and occlusive therapy, the results can still be considered successful.
Successful optical correction and occlusion therapy regimen are effective in patients with anisometric amblyopia aged of 8 to 15.5 years who had no previous occlusion treatment.

TALKING POSTER PRESENTATIONS
TP01: Talking Poster Session 1: Cataract, Glaucoma, Refractive Surgery, Retina, Uveitis

TP01-01-CAT

Femtosecond laser -assisted cataract surgery in black cataract

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Purpose: To observe the effect of femtosecond laser -assisted cataract surgery in black cataract.
Methods: Collected black nuclear cataract patients, 14 cases (14 eyes aged 61-86 from October 2015 to October 2017 in Lixiang Eye hospital affiliated to suzhou university. Surface anesthesia Femtosecond laser -assisted and ultrasonic emulsification cataract surgery with Infiniti ultrasonic emulsification instrument, intraocular lens implantation folding. Results 14 eye finished do incision.14 eye laser to complete the full capsulorhexis. 14 cases of complete chopping nucleus.
Results: All patients had no complications such as posterior capsular rupture.
Conclusions: Laser-assisted cataract surgery is suitable and safe for patients with black cataract.

TP01-02-GLA

Lensectomy vs trabeculectomy for the treatment of angle-closure glaucoma

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Purpose: To evaluate clinical outcomes of lens extraction by phacoemulsification with intraocular lens (IOL) and trabeculectomy in primary angle-closure glaucoma (PACG) eyes.
Methods: In our prospective study we included 87 patients (105 eyes) with PACG with uncontrolled intraocular pressure (IOP). Phacoemulsification with intraocular lens (IOL) implantation was performed in 57 eyes (main group), trabeculectomy - in 48 eyes (control group). All patients were followed up for 5-6 years.
Results: During long-term follow-up good IOP control was occurred in all eyes. After phacoemulsification IOP decreased from the mean preoperative level of 32.2 mm Hg to 19.2 mm Hg ($p \leq 0.001$) at the final follow-up. In 52.6% eyes IOP control was controlled without medications. The number of medications decreased from 2.4 to 0.54 ($p \leq 0.001$).
In this group the mean visual acuity was 0.76 (I-II stages - 0.82, III stage - 0.4) in long-term follow-up and all patients had stable visual fields. OCT examination showed significant deepening of the anterior chamber from 1.91 to 3.18 mm ($p \leq 0.001$), increasing of the trabecular-iris angle from 17.2 to 36.9 degrees ($p \leq 0.001$) at average.
After trabeculectomy we recorded 2 serious complications, which were accompanied by flat anterior chamber, IOP increasing, decreasing of visual acuity, that needed subsequent surgical procedures.
During long-term follow-up swelling of the lens was in 2 eyes, progression of opacification of the lens - in 24, which required fulfilling 26 phacoemulsifications.
Conclusions: The data of our study revealed significant changes of the anterior segment in PACG eyes after phacoemulsification. It allows us to create the favorable conditions for aqueous humor outflow and achieve good IOP control in these eyes. After phacoemulsification perfect visual results were produced and visual functions remained stable.

TP01-04-UVE

Combination of corticosteroid therapy and mycophenolate mofetil for idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN) syndrome

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Purpose: The patient was managed successfully with visual acuity from hand motion to 20/200 in his left eye using a combination of systemic corticosteroids, mycophenolate mofetil, panretinal photocoagulation and scatter laser photocoagulation in the ischemic extrafoveal temporal areas not associated with vasculitis of the right eye.
Methods: The patient was managed successfully with visual acuity from hand motion to 20/200 in his left eye using a combination of systemic corticosteroids, mycophenolate mofetil , panretinal photocoagulation and scatter laser photocoagulation in the ischemic extrafoveal temporal areas not associated with vasculitis of the right eye.
Results: The clinical picture of both eyes was stabilized after the performance of laser photocoagulation and the initiation of systemic immunomodulatory therapy.
Conclusions: Photocoagulation is an effective therapy to control retinal macroaneurysms and nonperfusions and to prevent visual loss, particularly in the early stages of IRVAN syndrome while the employment of immunesuppressive therapy even why still remains controversial still may result helpful in the prodromic phase of IRVAN.

TALKING POSTER PRESENTATIONS
TP02: Talking Poster Session 2: Contact Lenses, Cornea, Ocular Surface, Paediatric Ophthalmology & Strabismus

TP02-01-COL

Use of silicone-hydrogel contact lenses as a treatment of the patients with keratoconus after cross-linking procedure

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Purpose: The purpose of actual study is to reveal the efficiency of the use of silicone-hydrogel contact lenses in treatment of the patients with keratoconus after cross-linking procedure. The issue is especially important because of the prevalence and aggressiveness of this disease particularly among young people. The disease itself could lead to a decrease in the quality of life and to the disability.

Methods: The data from 35 patients (62 eyes) who did wear the silicone-hydrogel contact lenses last 7 years after cross-linking of keratoconus of II-III stage were investigated. Comparisons of visual acuity and corneal topography data as well as comparison of the patient's estimates of the methods of glass and contact correction of vision were made.
Results: Contact lenses were providing maximum level of visual acuity and improved the life quality.
Conclusions: Thus, contact lenses are the most effective and preferred method of vision correction for the patients with keratoconus.

TP02-02-COR

Anti-microbial efficacy of various formaldehyde releasers (FARs) as a potential treatment for antibiotic-resistant infectious keratitis

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Purpose: Corneal post-infectious scars are one of the leading causes of blindness worldwide. The increasing prevalence of multidrug-resistant keratitis have been reported over the last few years leading to the lower and lower success rate in its effective treatment. Corneal cross-linking might be one of the potential alternative management for the antibiotics in infectious keratitis since both direct microbial pathogen-killing and matrix stabilization can occur simultaneously. The present study was undertaken in order to compare in vitro the anti-microbial efficacy of 5 candidate cross-linking solutions against 5 different pathogens with relevance to infectious keratitis.
Methods: In vitro bactericidal efficacy studies were carried of 5 different FARs [diazolidinyl urea (DAU), 1,3-bis(hydroxymethyl)-5,5-dimethylimidazolidine-2,4-dione (DMDM), sodium hydroxymethylglycinate (SMG), 2-(hydroxymethyl)-2-nitro-1,3-propanediol (NT= nitrotriol), 2-nitro-1-propanol (NP)] against 5 different microbial pathogens including two antibiotic-resistant species [methicillin-sensitive Staphylococcus aureus (MSSA), methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant Enterococcus (VRE), Pseudomonas aeruginosa (PA), and Candida albicans (CA)].
Results: The results show that DAU, DMDM and SMG were effective for MSSA and MRSA with greater effects observed with longer incubation times and higher concentration. For VRE, SMG and DAU were the most effective. All FARs showed bactericidal effect against Pseudomonas aeruginosa, making PA the most susceptible of the strains tested. Candida showed relative resistance to these compounds, requiring high concentrations-potentially toxic (100mM) to achieve kill rates greater than 50%.
Conclusions: Our results show that each FAR compound has different effects against different cultures. Our antimicrobial armamentarium could potentially be broadened by DAU, DMDM, SMG for multidrug-resistant bacterial keratitis.

TP02-04-OCS

Ocular complications in patients with Systemic Lupus Erythematosus

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Purpose: Aim of the study is to present the frequency and diversity of ocular surface diseases in patient with Systemic Lupus Erythematosus.
Methods: The study included 35 patients with Systemic Lupus Erythematosus referred to the Ophthalmic Outpatient of University Clinical Center in Katowice. The ophthalmological examination assessing anterior and posterior part of the eye with additional tests was performed. Based on the medical history and presented symptoms the most common ocular symptoms in SLE patients were analized.
Every patient had the ophthalmological examination, which included: OSDI questionnaire, verification of visual acuity, slit light examination, corneal fluorescein staining with Oxford scale assessment, Schirmer test, TBUT and ophthalmoscopy.
Results: 16 of 35 patients presented from moderate to severe Dry Eye Syndrome and corneal epitheliopathy. The most frequent symptoms were dryness sensation (81%), ocular discomfort (sticking, burning, pain, itching; 67%) and foreign body sensation (25%). Less of them were complaining of light and wind hypersensivity (19%) and sticky eye in the morning (10%). In group of patients with severe grade of Dry Eye Syndrome the visual impairment and loss of visual acuity was also noted.
Conclusions: Patients with Systemic Lupus Erythematosus often require intensive treatment with artificial drops and anti-inflammatory topical medicaments. In patients with SLE ophthalmological examination is recommended at least once a year and in patients with severe symptoms at least every 6 months.

TP02-05-PED

Determination of the objective torsion in healthy subjects using Cyclocheck® application.

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Purpose: The measurement of the disc-foveal angle (DFA) using fundus photography is currently considered as the most valid procedure to evaluate ocular torsion objectively. Recently designed by the authors special graphic software Cyclocheck®, for objective assessment of cyclodeviation, occurred to provide repeatable and reproducible results.
The aim of the present study was to evaluate the range of cyclodeviation in normal individuals by means of Cyclocheck® application freely available at www.cyclocheck.com.
Methods: Healthy subjects with normal muscle balance, best-corrected visual acuity of $\geq 0{,}8$ and stereopsis on Randot charts of ≤ 100 seconds of arc were included in the study. Two separate digital fundus photographs were taken of each eye of every patient. The DFA was calculated using Cyclocheck® application. The average result of the DFA measurements were considered for data analysis.

Results: A total of 131 patients (88 female, mean age 31 ± 14 years) met inclusion criteria for the study population. The mean value of the DFA in the whole study group (regardless of the site) was 6.39 ± 2.72˚ with 5.26 ± 2.56˚ (range from -0.4 to 12.55˚) in the right eye and 7.52 ± 2.39˚ (range from 1.25 to 12.76˚) in the left eye. The mean value of the DFA of the left eye was greater by 2.26˚ than that of the right eye.
Conclusions: Cyclocheck® software allows easy assessment of cyclodeviation. Normal individuals present with a positive value of the DFA with a certain spread of the results. The analysis of obtained measurements revealed a significant asymmetry between both eyes with the left eye being more excyclodeviated in otherwise ortotropic population, which remains a subject for further investigations.

TALKING POSTER PRESENTATIONS
TP03: Talking Poster Session 3: Cataract, Education, Neuro-ophthalmology, Oncology & Pathology, Retina

TP03-01-EDU

An ophthalmologist-led, student-directed teaching intervention enhances knowledge and understanding related to ophthalmological primary care in general practitioner trainees

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Purpose: Patients presenting to primary care with an ophthalmological complaint comprise up to 5% of a general practitioners (GP) workload. In spite of this, many GP trainees in Ireland do not complete a formal ophthalmology rotation during the course of their training. This study investigated the benefit attained by a group of GP trainees who undertook a 90 minute focused ophthalmology teaching session.
Methods: A pre-teaching evaluation comprised a 'pre-quiz' followed by the group tutorial. This tutorial was designed following a qualitative and quantitative survey that identified knowledge deficiencies and student selected learning outcomes. The final tutorial broadly discussed topics centred around ocular examination, differential diagnosis, management, and hospital ophthalmological services. This was followed by a 'post-quiz'.
Results: The 'pre-quiz' average score was 54.9% +/- 23.8% (n=18). As expected, those who had completed an ophthalmology rotation achieved a higher average score of 71.4% +/- 14.1% (n=6), compared to those with no prior experience at 40.4% +/- 17.4% (n=12). The best answered questions referred to legal visual acuity requirements for driving and management of Herpes Simplex Keratitis. The poorest correct response referred to management of trigeminal-distribution shingles (11% correct response rate) and significance of unequal pupil size (33% correct response rate).
The 'post-quiz' average score was 85% +/- 9.1% (n=18). The greatest increases in the 'post-quiz' correct answer response where found to be related to shingles and pupil size as detailed above. Similarly, there were significant increases in correct answer responses for questions related to age-related macular degeneration and lesions of the visual pathway, both up 50% respectfully.
Conclusions: A student-directed teaching intervention can significantly increase the ophthalmological knowledge base of general practitioner trainees.

TP03-02-NE0

Leber's hereditary optic neuropathy plus disease in two unrelated patients harbouring m.3635G>A variant in ND1 gene

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Purpose: To report two adolescent patients, who presented with typical Leber's hereditary optic neuropathy (LHON) symptoms and were found to have additional signs in other body systems.
Methods: Two patients with typical LHON clinical presentation underwent full ophthalmological (best corrected visual acuity (BCVA), visual field, optical coherence tomography, ophthalmic imaging and visual electrophysiology testing), neurological examination and systemic work-up. Both patients were confirmed to carry a rare LHON variant of m.3635G>A in *ND1* gene.
Results: Both patients (15-16 years old) have a positive family history of LHON and presented with subacute, sequential, bilateral, painless central visual loss. In both cases the second eye was involved within a few weeks period. Both patients underwent genetic testing, and were found to harbour m.3635G>A variant in ND1 gene. Patient 1 was homoplasmic, patient 2- heteroplasmic. Heteroplasmy levels are unavailable.
Both patients presented with severely decreased BCVA and gradually increasing cecocentral scotoma. In addition, patients 1 brain magnetic resonance imaging (MRI) examination showed inactive areas of demyelination supra- and subtentoraly. Patients 2 brain MRI was within normal limits, however blood tests uncovered severe eosinophilia and hypovitaminosis.
Within 5 - 5.5 months since the disease onset, a treatment with Raxone® 900mg/d was initiated in both cases. Unfortunately, in patient 1 BCVA started to deteriorate after being stable for 6 months and new active areas of demyelination were identified in both brain and spinal cord. The treatment of the patient was modified and treatment with steroids initiated.
Conclusions: We report the first genetically confirmed LHON cases in Lithuania. These are the first LHON m.3635G>A cases treated with Raxone® in Lithuania. We would like to emphasize the importance of multidisciplinary approach of the patients with LHON, as well as that LHON Plus phenotype is not a rare phenomenon.

TP03-04-ONC

New primary retinoblastoma cell culture and drug resistance assessment

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Purpose: An attempt to create a primary cell culture of retinoblastoma and an evaluation of drug resistance to chemotherapy
Methods: The study included 19 patients aged 6-64 months (27.9 ± 17.4). In 6 patients (31.6%) bilateral disease was noted, in 13 (68.4%) - monolateral. In 18 patients (94.7%), retinoblastoma of group E was detected. In all cases, enucleation was performed, while in 94.7% of cases a low-differentiated retinoblastoma was defined. Samples of tumor tissue were taken to obtain a cell culture, followed by a study of drug resistance and cell metabolic activity (MTT assay).
Results: In four cases it was possible to obtain surviving adhesive primary cultures of retinoblastoma. Cytological verification of the obtained cultures was carried out. For bilateral lesions, primary cultures were obtained more often (4/6), whereas in monolateral lesions, the cells did not survive (0/13) ($p = 0.003$). A statistically significant relationship with the age of patients ($p = 0.33$) and the presence of calcinates in the tumor according to ultrasound data ($p = 0.26$) was not revealed. The performed MTT assay showed no differences in the sensitivity of cell cultures to irinotecan and ifosfamide. Expressed differences in stability between cultures were obtained only for oxaliplatin and ascorbic acid.
Conclusions: We describe the first domestic experience in obtaining the cellular culture of retinoblastoma and assessing chemosensitivity to various drugs. Performing an MTT assay with an evaluation of drug resistance can be used both in clinical practice to refine the chemotherapy regimen with registered drugs and to develop new approaches to the treatment of retinoblastoma in assessing the resistance of tumor cells in vivo in animal models.

TP03-05-RET

The correlation between fundus autofluorescence and visual function in patients with cone-rod dystrophy

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Purpose: Previous studies suggested the relationship between the visual function and the OCT parameters and fundus autofluorescence (FAF) in cone-rod dystrophy (CRD). In the current study, we measured wide-field FAF and quantified the abnormal autofluorescence area in CRD patients. The aim of the current study is to investigate the correlation between visual function and the quantified abnormal FAF area.
Methods: Thirty-seven eyes of 21 CRD patients (8 males and 13 females) were enrolled in the present study. We measured visual field testing with the Humphrey field analyzer (HFA; Carl Zeiss Meditec, Dublin, CA, USA) and FAF with Optos (Optos PLC, Dunfermline, UK). We defined Low FAF area ratio (LFAR) within central 30 degrees. The quantification of abnormal FAF area was calculated using Image J software. We analyzed the relationship between visual functions and the OCT parameters and LFAR, using linear mixed model.
Results: The mean age was 49.8 years. LogMAR VA, the mean deviation (MD), the central retinal thickness (CRT), the central choroidal thickness (CCT), LFAR were -0.52±0.47 and -17.91±10.59 dB, 108.6±55.1 um, 206.4±75.7 um, 0.109±0.165, respectively. Multivariate analyses suggested that among age, CRT, CCT and LFAR, only CRT was significantly related to logMAR VA ($p=0.006$). On the other hand, only LFAR was significantly correlated with MD ($p=0.001$).
Conclusions: In CRD patients, the quantification of the abnormal FAF area is useful to predict the visual field deterioration, rather than OCT parameters.

TP03-06-CAT

Clinical outcomes of cataract surgery in patients with Sjögren syndrome: a comparative study with non-Sjögren syndrome dry eye patients

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Purpose: To evaluate the clinical outcomes of cataract extraction with phacoemulsification and posterior chamber intraocular lens implantation in patients with Sjögren syndrome (SS) corpared with non-SS dry eye.
Methods: Medical records were reviewed of SS, non-SS dry eye, and non-dry eye patients underwent cataract surgery. Patients followed at least 6 months were enrolled. Uncorrected distance visual acuity (UDVA, LogMAR), ocular surface staining score (Oxford stain score, OSS), postoperative refraction, and mean absolute error (MAE) were evaluated for efficacy outcomes.
Results: This study comprised30 eyes (16 patients) with SS (Sjögren group), 33 eyes (17 patients) with non-SS dry eye syndrome (Dry eye group), and 35 eyes (18 patients) without dry eye (Control group). The OSS score was significantly higher in Sjögren group at preoperative and each postoperative visit. ($P<0.001$). Then, it improved significantly at 3 and 6 months after surgery. UDVA were improved in three groups (from 0.58 to 0.10 in Sjögren group, from 0.35 to 0.07 in Dry eye group, from 0.43 to 0.06 in control group, $P<0.001$, respectively). UDCV in Sjögren group was significantly lower than control group ($P<0.028$ at 3 months, $P<0.022$ at 6 months). There was no statistically significant difference in MAE between groups measured with IOLmaster or immersion ultrasound A-scan.
Conclusions: With proper preoperative and postoperative treatment of superficial keratitis, refractive outcomes of SS patients were comparable to healthy or non-SS dry eye patient. UDVA was less improved related with chronic keratitis in Sjögren group.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Cataract

EP-CAT-02

Determination of cytokines in the blood serum in patients with pseudo exfoliative syndrome

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Purpose: To study cytokines in blood serum in patients with with cataracts in pseudoexfoliation syndrome (PEX)
Methods: Eighty one patient with cataracts were examined and underwent facoemulsification surgery. Out of 81patients 46 patients were diagnosed with PEX.
Mean age was () between 61-83 years old, 19 (41.3%) were men, 27 (58.7%) were women (58.7%). Traditional ophthalmologic examinations were supplemented with ultrasound biomicroscopy, determination of interleukin-1β by serum immunoferment analysis and analysis of the somatic pathology.
Results: In the early period after cataract surgery, 8 patients (17.39%) with PEX showed signs of an inflammatory process in the anterior chamber. No inflammatory response was found in patients without PEX. A comparative analysis of serum interleukin-1ß concentration revealed an increase in the mean serum IL-1β concentration in patients with PEX of 0.454 ± 0.102pq / ml compared with the control group of 0.298 ± 0.102 pq / ml.
4 patients (8.69%) with PEX were healthy. 10 patients had (21.73%) hypertension, coronary heart disease - 5 (10.86%), diabetes mellitus - 4- (8.69%), diseases of the digestive system - 3 (6.52%), osteochondrosis - in 4 (8.69%), arthritis - in 9 (19.56%), hearing loss in 5 (10.86%), urological diseases - in 2 (4.34%). In the group without PEX, 8 patients (20.51%) were healthy, 9 (23.07%) had hypertension, coronary heart disease in 2 (5.12%), diabetes mellitus - in 5 (12.82%), diseases of the digestive system in 4 (10.25%), spinal osteochondrosis in 2 (5.12%), arthritis in 5 (12.82%), hearing impairment in 2 (5.12%), urological diseases in 2 (5.12%).
Conclusions: Compared with the control group, patients with PES after cataract surgery more often had an inflammatory process. The median IL-1β pri PEX was approximately 4 times greater. Somatic pathology in this group of patients occurred 2 times more often than in patients without PEX.

EP-CAT-03

Experience of the toric IOLs implantation in patients with astigmatism

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Purpose: Implantation of the toric IOLs in patients with astigmatism is a very effective method to rich the highest visual result. But often we face with residual astigmatism after surgery. The main reasons of that are wrong choice of toric IOL or defects in IOL calculation or in IOL positioning. The aim of our work is to analyze visual outcome and residual astigmatism in patients after implantation of toric IOL.
Methods: We assessed 288 eyes, which were implanted different of the power toric IOLs (Acrysoftoric, Alcon) SN6AT2 - 86 eyes, SN6AT3 - 107 eyes, SN6AT4 - 44 eyes, SN6AT5 - 22 eyes, SN6AT6 - 10 eyes, SN6AT7 - 8 eyes, SN6AT8 - 4 eyes, SN6AT9 - 7 eyes). The main principles of IOL calculation are: exact keratometry, calculation of the anterior and posterior curvature of the cornea, pointing of the cornea, positioning of the IOL. The main incision has to be definite configuration in the main axis (flat or steep) - it is necessary for minimizing of the surgical induced astigmatism. We calculated posterior corneal astigmatism by ourselves using Casia 2 (Tomey), thats why for IOL positioning we used the first generation of the toriciolcalculator (Alcon). The surgically induced astigmatism we defined as 0.5D.
Results: All patients had residual astigmatism from 0.84D to 0.06D by autorefractometry. The highest astigmatism, assessed by subjective refraction, was 0.75D. The middle residual astigmatism was 0.39±0.19D. The nessessarity to correct IOL position on the second day after surgery was in 46 cases, mostly in patients with myopia. The cause of this phenomena is a rotation of IOL during the first day after surgery. There was no any case of the correction of IOL more than one time.
Conclusions: Correction of astigmatism by toric IOLs is a very effective method increase of visual function of the patients. For the highest visual result it is necessary to assess posterior corneal astigmatism, calculate of axes of astigmatism and surgical induced astigmatism.

EP-CAT-04

Case series of manual small incision cataract surgery (MSICS) in mature cataract using Lerprat technique: visual outcome and complication

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Purpose: To report visual outcome and complication of Manual Small Incision Cataract Surgery (MSICS) in Mature Cataract using Lerprat Technique.
Methods: Retrospective descriptive study, between January to September 2016. Data were collected on 60 eyes of 60 patients who performed Manual Small Incision Cataract Surgery (MSICS) in Mature Cataract using Lerprat Technique by using conventional Extracapsular cataract extraction (ECCE) equipment (Sinskey hook, Iris spatula, Simcoe cannula). It can be used in cataract hardness, mature cataract, that is common in developing countries. Moreover, It does not interfere with the upper conjunctivae which is used in glaucoma surgical treatments if needed in the future. ”Lerprat technique” is a new technique by integrating the “Ruit technique” with the “Modified Blumenthal technique”. The postoperative visual acuity at first day, 1 week, 6 weeks and 3 months was collected. The intraoperative and postoperative complications were evaluated.
Results: All patients had preoperative visual acuity was poor (below 20/200) and improved visual acuity after surgery. Postoperative first day, the best corrected visual acuity (BCVA) were excellent(20/20-20/30) in 30 cases (50%), good (20/40-20/70) in 28 cases (46.7%) and borderline 2 cases (3.3%) respectively. Postoperative first week, visual acuity were excellent (20/20-20/30) in 52 cases (86.7%) and good (20/40-20/70) in8 cases (3.3%). At 6th weeks and 3 months after operation, visual acuity was excellent (20-20-20/30) in 60 cases (100%). Complication were hyphema 3 cases (5%) and increase intraocular pressure 1 case (1.7%).
Conclusions: When performed Manual Small Incision Cataract Surgery (MSICS) in Mature Cataract using Lerprat Technique is safe and effective procedure.

EP-CAT-05

A two-year experience with sutureless transconjunctival intrascleral IOL fixation

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Purpose: To review indications, procedure, and outcomes of the sutureless transconjunctival intrascleral IOL fixation.
Methods: A retrospective non-comparative analysis of consecutive patients, managed by sutureless intrascleral IOL fixation from January 2017 to December 2018. Chart data analysis revealed 32 patients, 34 eyes, that were operated at the University Eye Hospital of Ljubljana by one surgeon. In all the cases sutureless transconjunctival intrascleral IOL fixation was performed. Data analysed from medical records included: gender, age, indication, postoperative complication, functional and anatomical outcomes.
Results: There were 19 male and 13 female patients. Patients' age was from 14 to 92 years, mean age 64 years. Indication for the operation included aphakia after previous cataract surgery in 18 eyes. Ectopic lens was an indication in three patients, 5 eyes. In four cases IOL exchange was performed due to IOL opacification or its position in anterior chamber. Retinal detachement occured in one patient 16 days postoperatively. Partial vitreous haemorrhage presented in three patients and resolved spontaneously. Iris capture occured in two patients. Cystoid macular edema newly occured in four patients. In anatomical outcomes there was a tilt or an IOL optic decentration by more than one millimetre present in five patients.
Conclusions: Transconjunctival scleral IOL fixation is an effective and minimally invasive surgical procedure in the absence of capsular or zonular support. It is a sutureless technique where no conjunctival opening is needed and the incision wound is smaller than 3.0 mm, by which surgically induced astigmatism is minimal.

EP-CAT-06

Clinical investigation of trifocal intraocular lenses in Japanese patients

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Purpose: To evaluate safety and effectiveness of tinted aspheric trifocal intraocular lens (IOL) when implanted to replace the natural lens following cataract removal in Japan.
Methods: This is a prospective, multicenter, and single-arm clinical study. The subjects were bilaterally implanted with a tinted aspheric trifocal IOL Model TFNT00. Best corrected distance visual acuity at 5m (BCDVA), distance corrected intermediate visual acuity at 60 cm (DCIVA), distance corrected near visual acuity at 40 cm (DCNVA), contrast sensitivity, and QOL were key endpoints over 6-month study period.
Results: The lens was implanted first to the eye with more advanced cataract (first eye). For the first eye, 97.1% of eyes had ≥ 1.0 decimal BCDVA, 86.8% of eyes had ≥ 1.0 decimal DCIVA, and 97.1% of eyes had ≥ 0.4 decimal DCNVA at 6 months postoperative visit. The binocular defocus curve indicated that mean decimal VA of 1.0 or better was achieved at an extended range of distances, with approximately +0.5 to -3.0 defocus. Mean log contrast sensitivity values were well within the normal range for the population at all tested spatial frequencies. Majority of subjects achieved spectacle freedom. There were no serious adverse events or secondary surgical interventions, and no reports of device deficiencies in the study.
Conclusions: This trifocal IOL was safe and effective for the visual correction of aphakia secondary to removal of a cataractous lens in adult patients who desire near, intermediate, and distance vision with increased spectacle independence.

EP-CAT-07

Cataract surgery among patients of advanced age - possible, but is it actually worthwhile?

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Purpose: The aim of the study was to present the outcomes of cataract surgery in elderly and very elderly patients in our department during a period of 18 months, taking into consideration the special issues concerning this sensitive population.
Methods: We performed a retrospective chart review of 744 patients over 80 years old, who underwent either phacoemulsification or extracapsular cataract extraction (ECCE) between January 2017 and June 2018. Intraoperative complications were recorded and risk factors {pseudoexfoliation (PEX), poorly dilating pupil, intraoperative floppy iris syndrome (IFIS), hypermature-white cataract with visual acuity less than 6/60} were studied.
Results: Intraoperative complications occurred in 89 (11,9%) patients (61 aged 80-84, 19 85-89 and 9 ≥ 90 years). Out of 89 complicated cases, 76 underwent phacoemulsification, 4 ECCE and 9 phaco converted to ECCE. Posterior lens capsule rupture (PLC) occured in 66 cases (8,9%), followed by vitreous loss in 29 (3,9%).
Posterior loss of lens fragments affected 7 eyes (0,9%), posterior dislocation of IOL 2 (0,2%) and suprachoroidal haemorrage 5 eyes (0,7%). Regarding risk factors, 44 of all complicated cases concerned hypermature cataract with preoperative visual acuity less than 6/60, 35 poorly dilating pupils, 27 eyes with PEX and 22 eyes with IFIS.
Conclusions: High prevalence of systemic comorbidities (diabetes mellitus, hypertension, benign prostate hyperplasia treated with α-blockers, anticoagulants) resulted in a relatively high rate of intraoperative complications. However, cataract surgery was successful in the great majority of our patients, leading us to say that it is worth performing it even on patients above 80 years.

EP-CAT-08

B-hex ring for small pupil and IFIS: a stable solution for an unstable situation

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Purpose: Small pupil and intraoperative floppy iris syndrome (IFIS) are challenges in cataract surgery, and inappropriate management may cause severe and irreparable complications. Various pupil expansion devices are available on the market in order to facilitate the management of those cases where mydriatic drug methods fail. The purpose of this paper is to demonstrate the usefulness of using the B-hex ring in patients with IFIS in treatment with selective alpha-1 antagonists (most frequent tamsulosin).
Methods: We present the case of a 66-year-old man treated with tamsulosin for 9 years. Upon admission, the right eye best corrected visual acuity (VA) of the right eye (OD) is the perception of the hand movement, VA left eye (OS) is 0.6 according to Decimal scale, microscopy highlight hypermature cataract in OD, advanced cataract in OS. It is performed on OD: subconjunctival anesthesia, bimanual 1.2 mm tunnel incisions at 2 and 9 o'clock, 25 G Grieshaber forceps bimanual capsulorexis, B-HEX ring fitting, phacoemulsification of the nucleus by stop-and-chop technique and posterior chamber 19.5 diopters artificial lens implant.
Results: First day postoperative, VA OD = 1, IOP OD=15mm Hg, artificial lens is well positioned in the bag and the pupil is miotic. The patient undergoes local and general antibiotic and anti-inflammatory treatment for 3 weeks. Local hygiene and periodic follow-ups every 6 months are recommended.
Conclusions: The B-HEX ring is an easy-to-insert and easy-to-remove pupil expansion device that does not cause changes in the iris tissues, with particular intraocular stability. It prevents iris prolapse at the incisions, but also protects the iridium sphincter by its particular design to support it.
The biggest advantage of the B-HEX ring is the possibility of insertion through a small incision of only 0.9 mm. Thus, we recommend considering this approach in patients with treatment or with a history of selective alpha-1 antagonists, especially tamsulosin.

EP-CAT-09

Features of surgical treatment of cataract in a patient with graves disease and ophthalmopathy

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With the introduction in ophthalmic practice the method of phacoemulsification surgery to replace the clouded lens has become routine practice in the hands of ophthalmologists and has exceeded half a million transactions per year on the territory of our country. Cataract combined with endocrine ophthalmopathy represents a significant challenge for the operating surgeon due to unusual anatomical picture of the orbit and the eyeball, as well as elevated intraocular pressure, is not due to primary glaucoma, and oedema of the tissues repulsed and retrobulbar tissue and extraocular muscles.
In the article the analysis of the peculiarities of surgical treatment of cataract with intraocular lens implantation in a patient with Graves disease and endocrine ophthalmopathy, complicated by secondary ocular hypertension, optical neuropathy, lagophthalmos.
After restoration of euthyroid state and reduction of the activity of endocrine ophthalmopathy phacoemulsification performed in two eyes with an interval of 2 months. Intra - and postoperative complications of the organ of vision in patients were observed. Maximum corrected visual acuity were made on both eyes of 0.4-0.5 the tables Snellen.
The authors recommend to use your surgical experience for surgical treatment of cataract in patients with Graves ' disease and ophthalmopathy.

EP-CAT-10

Association between aqueous cytokines and diabetic retinopathy stage

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Evidence shows that increasing concentrations of various pro-inflammatory cytokines in diabetic eyes may lead to microvascular occlusion and breakdown of the blood-retinal barrier, followed by vascular leakage, capillary nonperfusion, neurodegeneration, and neovascularization. Therefore, measuring various cytokines in patients with different stages of DR may facilitate the evaluation of the inflammatory status at each stage and the exploration of their effects on disease progression.
We measured the concentrations of various cytokines (IL-1β, IL-8, IL-10, MCP-1, VEGF, ICAM-1) in the aqueous humor in patients with different stages of DR. In this study 90 selected cataract patients were included. All patients were randomized into 4 groups: the control group without DM, the group without DR, the group with non-proliferative stage DR (NPDR), the group with the proliferative stage DR (PDR).
All samples (100-200 μL) of the aqueous humor were collected during the phacoemulsification with intraocular lens implantation. All cytokines (IL-1β, IL-8, IL-10, MCP-1, VEGF, ICAM-1) were analyzed using the automated Bio-Plex Protein Assay System (Bio-Rad, USA). In this study, a statistically significant difference in the concentrations of MCP-1, VEGF and ICAM-1 was observed between all groups.
By contrast, no difference was found in the concentrations of IL-1β. The concentration of IL-10 was significantly higher only in the PDR group. In this way, the concentrations of pro-inflammatory cytokines increase with the severity of patients› DR and might play a certain role in the development of DR.

EP-CAT-12

Procedural strategies and long-term outcomes of Nd:YAG laser posterior capsulotomy in children

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Purpose: To evaluate the long-term outcome of neodymium:yttrium-aluminum-garnet (Nd:YAG) laser posterior capsulotomy after cataract surgery in children.
Methods: Electronic medical records of pediatric patients who underwent Nd:YAG laser posterior capsulotomy between January 1, 2008, and October 31, 2012, and followed up for more than five years were reviewed. Through evaluating each patient's behavior during slit-lamp examination and anterior segment photography, only compliant patients underwent laser treatment. The mean age at the time of laser treatment and success rate were investigated. LogMAR best-corrected visual acuity (BCVA) before and after treatment was compared and long-term stability of BCVA was evaluated. Complications of laser treatment including the recurrence of posterior capsular opacity were analyzed.
Results: Thirty one eyes of 25 patients were included. The mean age at the time of initial laser treatment was 9.04 ± 3.51 years (minimum 56 months), and the mean interval between cataract surgery and initial laser treatment was 28.1 ± 22.1 months. Posterior capsular openings were successfully made in 26 (83.9%) eyes with a single attempt and in 3 (9.7%) eyes with second attempt. Overall success rate was 93.5%. The logMAR BCVA was significantly improved from 0.61 ± 0.36 to 0.19 ± 0.25 at 1 month post-treatment ($p < 0.0001$) and well maintained at least for 5 years of follow-up without serious complications.
The recurrence of posterior capsular opacity was observed in 7 (24.1%) eyes, which was successfully managed by repeated laser procedure or surgical capsulectomy.
Conclusions: By selecting compliant patients and repeated attempts, Nd:YAG laser posterior capsulotomy can be successfully performed in pediatric population without serious complications. Laser treatment is also a good option for managing recurred posterior capsular opacity. Restored visual acuity can be maintained for at least 5 years.

EP-CAT-14

Chevalier John Taylor, his practise, his patients and the consequences of his medicine

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Purpose: In this work we present the famous 'quack' 'Chevalier' John Taylor, who was a flamboyant personality, a writer of about fifty books in Latin, English, German, French, Italian, Spanish, Portuguese, Danish, Swedish and Russian. The most interesting and revealing work was the autobiographical 'The History of the Travels and Adventures of the Chevalier John Taylor, Ophthalmiater' which we describe in this presentation along with the facts of his real career.
Methods: Taylor was travelling in Europe and he reached a high point of respect as a competent 'ophthalmiater' and eye surgeon and he was appointed the royal eye surgeon of King George II. He studied under the famous surgeon William Cheselden at St. Thomas' Hospital. He toured Europe in a carriage and performed many cataract operations, with couching, the ancient method of treating this condition.
He went famous by treating of cataract Bach and claiming that he did also Handel's operation. In any case Bach's surgery did not come well and he became blind. Handel's also operation was not successful but did not come completely blind.
In our presentation we will speak also about his famous patients, his description of Bach's operation and his other patients as Edward Gibbon, Gottfried van Swieten and his technique of cataract surgery.
Results: The work 'THE HISTORY of the TRAVELS and ADVENTURES OF THE Chevalier JOHN TAYLOR, OPHTHALMIATER' is a useful tool for the depiction of his personality and his work. He presents himself as an expert, aristocrat and intelligent physician, and writes many exaggerations and lies about his patients and his work.
Conclusions: 'Chevalier' John Taylor undoubtedly was an intelligent, talented and fraud man a personality of his era and Ophthalmology was a field where many quacks found a fertile ground to blossom. He treated famous people like Bach and Handel and many others, not always with success.

EP-CAT-15

An alternative method of implantation of IOL RSP-III through a small self-sealing incision at ruptures of the posterior capsule during cataract phacoemulsification

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Purpose: Analysis of an alternative method of implanting an IOL RSP-III using a cartridge through a small self-sealing incision in cases when the posterior capsule ruptures during the PhEC
Methods: We analyzed the results of phacoemulsification of 21 patients (21 eyes) with complicated cataract combined with intraoperative rupture of the posterior lens capsule. All patients underwent PhEC using Nagahara's «phakochop» method in our modification using ultrasound in the Burst mode (patent No. IAP 04320 of March 18, 2011, "A method for the surgical treatment of cataracts by ultrasound phacoemulsification"). Cataract phacoemulsification was performed through a corneal tunnel incision with a width of 2.2 mm, with RSP-III IOL implantation using an injector in cases of rupture of the posterior lens capsule. We have developed a modified method by implanting an IOL model RSP-III according to our own method (patent No. IAP 05256 dated 08/18/2016 "Method for implantation of an intraocular lens (IOL) from a collagen copolymer")
Results: 1 year after surgery, the visual acuity was 0.7 ± 0.1. The correct position of the IOL in the early and remote periods was achieved in all 21 eyes (100%). In all periods of observation in the postoperative period, the values of intraocular pressure and induced astigmatism were within the physiological norm
Conclusions: Implantation of an IOL RSP-III using an injector in cases of rupture of the posterior capsule during PhEC, allows achieving a stable position of the IOL in the early and relatively later observation periods, high visual acuity with minimal intraoperative eye injury

EP-CAT-16

Comparative results of phacoemulsification of diabetic cataract in combination with pseudoexfoliation syndrome

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Purpose: to study the results of diabetic cataract phacoemulsification in combination with pseudoexfoliation syndrome depending on the used phacoemulsification technique
Methods: 78 patients were under observation, 43 of them were women (55%), 35 men (45%), the average age was 63.2 ± 1.8 years. Depending on the PhEC technique, patients were divided into two groups: Group I (main) - 38 patients (40 eyes), operated on using the phacochop method in our modification (patent No. IAP04320) and group II (control) - 40 patients (41 eye), operated on by the Shepherd method. All patients underwent standard ophthalmologic examinations, with mandatory UBM
Results: Data of UBM: 5 eyes in patients of the first group and 4 eyes in group II revealed a gap of Zinn ligaments in 1 quadrant. In 6 eyes in patients of group I and in 8 eyes in group II there was a gap in 2 quadrants. In 3 eyes in patients of group I and in 3 eyes in the control group there was a gap in 3 quadrants. When performing the PhEC in both groups at PES I st. mechanical devices for the expansion of the pupil were not used, when PES II st. Malyugin's ring was used, at PES III st. iris retractors were used with suspension of the capsular bag and implantation of the intracapsular ring. Rigid pupil and insufficient mydriasis caused usage of the Malugin's ring and iris retractors in patients of group II. As a result, the time of ultrasound decreased by 2-6 times. By the end of the first year of observation after surgery, visual acuity in patients of group I was 0.89 ± 0.032, and in group II, 0.79 ± 0.036
Conclusions: The use of the phacochopic technique in our modification when performing phacoemulsification in patients with diabetic cataract in combination with the pseudoexfoliation syndrome significantly reduces the load on the ligamentous apparatus of the lens and allows to obtain high visual functions

EP-CAT-17

Stabilize the capsular bag in cataracts with crystalline lens dislocations

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Purpose: To observe the treatment effects of chop hook-assisted phacoemulsification surgery in patients with crystalline lens dislocation.
Methods: Thirty-seven eyes with cataracts and crystalline lens dislocations underwent cataract surgery. An L-shaped chop hook was introduced into the anterior chamber, and the tip was pushed or pulled to the centre of the anterior capsular edge of the zonular dialysis during the cataract operation. Postoperative follow-up was conducted for 3month.
Results: All patients' postoperative visual abilities improved except one patient with glaucoma. One patient who underwent 5D intraocular lens implantation exhibited vision of 1/50. Visual acuity was less than 6/20 in 6 eyes, 6/20 to 10/20 in 7 eyes, and greater than 10/20 in 22 eyes.
Conclusions: L-shaped chop hooks can be used to push or pull the anterior capsular edge of the zonular dialysis for protection and avoidance of further zonular damage. This strategy provides satisfactory effects and reduces use of additional instruments.

EP-CAT-18

Femtosecond laser -assisted cataract surgery in congenital cataract

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Purpose: To research the effect of femtosecond laser phaco in congenital cataract
Methods: General anesthesia, open the disposable soft corneal contact lens glass bottles, remove the contact lens is placed within the PI surface, mirror light contact discharge between the gas and liquid.The suction port connected to the vacuum line of PI.Install the PI in the system of the focusing lens distal and as a sterile barrier between the patients and laser.Using lever will saddle in the central and lower contact interface until the patient to the eye.In the middle of the operation display shows the pressing rod monitoring access on PI.To flatten in the green part, according to the operation screen corner PI suction control button. according to flatten the eye of the living video images instructed the parameter. .Each parameter was adjustment. Laser emission. The patient from the laser to the operation rooms.Open the incision.Remove the former capsule membrane.Water separation.Ultrasonic emulsification suck out crystal nucleus.The removal of the cortex.Posterior capsule incision, do anterior segment vitreous and implanted IOL.
Results: postoperative vision is 0.25 on the first day, intraocular pressure is 11 MMHG
Conclusions: Compared with adultscongenital cataract have obvious differences which is a severe challenge for ophthalmologists. Complications can seriously affect vision rehabilitation and visual function reconstruction.This case showed that Femtosecond laser -assisted cataract surgery is suitable and safe for patients with congenital cataract.

EP-CAT-19

New single-piece aspheric diffractive trifocal intraocular lens implantation: short term analysis

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Purpose: Evaluation of short-term (up to 9 months) results of new one-piece aspherical diffractive trifocal intraocular lens implantation.
Methods: A prospective, open-label study included 65 patients (100 eyes) with presbyopia, who received cataract extraction with the implantation of a new IOL AcrySof PanOptix® trifocal. The average age of the patients was 60.0±12.1 years. 35 patients underwent bilateral correction with multifocal IOLs, and 30 had a monolateral correction. In 21% (n=21) cases, femtolaser support of cataract extraction was performed. On 9 eyes (9%) the primary posterior capsulorhexis was performed. The range of optical power of implanted IOLs was 13 to 30 D. The follow-up period was from 6 to 9 (6.8 ± 0.9) months.
Results: On the 1 day an increase in UCNVA was noted from 0.22±0.19 to 0.76±0.23 ($p < 0.05$), at follow-up to 6 months up to 0.85 ± 0.22. One day after surgery, the increase in UCIVA was from 0.23 ± 0.19 to 0.7±0.25 ($p< 0.05$), followed by an increase to 0.84±0.24 in the maximum follow-up period of 6 months. UCFVA in the preoperative period was 0.27±0.23, with an increase to 0.78±0.23 ($p< 0.05$) for 1 day and 0.93±0.18 at 6 months.
The increase in BCNVA was from 0.56±0.25 before surgery to 0.8±0.19 on the 1st day after cataract removal ($p< 0.05$) and 0.98±0.16 at the follow-up period of 6 months. Similar data (0.58±0.29, 0.82±0.21 and 0.95±0.14) was noted for

BCIVA. An increase in BCFVA was from 0.71±0.28 in the preoperative period to 1.0±0.04 ($p< 0.05$) after 6 months.
The primary endpoint of the study (BCFVA=1.0) in the group was achieved in 83% of cases (n=83). The effect of glare was noted in 17 patients (26.1%), halo in 9 (13.8%), driving difficulties in 6 (9.2%). The overwhelming majority of patients (96.9%) rated the result of the operation as "excellent" (n=51, 78.5%) and "good" (n=14, 21.5%).
Conclusions: Implantation of the examined IOL is associated with a high efficiency of near, intermediate distance and far vision correction.

EP-CAT-20

An experience of primary posterior capsulorhexis in bifocal IOLs implantation

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Purpose: To assess the feasibility of performing a primary posterior capsulorhexis in patients with implantation of bifocal IOLs.
Methods: A total of 34 (40 eyes) patients were examined and treated. Men accounted for 44.1%, women - 55.9%. The average age of the patients was 57.1 ± 7.0 years. In all investigated cases, a complex preoperative examination was performed. The phacoemulsification was performed using Stellaris and Infinity microsurgical systems through a corneal temporal tunnel incision of 1.8-2.0 mm.
Results: We present our own technique of primary posterior capsulorhexis, including the use of two types of viscoelastics and the implementation of capsulorhexis after implantation of the IOL. In all cases, the bifocal IOL Acrysof IQ Restor was implanted, the target refraction was ± 0.25 D. The observation period was from 6 to 60 (13.4 ± 10.2) months. Significant intra- and postoperative complications were not detected. An increase in the UCVA from 0.13 ± 0.11 to 0.85 ± 0.21 in the distance and 0.77±0.21 near, BCVA from 0.25±0.20 to 0.93 ± 0.13 in the distance and 0.83 ± 0.21 near 6 months after surgery ($p< 0.05$). Reduction of the spherical and cylindrical component of refraction is shown.
Conclusions: The data obtained indicate the safety and effectiveness of the proposed method. To determine the indications and contraindications it is necessary to conduct a comparative study with patients with a preserved posterior capsule of the lens and multifocal correction.

EP-CAT-21

Binocular implantation of diffractive trifocal intraocular lens for presbyopia correction

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Purpose: Evaluation of the visual and functional results of bilateral implantation of the diffractive trifocal intraocular lens, the incidence of adverse optical phenomena and the degree of patient satisfaction.
Methods: A prospective, open-label study included 82 patients (164 eyes) with presbyopia who underwent cataract phacoemulsification (n = 128) or refractive lensectomy (n = 36) with bilateral implantation of a new multifocal IOL AT LISA tri 839MP. The mean age of the patients was 61.2 ± 11.8 (32-84) years. The period of observation of patients was from 6 to 36 (18.3 ± 3.9) months.
Results: After 1 year of follow-up, the increase in UCNVA was observed from 0.19 ± 0.17 to 0.89 ± 0.21, UCIVA from 0.18 ± 0.20 to 0.78 ± 0.17, UCDVA from 0.26 ± 0, 23 to 0.9 ± 0.12 ($p < 0.05$). The increase in BCNVA was from 0.49 ± 0.23 to 0.99 ± 0.07, BCIVA from 0.44 ± 0.27 before and 0.96 ± 0.11 and BCDVA from 0.58 ± 0.25 to 1 , 0 ± 0.04 ($p < 0.05$). The greatest visual acuity (0.0 logMAR for OU) was noted with a defocus of 0, which corresponds to the point of clear vision in the distance. At -1.0 D (the point of clear vision at an average distance) and -2.5 D (the point of clear vision near), a high visual acuity (0.04 and 0.09 logMAR, respectively) was noted, which indicates a good vision correction in all investigated distances. The frequency of achieving SE in the range ± 0.5 D was 92.7%. The primary endpoint of the study (BCDVA = 1.0) in the long-term follow-up period was 95.1%. In all cases, high patient satisfaction and a low incidence of undesirable side effects were noted (glare, halo, difficulty in driving).
Conclusions: Implantation of the trifocal IOL AT LISA tri 839MP leads to a good level of functional vision restoration at near, average and far distance after cataract surgery and clear lens removal.

EP-CAT-22

Pinhole intraocular lens to correct presbyopia and astigmatism : 3 year follow up

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Purpose: To demonstrate visual performance of the IC-8 small aperture IOL (AcuFocus, Irvine, CA) implanted in patients in whom a cataractous lens has been removed.
Materials, Patients and Methods: 21 Eyes with cataract, corneal astigmatism ≤ 1.25,had IC-8 IOL implantation in the non-dominant eye and a monofocal IOL in the dominant eye.
Postoperatively,visual and refractive parameters were measured:distance (4m) near (40cm) and intermediate (80 cm) visual acuity, corneal topography and Acutarget analysis, contrast sensitivity and defocus curve.
Follow-up examinations were performed up to 3 years
Results: At 3 years in the IC-8 eye,UDVA is 20/20.5,UIVA is 20/19 at 80cm and 67 cm and UNVA is 20/20.5.In the monofocal eye,UDVA is 20/19,UIVA is 20/23 at 80cm 20/25.7 at 67cm and UNVA is 20/50.Binocular UDVA is 20/18,UIVA is 20/18.3(80 cm and 67cm)and UNVA is 20/20.5
Conclusions: Pinhole technology in the non dominant eye mixed with monofocal IOL in the dominant eye provides good far,intermediate and near vision. Pinhole effect normally corrects up to two diopters of corneal astigmatism and overcome toric IOL management within this range

EP-CAT-23

Trifocal IOLs implantation in cataract patients that have experienced previous laser vision correction: three years follow-up

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Purpose: To evaluate visual performances of trifocal IOLs AT LISA tri 839 MP and AT LISA tri toric 939MP trifocal IOLs (Carl Zeiss Meditec) in patient that experienced previous laser vision correction
Methods: Only eyes with regular were included in this study: 16 eyes of 10 patients mean age: 55.81 ± 8.50 years. Preop SE was -0,53 ± 3,59 BCDVA 20/22 ± 3,56. Postop were measured: distance (5m) near (40cm) and intermediate (80 cm) VA, corneal topography and aberrometry, contrast sensitivity and defocus curve.
Follow-up examinations were performed at day 1 2 7 30 90 180 360 720
Results: At two years BCDVA was 20/20,91 ± 3,02. SE was -018 ± 0,45. Residual astigmatism was -0,02 ± 0,24. . UCNV 20/22
92% of eyes achieved postop refractive results within ± 0.50 diopter
Conclusions: Trifocal Lenses provided good visual performances also patients that experienced laser vision correction decades ago. To be included in the group biometry needed to detecting no significant outcome differences after multiple attempts.

EP-CAT-24

Surgery treatment of hyper-matur cataract complicate with phacolytic glaucoma

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Purpose: The aim of this case study is to analyze the results of the surgery of phacolytic glaucoma treated by phacoemulsification and trabeculectomy, both separately and at the same time.
Methods: Observations were done on 8 patients with different picture of phacolytic glaucoma treated at our Clinic from 2015. to 2018. Phacoemulsification was performed and intraocular lens was implanted too on each of the patients. In 2 cases we also did trabeculectomy 2 days afterwords, in 4 cases we combined phacoemulsification and trabeculectomy simultaneously.
Results: Before the operation visual acuity were: irregular light perception in 2 cases, regular light perception in 6 cases. Intraocular pressure readings were 35 mmHg to 75 mmHg.
In 5 cases before the operation we had performed paracentesis, due to non-effective local and systemic hypotensive therapy.
In 2 cases we made phacoemulsification solely, but after 2-3 days we had increase of IOP more than 30 mm Hg, which can be explained by obstruction of trabecular meshwork by lens proteins, phagocytizing macrophages, and other inflammatory debris. It was necessary to perform trabeculectomy.
In 4 cases we opted for combined surgery methods of phacoemulsification and trabeculectomy. In those 4 cases less kerathopaty was noted and cornea was more transparent as well. Postoperative visual acuity was less than 5/50 in 2 cases, 0,2 - 0,4 in 5 cases, and 0,6 in one case. Intraocular pressure was lowered with all the patients, with typical value of 15.5 mm Hg.
Conclusions: Phacoemulsification showed as not good enough method to treat hyper mature cataract with phacolytic glaucoma, mainly because of occlusion of trabecular meshwork caused by lens proteins. A better method proved to be to combine phacoemulsification and trabeculectomy surgery, keeping in mind that in order to obtain satisfactory results this ought to be done as quickly as possible after increase of intraocular pressure as the core symptom is spotted. .

EP-CAT-25

Results of astigmatism correction after phacoemulsification with implantation of AT TORBI 709 M toric IOL

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Purpose: To evaluate the results of astigmatism correction after Phacoemulsification with implantation of AT TORBI 709 M Intraocular Lens during a 3-month follow-up.
Methods: Prospective study including 51 consecutive eyes of 45 patients (mean age: 60.67 ± 20.55 years, from 13 to 86 years old) with corneal astigmatism ≥ 1D (0.98 - 4.15D) and undergoing uncomplicated cataract surgery with implantation of AT TORBI 709 M toric IOL. Visual, refractive, and keratometric outcomes as well as IOL rotation were evaluated 1 week, 1 month and 3-month follow-up. At the end of the follow-up, patient satisfaction and perception of optical/visual disturbances were also evaluated using a subjective questionnaire.
Results: At 3 months after surgery, mean LogMAR UDVA and CDVA were 0.23 ± 0.11 and 0.13 ± 0.10, respectively. UDVA of 20/40 or better was achieved in 86.3% of eyes and 20/25 or better in 25.5%. CDVA was 20/40 or better in 96.1% of eyes and 20/25 or better in 74.5%. Mean refractive cylinder decreased significantly from -2.26 ± 0.59 to -0.61 ± 0.28 D ($p < 0.001$) while keratometric cylinder did not change significantly. IOL rotation was lower than 5 degrees in 72.5%. Mean patient satisfaction score was 8.08 ± 1.02, using a scale from 0 (not at all satisfied) to 10 (very satisfied).
Conclusions: Phacoemulsification with implantation of the AT TORBI 709 M intraocular Lens is a predictable and effective procedure for visual rehabilitation in eyes with cataract and low to high corneal astigmatism, providing a quite good postoperative ocular optical quality
Keywords: AT TORBI 709 M, corneal astigmatism, Toric IOL
Subspecialty: Cataract

EP-CAT-27

Perioperative management of antithrombotic therapy in cataract surgery - is it safe to continue it?

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Purpose: The large majority of patients undergoing cataract surgery are elderly and take systemic medications on a regular basis, including antiplatelet(AP) and anticoagulant(AC) treatments. Our purpose is to investigate whether those agents are continued perioperatively among our patients and if there is a difference between peri- and postoperative complications among patients who continued and those who stopped their antithrombotic treatment.
Methods: 587 consecutive patients(aged between 53 and 88 years old) who underwent cataract surgery with topical anaesthesia from July to November 2018 participated in the study. 148 (25,2%) of them (76 females) received

at least one anticoagulation/antiplatelet agent for the past two years, due to coronary artery disease, cerebrovascular disease, or arrhythmia. 68 patients (45,9%) received aspirin, 38 clopidogrel (25,7%) and 42 patients (28,4%) received anticoagulation treatment (14 acenocoumarol, 9 apixaban, 19 rivaroxaban).
Results: 63 patients (42,6%) did not stop their AP or AC treatment preoperatively (group A), whereas 85 patients (57,4%) stopped their treatment according to their physician's instructions (group B). There were no intraoperative or late postoperative complications. Postoperative subconjuctival haemorrhage was recorded in 6 patients from group A and 2 patients from group B.
Conclusions: Anterior chamber surgeries, including cataracts, are considered low risk. Maintenance of antithrombotic therapy during the perioperative period in patients scheduled for cataract surgery with topical anaesthesia does not increase the risk of peri- or postoperative complications. This practice is, however, not commonly accepted and still many cataract surgery patients are advised to stop or modify their antiplatelet/anticoagulant treatment, thus imposing an unnecessary risk to individuals with serious systemic comorbidities.

EP-CAT-28

Burden of cataract in Azerbaijan

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Purpose: Blindness due to cataract presents a big problem in Azerbaijan. Our previous evaluations have shown that a backlog of over 100 thousand people with blindness in the country, and 51.4% of these are blind due to cataract. The annual incidence of cataract for last ten years was about 2000 cases per year. 20% of all surgery carried out on the basis of National Center of Ophthalmology accounted for extracapsular cataract extraction. Aim of this study was to describe the morbidity for cataract in an Azerbaijani adult population.
Methods: The statistical data for young (from 18 to 29) and adult (over 30 years old) population was collected from Ministry of Health for 2013-2017. Descriptive analyze was conducted by using EpiINFO. The significance of differences was calculated using the Pearson criterion.
Results: In the study period 84,304 cases of cataracts have been reported in the population of Azerbaijan. The incidence of cataracts is 4,394±3.57 per 100,000 populations, in average. In compare with previous decade the incidence of cataracts was increased twice. On average, 10951.8 ±7.36 people per year are under dispensary observation. The proportion of cases by gender is 1:1, however, an increase in the percentage of cataract cases (from 3.6% in 2013 to 5.8% in 2017, prevalence; $p< 0.005$) and the percentage of cases of newly registered cataracts (from 4.2% in 2013 to 5.7% in 2017, incidence; $p< 0.005$) among the young population ($p < 0.005$) has been found. An increase in the number of cataracts among urban population has also been found. The percentage of young people covered by dispensary observation also increases over the years (from 3.8 to 4.5%, $p< 0.005$).
Conclusions: The increase in the incidence of cataract among young population highlights the necessity in plan appropriate medical services and public health interventions for primary and secondary prevention.
Keywords: cataract, prevalence, incidence, Azerbaijan

EP-CAT-29

Reversible opacification of a hydrophobic acrylic intraocular lens

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Purpose: We report a case of temporary post-operative IOL opacification of a hydrophobic acrylic IOL (Tecnis ZB00, Abbott), following uncomplicated phacoemulsification cataract surgery.
Case: The 68-year-old caucasian woman had a background history of right macular hole repair by 23 gauge vitrectomy with ILM peel and SF6 gas, eighteen months previously, and her VA in the right eye after macular hole repair and before cataract surgery was 6/30-1. Uneventful cataract microincision phacoemulsification cataract surgery, with vision blue dye, was performed, with a 25 dioptre (Tecnis ZB00) intraocular lens implanted.
She was seen 4 weeks after cataract surgery, when she complained that she noted no improvement in her vision and felt discomfort in her operated eye. Her right vision at this visit was 6/36 unaided, improving to 6/18-1 with -1.00DS/-0.75 x 126. Her intraocular lens showed a peripheral frosting opacification, with the centre spared, the anterior examination was otherwise normal. The dilated fundus exam was normal, with the optical coherence tomography showing a closed macular hole, and fluorescein angiography was normal. She was reviewed regularly, with the peripheral IOL frosting clearing at 13 weeks postoperatively.
Conclusions: This is the third reported case of temporary opacification in hydrophobic lenses, to our knowledge. Cataract surgeons should be aware of this rare complication which we found to resolve spontaneously.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Contact Lenses

EP-COL-01

Scleral lenses in the management of exposure keratopathy in one-months-old male infant with bilateral upper eyelid coloboma

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Purpose: Eyelid colobomas are congenital abnormalities caused by failure of fusion of the mesodermal lid folds. Corneal protection is the primary goal in the medical treatment of eyelid coloboma to prevent complications.
Methods: We report a rare case of bilateral upper eyelid coloboma in one-month-old male infant. On physical examination, the patient had congenital bilateral upper eyelid coloboma of medial location involving more than two-thirds of the eyelid margin. The patient had more than 4 mm of bilateral lagophthalmos, euryblepharon, and large corneal ulcers with central leukoma. We have focused our patient care on two priorities: rehabilitation of exposure keratopathy and reconstruction of bilateral upper eyelid defect. According to the anaesthesiologist, general anaesthesia is contraindicated to this patient until it reaches a weight of ten kilograms.To tackle the issue, we used pediatrics, therapeutic, high Dk, non-fenestrated, gas permeable scleral lens to manage the corneal exposure.

Results: Congenital upper eyelid colobomas are one of the few nontraumatic oculoplastic emergencies that may occasionally present in the first days of life with exposure keratopathy. Operating on very young infants with probably multiple congenital anomalies with attendant possible anaesthetic risks could be a major surgical challenge. Sometimes the surgical treatment cannot be practice immediately. Awaiting the surgery, the rehabilitation of exposure keratopathy is more than appropriate. The goal of wearing scleral lenses in pediatric age is, in our case, the protection of the ocular surface awaiting the surgery. For our patient the scleral lenses have protected and hydrated the cornea, enabling corneal surface recovery.
Conclusions: Scleral Lens is a treatment option after failure of conventional therapy or in attempt of surgical treatment for a broad range of ocular surface and refractive disorders in the pediatric age group.

EP-COL-02

Fitting characteristics of rigid gas permeable (RGP) contact lenses following corneal collagen crosslinking for keratoconus

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Purpose: To compare fitting characteristics of rigid gas permeable (RGP) lenses before and after corneal crosslinking (CXL) in progressive keratokonus.
Methods: The charts of consecutive patients who underwent CXL and had been fitted with RGP lenses before and after the procedure were retrospectively reviewed. Uncorrected and spectacle-corrected visual acuity, best fitting RGP lens parameters, contact lens-corrected visual acuity (CL-CDVA), corneal topography were evaluated before and 3 months after CXL. Additionally, the patients were asked to grade the comfort with RGP as poor, good, very good, or excellent at the last follow-up examination.The main outcome measure was any change in objective or subjective on-eye performance of RGP lenses following CXL.
Results: 219 eyes of 136 patients were evaluated.126 eyes were fit with Rose-K2 and 93 eyes were fit with Orbiflex contact lenses. Of the 219 RGP fittings analyzed before CXL, 179 eyes (81.7%) were adequately fit, whereas, 40 (18.3%) eyes were considered RGP failures. 51 of 179 (28.5%) eyes needed a base curve adjustment compared to baseline. The base curve was flattened in 60.2%, and steepened in 39.8%. RGP power changed in 136 of the 179 eyes (76%); lens (-) power was increased in 61% and decreased in 39%. Patient eyes which were considered RGP failures preoperatively, could not be fit adequately following CXL, either. At postoperative month-3, there was no significant change in CL-CDVA compared to baseline measurements(p=0.325). At the last follow-up examination, all of RGP-tolerant patients rated comfort with their contact lenses as "very good" to excellent.
Conclusions: In this study, objective and subjective RGP tolerance did not change following CXL. Any eye that is RGP intolerant at baseline can be expected to remain RGP intolerant following CXL. However, adjustments to base curve and power of RGP lenses may be required post-operatively. Therefore, lens fit should be re-evaluated following CXL for optimal results.

EP-COL-03

The role of contact lenses in anisometropia

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Purpose: Anisometropia is the irreversible process of developing amblyopia. Frequently the correction is chosen to be done in favor of dominant eye and thus in the nondominant eye the amblyopia is formed.
Methods: The patients taking part in the research are prescribed the following items; eyeglasses, eyeglasses and obturation, contact lenses and obturation.
In the research there participated 25 people, 45 eyes, age - from 6 months till 35, 9 men and 16 women. 31 eye have nearsightedness, and astigmatism, 4 eye have farsightedness, 10 eyes farsightedness and astigmatism.
The following researches were taking places: visometry, measurement with refractor/ Keratometer, cover test, defining the dominant eye, stereo test, correction with eyeglasses, correction with contact lenses, biomicroscopy.
Results: 1. In 21 patients there were obviously seen the improvement of eyesight with the help of contact lenses. From them in 3 squint-eyed patients and with myopic astigmatism the squint-eyes were totally compensated. The patient only needed to be prescribed the contact lenses for the eye-sight correction.There were better results with 4 patients with the combination of occlusion. 2. There were no result with 4patients.
Conclusions: Contact correction as effective type of correction the eyesight is acceptable in the following cases:
1. In any cases of Anisometropia.
2. From 70 to 100 % improves the eyesight while carrying on the correction of any type of myopic astigmatism. In 60% it is enough to do the contact correction, and in 40% the dominant eye occlusion is added to the contact correction.
3. Good results are achieved in treatment the patients with myopic astigmatism and outside squint.
Correction of anisometropia doesn't mean the development of amblyopia.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Cornea

EP-COR-01

Long-term safety of topical 0.03% tacrolimus ointment for ocular inflammation in children under 18 years old

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Purpose: To investigate the efficacy and safety of long-term treatment with topical 0.03 % tacrolimus ointment for ocular inflammation in children under 18 years old
Methods: Seventy two patients under 18 years (mean age 10.79 (± 3.96) years), range 3~17) old who were prescribed 0.03% tacrolimus ointment in ophthalmology clinic from Jan 2010 to Mar 2018 were included in the study. Long-term maintenance treatment (≥6 months) with topical 0.03% tacrolimus

ointment was applied to patients with ocular GVHD (Graft-versus-host disease), VKC (Vernal Keratoconjunctivitis), allergic conjunctivitis, and corneal phlyctenulosis. The clinical outcomes were assessed by symptom score, best-corrected Snellen visual acuity (BCVA), Intraocular pressure (IOP). Patients were evaluated with a questionnaire and slit-lamp examination after treatment, and symptoms and signs were compared to those observed at baseline.
Results: Seventy two patients (144 eyes) were treated with tacrolimus ointment. Seven patients did not follow up. Except for mild burning sensation, there were no reported side effects. Six of 65 patients experienced intolerable burning sensation, which required treatment cessation. Cessation days of those who quit were 1,5,14,35,38, and 109 days. Twenty five of 65 patients fully recovered, resulting in discontinuance of the ointment treatment before 6 months. Thirty four patients consisted of nineteen males (56%) and fifteen females (44%) (mean age 11.05 (± 4.15) years) were treated with tacrolimus ointment for over 6 months (average 23.12 (± 19.07) months). At the final follow-up, all patients reported improvement in clinical outcomes, compared to initial findings. No adverse changes related to the use of topical tacrolimus were noted.
Conclusions: Long-term maintenance of topical 0.03 % tacrolimus ointment is a safe and useful treatment in children under 18 years old to treat GVHD, VKC, allergic conjunctivitis, and corneal phlyctenulosis.

EP-COR-02

Type 1 keratoprosthesis with cross linked carrier donors, a better together concept - longitudinal analysis

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Purpose: To demonstrate the efficacy of cross linking of donor corneas in resisting post operative infections and corneal melts in Boston Type 1 Keratoprosthesis in eyes with ocular surface disorders
Methods: A conventional epithelium off corneal collagen cross linking was performed with riboflavin and UV light, in a de-epithelialized donor cornea mounted on an artificial anterior chamber, subsequently the cornea is used as a carrier for Boston Type 1 keratoprosthesis, and transplanted in eyes with OSD and multiple failed corneal grafts. The patients were followed up for corneal integrity to resist infection and corneal melts, which are common following Boston Keratoprosthesis and especially in cases of OSD
Results: 16 cases of 15 subjects were studied, followed-up of 5 years. All grafted eyes were healthy in resisting long term post operative infections and corneal melts.
Conclusions: Cross linking of donor corneal button before Boston Type 1 Keratoprosthesis (A Better Together Concept) with Riboflavin and UV rays is effective in improving long term post operative strength and outcome of corneas, especially in cases of ocular surface disorders

EP-COR-03

Corneal endothelium cell loss in anterior chamber versus retropupillary implantation of irisclaw intraocular lens

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Purpose: To retrospectively compare the outcomes of corneal endothelium cell loss in anterior chamber and retropupillary implantation of iris claw intraocular lenses (IOL).
Methods: A retrospective study was performed, evaluating the charts and endothelial photographs of 27 eyes. Patients are divided into two groups based on the way of iris claw intraocular lens (Artisan Aphakia, Ophtec) implantation. Group 1 received anterior chamber iris claw IOL implantation. Group 2 received retropupillary iris claw IOL implantation. The data of the central endothelial cell density (CECD), the percentage of cell loss and the change of central cornea thickness preoperatively and 3 months postoperatively were evaluated.
Results: At the post-operative 3 months follow-up , the mean best-corrected LogMAR visual acuity was 0.3 in group 1; 0.2 in group 2. Each two groups obtained a significant improvement in CDVA ($P < 0.05$).
There was statistically significant difference in the change of endothelial cell density (cells/mm^2) between these two groups($p=0.025$).
There was no statistically significant difference of the central cornea thickness compared between these two groups.
Conclusions: The result shows significantly lower endothelial cell loss in retropupillary fixation group. However, the choice of anterior chamber or retropupillary implantation of iris claw intraocular lens still depends on patients' aphakic etiology, original CECD, ACD(anterior chamber depth) and surgeon's judgment.

EP-COR-04

Severe iatrogenic corneal damage following bilateral I-CARE phakic lens implantation

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Purpose: To describe a case of severe corneal damage following bilateral I-CARE anterior-chamber lens implantation.
Methods: We report a case of a 41-year old male patient who developed severe bilateral endothelial cell loss following anterior chamber lens implantations (I-CARE) in 2002 for the correction of myopia. In 2015 the anterior chamber lens of the right eye was removed but corneal decompensation of that eye required a penetrating keratoplasty (PK). One year post-operatively graft rejection occurred. The patient was offered an HLA-matched donor cornea, but the graft was rejected again another 4 months later. In the left eye, the I-CARE lens was still in place upon presentation in our centre in 2018, despite a significant endothelial cell loss and bullous keratopathy. The best-corrected vision at that time was counting fingers in both of the eyes. We offered a DMEK procedure for the right eye and an urgent removal of the left phakic lens.
Results: Visual acuity had improved from counting fingers to 0.32 in the right eye, 3 months following DMEK. The uncorrected vision of the left eye was 0.3 on the first post-operative day.

Conclusions: This case stresses the importance of close follow-up in patients with phakic I-CARE intra-ocular lens (IOL) implants. The lenses may lead to serious endothelial cell loss, and the IOL should be explanted once the endothelial cell count drops to less than 2000 cells/mm2, in order to avoid further iatrogenic damage as in this case. In addition, a rejected corneal graft from a PK procedure may be treated by a DMEK.

EP-COR-07

Interest of SD-OCT in Vortex keratopathy

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Purpose: To emphasize on Anterior Segment-Optical Coherence Tomography (AS-OCT) interest in Amiodarone corneal induced keratopathy through two cases.
Methods: Two patients, a 58 year-old woman and a 53 year-old man, were referred with the complaint of eye dry symptoms. Both of them had a history of atrial fibrillation and had commenced Amiodarone 200 mg once daily for 4 years and 5 months respectively.
Both of our patients underwent a complete ophthalmologic examination that showed characteristic corneal deposits. Therefore, an AS-OCT was applied to localize these deposits.
Results: On examination, best corrected visual acuity was 20/20 in each eye and slit-lamp examination revealed bilateral, symmetric, whorl-like pattern of brown intra-corneal deposits in the inferocentral region called Corneal Verticillata or Vortex keratopathy.
AS-OCT showed a thickening of the corneal epithelium and the Bowman's layer associated to the presence of reflective micro-deposits.
Conclusions: Vortex keratopathy is the most frequent feature of ocular toxicity of Amiodarone. Corneal deposits are typically bilateral, symmetrical and are generally asymptomatic. AS-OCT is a new imaging technique that allows understanding its physiopathology by localizing these deposits within the different layers of cornea.

EP-COR-08

The therapeutic potential of PEDF-peptide derivative in corneal endothelial wound healing

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Purpose: To assay the therapeutic effect of intracameral injection of PEDF-peptide on corneal endothelial wound healing in a rat model of transcorneal cryoinjury.
Methods: Central corneal endothelium of Sprague-Dawley rats was damaged by transcorneal cryoinjury. Injured eyes were treated with an intracameral injection of PEDF-peptide or vehicle-control DMSO. Quantitative and qualitative analysis of the damaged corneal endothelium was performed by using Alizarin Red S. The area of corneal endothelial damage and endothelial cell morphometric analysis were evaluated at different time points (days 3, 5 and 14 after cryoinjury) by using Alizarin Red S vital stain. The corneal endothelial proliferative activity was determined by immunolocalization of BrdU with diaminobenzidine (DAB).
Results: There was reduced endothelial damage in rat corneal buttons (6.0-mm diameter) that experienced a single dose intracameral injection of PEDF-peptide treatment following transcorneal cryoinjury. The beneficial effect of the PEDF-peptide treatment was statistically significant for nearly all followed timepoints in treated corneas ($p< 0.05$). The corneal endothelium (CE) cell density and morphometric analysis demonstrated CE confluence in both control and PEDF-peptide treated corneas. However, intense polymegathism and pleomorphism were observed in the control eyes. Central cell density reached nearly normality in the PEDF-peptide treated eyes compared to normal controls. Anti-BrdU labeled cells visualized in light microscopy showed an increased CE proliferative activity in PEDF-peptide treated corneas in nearly all followed up time points (days 3, 5 and 14 after cryoinjury).
Conclusions: Intracameral injection of PEDF-peptide demonstrated to be effective in the treatment of damaged corneal endothelium in a rat model of transcorneal cryoinjury.

EP-COR-09

IQGAP-1 modulation of tight junction proteins and protection against P. aeruginosa invasion

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Purpose: To determine the role of IQ-domain GTPase-activating protein1 (IQGAP-1) in tight junctions of human corneal epithelial cells (HCECs) and its effect against *P. aeruginosa* infection.
Methods: Transformed human corneal epithelial cells (HCECs) and IQGAP-1 RNA knockdown HCECs (siHCECs) were used. Confocal microscopy was preformed to locate the proteins actin, zonular occluding-1 (ZO-1), and IQGAP-1 in both HCECs and siHCECs. Transepithelial electrical resistance (TER) was compared both after infection by Type III secretion system (T3SS) invasive genotype *P. aeruginosa* strain (PAK) and with cytochalasin or jasplakinolide pretreatment. Trypan blue exclusion assay and gentamicin invasion assay were done to compare the relative survival and PAK intracellular invasion.
Results: In control HCECs, IQGAP-1 was located at submembrane intracytoplasmic regions and cell borders which co-localized with ZO-1 and actin. Confocal z view microscopy further identified the apical positioning of ZO-1 with IQGAP-1 co-localization. Enhanced actin and ZO-1 aggregation was seen in siHCECs. IQGAP-1 knockdown significantly increased TER of HCECs ($P< 0.0001$). After PAK infection, siHCECs could maintain the TER up to 2.5 hrs after infection ($P< 0.001$). Cell viability after PAK infection was also greater for siHCECs for up to 4 hrs after infection. PAK intracellular invasion was significantly lowered by 40% and 50% in siHCECs at 0.5 and 1 hr post infection, respectively.
Conclusions: IQGAP-1 through its binding with actin and ZO-1 may modulate the tight junction of HCECs. IQGAP-1 knockdown increased the strength and integrity of tight junctions and may provide an early protective effect against *P. aeruginosa* invasion.

EP-COR-10

Neurotrophic keratopathy post radiofrequency trigeminal nerve ablation

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A 89 years old gentleman received radiofrequency trigeminal nerve ablation for his trigeminal neuralgia and two days after he complained of painless acute deterioration of the vision. On ophthalmic examination, his right visual acuity had dropped from 6/18 to 6/36, right corneal reflex was absent with poor bilateral bell's phenomenon. His right cornea had 2 x 4 mm focal corneal epitheliopathy with extensive corneal punctate epitheliopathy and irregular corneal surface area. Schirmer test showed ipsilateral reduced base-line tear production.
Literatures have reported 5% risk of diminished corneal reflex after radiofrequency trigeminal nerve ablation, however there was no cases reported about the risk of reduced lacrimal gland tear production.
In this case, we are addressing the diminished lacrimal gland tear production as the complication of radiofrequency trigeminal nerve ablation procedure due to the parasympathetic pathway of lacrimal gland being damaged.

EP-COR-11

Factors predicting graft failure of pediatric penetrating keratoplasty in Southern Tunisia

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Purpose: To study the incidence of graft failure in pediatric keratoplasty, analyze the causes of failure according to the age of the patients and preoperative indications and to evaluate the main risk factors for failure.
Methods: We undertook a retrospective review of 40 primary penetrating keratoplasty performed in 37 children and adolescents 18 years of age or younger in our department between January 2004 and December 2015.
Results: Mean age was 12 years (1 to 18 years). Surgical indications were congenital opacities (23%), acquired non-traumatic opacities (65%) and acquired post traumatic opacities (12%). Keratoconus was the most common diagnosis (53%). Overall graft survival rate was 67% at one year. The best corneal graft survival was found in acquired non-traumatic opacities (77%) and adolescents (79%) ($p < 0.0001$).
Graft rejection was the leading cause of failure (77%). Risk factors for graft rejection included history of intraocular surgery, combined surgery, corneal neovascularization, intraocular inflammation, and surgery after keratoplasty.
Conclusions: The penetrating keratoplasty in children has specific indications and problems. The complications represented mainly by graft rejection, remain an important cause of therapeutic failure.
Graft survival vary by indication and recipient age. Corneal grafts for keratoconus in adolescents show excellent survival. Successful transplantation requires careful preoperative evaluation, rigorous follow-up, and aggressive postoperative treatment and cooperating parents.

EP-COR-13

Femto assisted crosslinking in dampening progression of keratoconus: a longitudinal study

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Purpose: 1. To compare femto assisted CXL with conventional-CXL, and evaluate the concept of deeper stromal crosslinking better dampens progression of ectasias. 2. To study the long term outcomes of femto CXL after two years.
Methods: A non-randomised comparative clinical trial followed by single arm longitudinal analysis of Femto CXL group.
In phase 1, Femto CXL (FC) (creation of stromal bed, 8.5mm dia., 140-160 mic. deep with two incisions, into which riboflavin is infused in addition to transepithelial application & subsequent UVA) was compared with epi-off conventional-CXL (CC). Visual acuities, CCT, K max value, astigmatism, AS-OCT derived demarcation line (DL) were analysed at 1 year.
In phase 2, subjects of Femto CXL (FC) group were followed up after 2 years to study the long term outcomes.
Results: In Phase 1 (25 FC, 21 CC) UCVA improved in FC (0.64 +/-0.25), BCVA was similar, CCT maintained in FC (474+/- 37.5 mic), reduced by 25 mic. ($p< 0.05$) in CC. Astigmatism reduced in FC by 0.25D, increased by 0.27D in CC. DL in FC (393+/- 34.1 mic) Vs (243 +/- 15.9 mic) in CC. In Phase 2 (24 FC), CCT (470+/- 36.53 mic), UCVA (0.61 +/-0.26), BCVA (0.14 +/-0.13), Astigmatism (2.84 +/- 1.23D) and KMax (47.6 +/- 2.28D) were maintained
Conclusions: Crosslinking of posterior stroma deeper than 250 micron could be achieved with femto assisted CXL than conventional CXL. Femto assisted cross linked corneas clinically remained stable with no progression after 2 years.

EP-COR-14

Corneal stromal augmentation folowed by toric phakic intraocular lens implantation in advanced non-scarred keratoconic eyes: a conceptual analysis

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Purpose: To analyze the effectiveness of implantation of toric phakic IOL (PIOL) as an Add-on refractive measure to corneal stromal augmentation technique (CSA) in the management of advanced non scarred keratoconic eyes
Methods: A prospective exploratory clinical trial.In phase1, non-scarred keratoconus contraindicated for cross linking were included. Femto assisted donor stromal lenticule (180 -220 mic., 7.5-8.5 mm in dia.) was fashioned, and a mid-stromal bed was created with 2 incisions in recipient cornea again using femto lasers, into which donor lenticule was transplanted for stromal augmentation. Difference in pre and post operative vision, pachymetry, anterior and posterior corneal elevation(mm), reversal of irregular astigmatism were analyzed at 1 year. In phase 2, subjects with high residual refractory errors underwent an Add-on toric phakic IOL implantation and outcomes measured at 6 months.
Results: In phase 1, 15 underwent CSA. UCVA improved from 1.2 +0.2 to 0.8+ 0.2 ($p=0.003$), BCVA from 0.9 +0.2 to 0.4 +0.1 ($p< 0.0001$).Pachymetry restored from 359 +49 to 583+53. Cornea flattened significantly (Anterior improved from 0.067 to 0.044 and Posterior from 0.075 to 0.039). Astigmatism

reduced from 9.2 +4.3D to 4.3 +1.7. Post CSA inferior to superior asymmetry was 3.2+1.4D In phase 2 (n=8), Residual spherical error was -3.87 +2.21 and cylinder was -4.18+0.84. UCVA improved from 1.0 +0.11 to 0.4+ 0.14 ($p<0.0001$), BCVA from 0.63 +0.15 to 0.25 +0.05 ($p<0.0001$) at one month and 0.22 +0.04 at 6 months.

Conclusions: Corneal Stromal Augmentation is effective in improving vision, flattening cornea, increasing pachymetry (reversal of ectasias), and improving irregular astigmatism without sacrifice of recipient tissue and suture complications. Add-on Toric phakic IOL is effective in overcoming residual high refractive errors post stromal augmentation

EP-COR-15

Epidemiology of eye injuries in a high-income developing country

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Purpose: Vision loss following eye trauma is a serious health problem worldwide. The aim of the study was to report the epidemiology of eye injury that requires hospitalization and surgery at a secondary referral center in a high-income developing country so as to give recommendations regarding its prevention.

Methods: All patients who had an eye injury that required surgical intervention between 2012 and 2017 at Al-Ain Hospital were retrospectively studied. Demography, cause of injury and visual acuity before and after treatment were studied.

Results: One hundred forty one patients were operated, 96 eyes with open globe and 48 with other injuries. The mean (SD) age of the patients was 26 (15.5) years, 89% were males. Majority of injuries occurred at work (50.4%) followed by home (31.2%). Sharp objects (24.1%) and blunt trauma (16.3%) were the most common mechanism of injury. Eye injury was less during the weekends (Friday and Saturday) and during the summer vacation. Cornea injuries (48.2%) were the most frequent cause for visual acuity deterioration followed by lens/cataract (23.4%). Among injured eyes, 30 eyes (21.3%) retained intraocular foreign bodies. There was significant improvement of the visual acuity after surgery ($P< 0.0001$, Wilcoxon signed rank test).

Conclusions: Our study has shown that eye injury is a major cause for visual loss of young people which is mainly work-related. Use of personal protective equipment for the eyes and adopting legislative eye safety regulations will reduce the impact of eye injuries in our community.

EP-COR-17

Two month visual outcome after contact lens related Pseudomonas keratitis in healthy young adults in September of 2018

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Purpose: Unusually, in a week period had to treat two (unrelated) healthy young adults with Pseudomona keratitis. We want to share visual outcome for young patients two months after Pseudomonas keratitis.

Methods: Nineteen years old male and female were hospitalised with complain of red eye and severe pain for two days. Both patients are soft disposable monthly contact lens users who were suspected for microbial keratitis. Immediately, patients were treated with local Fluoroquinolone and systemic Cefazolin. Periodically they underwent OCT-AS, ophthalmic photography and Snellen visual acuity examination.

Results: At the presenting day slit-lamp examination revealed 0,58 mm² wide corneal patch staining for female, but 4,87 mm² for male. Best corrected visual acuity (BCVA) was decreased to 0,15 for female and 0,1 for male. OCT-AS revealed 990 μm central corneal oedema and 236 μm deep corneal infiltrate for female, but for male respectively 865 μm and 471 μm. After two weeks the BCVA improved for female to 0,8 and 0,2 for male. OCT-AS affirm infiltrate decrease to 229 μm for female and 351 μm for male. The central corneal oedema decreased for both patients to almost normal corneal thickness. Microbiology laboratory identified Pseudomona aeruginosa.

Two months later female had no corneal staining, but male had 0,2 mm² wide stained area. Central corneal thickness was 559μm for female and 556μm for male. BCVA increased to 0,9 for female, but 0,4 for male.

Conclusions:

1. The residual corneal scarring reduces BCVA in patients with massive, centrated and deep Pseudomonas keratitis.
2. The good outcome after pseudomonas keratitis is possible if the management of inflammation is started early and used massive antibiotic therapy (local and systemic).
3. Even two months after keratitis there is slowly BCVA improvement.

EP-COR-18

Long-term results of corneal transplantations during HAAR-therapy of HIV infection

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Purpose: According to the WHO 70-80% of HIV-patients receiving treatment for HIV-associated eye diseases.The main prognostic criteria is the number of CD4+ T cells.

Corneal grafts rejection usually caused by latent HSV-1 reactivation in the trigeminal ganglion during immunodeficiency, which transmitting along the nerve axons to the corneal tissue, triggers inflammation.

Here is the long-term clinical observation of corneal grafts after HIV-associated leucomas and cataract surgeries in young patient.

Methods: An insulin-dependent HIV-patient, a young woman, with corneal blindness (uveal leucomas and cataract in both eyes) and continiously receiving HAART underwent the surgeries: PK and cataract extraction with IOL implantation simultaneusly in both eyes 10 and 7 years ago. Before surgeries patient had very poor visual functions as hand movement in both eyes and

surgeries were done for social reasons.IOLs were calculated by the average value. Surgery techniques were the standart "tripple procedure" under the "open sky". The number of CD4+ T cells before surgeries where 630 and 564 cells/ µL respectively.

Results: First operated eye immidietly after surgery had a sight 0.09, next year after Yag-laser capsulotomy sight was 0,06, one year later she had decentration of the IOL because of eye-ball injury and after treatment the sight was 0.04 no correction.

The same surgery on another eye was done because of low vision in first eye. Immidietly after surgery the sight was 0.1, after one months and till today - 0.06.

Both corneal grafts are clear until now. A full social rehabilitation of young woman with HIV and Diabetes mellitus 1 type achieved : managing herself and insulin injections, found a job, got married and became a mother.

Conclusions: The efficacy of HAARTpositively influenced on corneal grafts during HIV infection by maintaining the number of cells at a sufficient for immunocompetence level, supressing HSV reactivation and preventing inflammation in the corneal tissue.

EP-COR-19

Six years of corneal donation to the hospital São João eye bank: characteristics of cornea donors from 2012 to 2017

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Purpose: To investigate the characteristics of cornea donors to the Hospital São João Eye Bank during a 6-year period.

Methods: Retrospective analysis of Hospital São João Eye Bank records from January 2012 to October 2017. We analyzed donor standardized records, which included demographic data, cause and time of death, death-to-preservation interval, preservation-to-utilization interval, endothelial cell density (ECD), pachymetry and blood tests.

Results: The sample contained 509 corneal donors. Mean age was 58,94±16,31 years (range 4-88 years) and most donors were male (61,1%). The most common cause of death was cardiovascular disease (47.3%), followed by cancer (29,9%) and trauma (12,6%). 69,5% donated tissue was obtained in deceased donors and the others in living donors.

Mean death-to-preservation interval was 6.13±3.27 hours. Mean preservation-to-utilization interval was 6.58 ± 2.86 days on the right eye and 6.64 ± 2.90 days on the left eye. The mean ECD of corneal tissue was 2407,00±586,96 cells/mm2 on the right eye and 2386,37±644,23 cells/mm2 on the left eye. Mean pachimetry was 556,83±95,72 µm on the right eye and 562,27±97,18 µm on the left eye. Blood tests were negative in 94,9% of cornea donors. Only 3% presented with Treponema pallidum hemagluttin antigen (TPHA) positive test and 2% with active infection for Hepatitis B Virus and/or Hepatitis C Virus.

Conclusions: In Hospital São João Eye Bank, the generic donor was a man in the sixth decade of life who died due to circulatory system diseases, whose corneas had approximately 2400 endothelial cells/mm2 and 540 µm in pachymetry and with negative blood tests.

EP-COR-21

The role and place of the penetrating transplantation of canned cornea in the surgical treatment of the keratoconus

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Purpose: To analyze the outcomes of the penetrating transplantation of the cornea in the advance stages of the keratoconus

Material and methods: We analyzed the results of the surgical treatment of patients to whom were performed PKP in terms of the II-IV stages of the keratoconus. PKP was done to patients with keratoconus who had visual acuity deteriorating quality of life and not corrected with glasses and contact lenses as well as at patients whose thickness of the cornea does not allow to carry out implantation of the intracorneal rings. A cornea canned used that was delivered from the ophthalmic banks of USA. The study involved 30 patients, including men - 24, women - 6. Average age was 30 ± 0,08 years old. Average date of the observation made up 3 years. All patients were undergone common ophthalmologic examination before surgical intervention and after 1, 3, 6, 12 months

Average visual acuity before operation with correction was - 0,04±0,01. Corneal astigmatism up to 6,0 D was at 27% of patients, 7,0 -15,0 D was at 67% of patients and 15,0< was just at 6% of patients respectively. Keratoconus of the 3-4 stages were at 93% of patients, at 7 % of patients were keratoconus of the II stages.

Results: In postoperative period a corneal astigmatism decreased up to 6,0 D and even less at 93% of patients, average visual acuity with correction was made up 0,38±0,04. Visual acuity with correction 0,4 and more was at 53% of patients.

To sum up as a result of surgical treatment, visual acuity increased to 9,5 times compared to initial indicators from 0,04±0,01 up to 0,38±0,04 and corneal astigmatism decreased to less than 6,0D at 66% of patients.

Conclusions: The right approach to the surgery, thorough preoperative examination and patient preparation, the usage of the high qualified transplant material allow to obtain high optical and medical results at patients with keratoconus II-IV stages.

EP-COR-22

Eye injuries caused by date palm thorn-leaves in high income Middle Eastern country

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Purpose: To describe the clinical features and treatment outcome of admitted date palm tree eye injuries.

Participants: Consecutive patients who were admitted to hospital following date palm tree eye injury between 2012 and 2017.

Methods: Patients demography, symptoms and signs at presentation, visual acuity (VA) before and after treatment were studies. Causes for VA limitation and time lapse to hospital presentation were recorded. All microbiology findings and surgical repairs of the injury were analyzed.

Main Outcome Measures: The assessed variables included visual acuity, treatment, and outcome.

Results: A total of 16 patients were identified with median age of 38.5 (7-58) years and all were males. Majority (87.5%) were expatriates. Majority of injuries occurred at farms. Eye pain (94 %) was the most common presenting symptoms while keratitis (62.5%) and corneal perforation (43.8%) were the most common physical finding. Although there was trend for vision improvements after treatment, five patients were blind in the injured eye (VA ≤ 20/200).
Conclusions: Palm date tree eye injury is a significant cause for visual loss of which mainly occurs at farms. Use of eyes protective googles and adopting legislative eye safety regulations will reduce eye injuries in these individuals.

EP-COR-23

Innate immunity alteration in first-order relatives of patients with keratoconus

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Purpose: To compare Toll-like receptors 2 (TLR2) and 4 (TLR4) expression in cells of corneal and conjunctival epithelium between keratoconus (KC) patients, healthy relatives and control subjects.
Methods: Cross-sectional study including 60 patients with KC (109 eyes), 27 healthy first-degree relatives of patients with keratoconus (53 eyes), and 36 control subjects (72 eyes). All participants underwent a detailed ophthalmological examination and corneal topography, aberrometry and tomography studies. TLR2 and TLR4 expression was measured by flow cytometry. The results were expressed in arbitrary fluorescence units (AFUs).
Results: Mean expression of TLR2 and TLR4, in corneal and conjunctival cells, was significantly higher in KC compared to relatives and control groups (all $p< 0.0001$). Mean expression of TLR2 in corneal cells was significantly higher in relatives compared to control group (1054±772 and 752±629, respectively; $p< 0.026$). Mean expression of TLR2 and TLR4, in conjunctival cells, was significantly higher in relatives compared to control group (1117±595 and 806±412, respectively for TLR2; $p< 0.001$) (3259±1305 and 2669±1441, respectively for TLR4; $p< 0.031$). Age, gender and allergy not show correlation with the immune innate expression.
Conclusions: TLR2 expression in corneal epithelial cells; TLR2 and TLR4 expression in conjunctival epithelial cells may be altered in the clinically healthy relatives of patients with KC. It is necessary to take special care with these subjects who may show more susceptibility to develop the corneal ectatic disease.

EP-COR-26

Routinely adoption of thermal pulsation treatment for MGD to improve quality of vision after cataract surgery

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Purpose: To evaluate a system (LipiView and LipiFlow TearScience, Morrisville, NC) for the thermal pulsation treatment of Meibomian Gland Dysfunction (MGD) to improve quality of the tear film.
Methods: 24 patients (mean age 64.11±12.28 years) were diagnosed with partial or total Meibomian glands occlusion by the LipiView lids transillumination. Patients received a LipiFlow treatment to remove obstructions and restore meibomian gland function.
Results: Symptoms had decreased at 1 month post treatment.Patients reported no discomfort or pain during or after treatment. Postop quality of vision improved due a better corneal tears film. MG appeared mainly not occluded
Conclusions: This system provides with the transilluminator option an effective way to detect MG occlusion in MGD. It should be considered in order to optimize the tear film and visual outcomes. This treatment helps to adopt presbyopic implants up to 70% of cataract patients.

EP-COR-28

Delayed re-epithelialization after epithelium-off crosslinking: associated factors and impact on keratoconus progression

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Purpose: Corneal collagen crosslinking (CXL) is a safe procedure for the treatment of progressive keratoconus (KC). Delayed re-epithelialization (DRE) is a possible complication of epithelium-off CXL (epi-off CXL). This study aims to investigate the demographic and corneal factors associated with DRE.
Methods: A retrospective chart review was performed to identify patients treated with epi-off CXL at Clinica Oculistica, University of Genova, Italy. A bandage contact lens was always fitted for 3-5 days after CXL to reduce discomfort and to promote epithelial healing. DRE was defined as a corneal epithelial defect, detected by fluorescein staining, that persisted more than 10 days. Slit-lamp examination, anterior segment optical coherence tomography (AS-OCT), corneal topography and, corneal in-vivo confocal microscopy (IVCM) were always performed preoperatively and at each follow-up visit (1, 3, 6, 12 months). Logistic regression was used to assess the baseline factors associated with DRE.
Results: Data from 153 eyes were included. The mean patients' age was 24.9±8.5 years, and 47 (30.7%) were females. The average re-epithelialization time was 4.7 ± 1.8 days. Six eyes (3.9%) experienced DRE. In the multivariate logistic model, both the patient's age (OR=1.30, 95% CI 1.1 to 1.6; p=0.019) and the corneal steepest meridian readings (OR=0.44, 95% CI 0.19 to 0.99, p=0.046) were associated with DRE. Male gender was associated with a slower early nerve regrowth (1 to 6 months) (p=0.048) but not with the occurrence of DRE (p=0.271). Preoperative central corneal thickness was not related with DRE (p=0.066). Moreover, DRE was not associated with KC progression after epi-off CXL (p=0.520).
Conclusions: The association between DRE and age may reflect the age-related decrease in the corneal healing response. Gender seems to affect re-innervation measured by IVCM but not the re-epithelialization time. DRE does not seem to affect the efficacy of epi-off CXL treatment.

EP-COR-29

Peripheral ulcerative keratitis in patient with rheumatoid arthritis. Case report

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Introduction: Peripheral ulcerative keratitis is a complication of autoimmune disorders, espacially collagen vascular disorders which can lead to rapid peripheral corneal thinning and perforation with loss of vision. In the most of cases correlates with exacerbations of the autoimmune diseases. It may be associated with scleritis, more frequently with necrotizant form.
Case report: our patient came at our office because of ocular pain, redness, tearing, photophobia, foreign body sensation and decreased vision. Past medical history: rheumatoid arthtritis since 5 years. No family history of autoimmune diseases. Exam: VA without correction: 20/200; IOP: 18 mmHg; Meibomian gland dysfunction, conjunctival hyperemia, peripheral ulcerative keratitis between 3:00 and 7:00 with epithelial defect and stromal thining: anterior chamber: 3+ cell; pupil:equal and round with light response and acomodation; fundus exam normal. We have treated with topical moxifloxacine and tobramicyn, lubrificants, bandage soft contact lens to treat associated dry eye and promote epithelialization of the ulcer; and sistemic therapy with methylprednisone 1mg/kg/day for 3 days and than 60mg oral steroids for 2 weeks than tapered over several months; also methotrexate 20mg/weekly with blood monitoring. The eye was saved from corneal perforation but with permanent corneal scarring.
Conclusions: The first-line of treatment in acute phases is represented by systemic administration of corticosteroids, immunosuppressive and cytotoxic agents that are necessary for the treatment of peripheral ulcerative keratitis associated with systemic diseases.

EP-COR-30

Collagen cross-Linking using photoactivated Riboflavin in treatment of resistant infectious keratitis

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Purpose: To evaluate the efficacy of collagen cross-linking (CXL) using photoactivated riboflavin in treatment of resistant infectious keratitis in antibiotic therapy.
Methods: 18 patients with advanced infectious keratitis that did not respond in systemic and topical antibiotic therapy were treated with CXL. The slit-lamp characteristics of the corneal ulceration, corrected distance visual acuity and complication were documented in each patient.
Results: In 11 patients the infection was stoped following antibiotic therapy after CXL, in 5 patients with corneal melting, the progression of corneal melting was halted after CXL, and in 2 patients with severe form of corneal melting the keratitis did not resolve successfully and in those patients was suggested a penetrating keratoplasty.
Conclusions: These results indicate that CXL maybe an promising option for treating patients with resistant infectious keratitis to prevent further complication as corneal melting and corneal perforation and, the needs for emergency keratoplasty. The success rate was higher for bacterial infections than fungal infections.

EP-COR-31

Toxicity of povidone iodine to the ocular surface of rabbits

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Purpose: We evaluated the toxicity of 5% (w/v) povidone iodine (PI) applied to the ocular surface of rabbits.
Methods: Twenty three white rabbits were divided into four groups; these were a control group and three study groups in which the ocular surface was exposed to PI for different times. In the control group, phosphate-buffered saline (PBS) was applied once, for 10 mins. In the PI groups, 5% (w/v) PI was topically administered (once) for 1 min, 3 mins, and 10 mins, and then the animals were observed for 7 days. The Schirmer test, Rose Bengal staining, corneal fluorescein staining, and conjunctival impression cytology, were performed on days 0, 3, and 7. After day 7 the rabbits were sacrificed and conjunctiva and cornea were collected and evaluated by light and electron microscope. Immunofluorescence staining also was performed to detect mucin 5 subtype AC (MUC5AC).
Results: The decrease in goblet cell density (GCD) and histopathological changes of conjunctiva and cornea were more prominent in the 5% (w/v) PI groups than the control group ($P < 0.05$). Moreover, these changes were more noticeable when PI was applied for 3 and 10 mins rather than 1 min (both P values < 0.05). Reductions in MUC5AC levels, and histopathological and ultrastructural changes in the conjunctiva, were more prominent in study groups exposed to PI for longer times.

EP-COR-32

Combined retro-pupillary iris claw intraocular lens implantation and penetrating keratoplasty in a case of traumatic eye ball rupture

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Purpose: To report a case of traumatic eyeball rupture with severe corneoscleral laceration and large iris defect who was treated with iris claw intraocular lens implantation and penetrating keratoplasty.
Results: A 19-year-old female suffered from traumatic eyeball rupture with severe corneoscleral laceration due to an accident of explosion of a beer glass bottle. The presenting vision was no light perception and emergency repair of the ruptured globe was done with suturing of corneoscleral laceration. The lens and a large part of iris were lost due to the eye injury. Corneal transplantation with iris claw IOL which was fixated retro-pupillary three months later. The postoperative BCVA was 0.2, and the cornea remained clear at 12 months follow up.
Conclusions: Corneal transplant with concomitant retro- iris fixation of an iris claw intraocular lens is effective in the treatment of severe traumatized eye with good short term results.

EP-COR-33

Corneal collagen crosslinking in spontaneous wound dehiscence after penetrating keratoplasty for keratokonus

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Purpose: To describe a case of corneal collagen crosslinking in a spontaneous wound dehiscence in a patient after penetrating keratoplasty for keratokonus without history of ocular trauma.
Methods: A 49-year-old man with keratokonus underwent penetrating keratoplasty on 1987. The surgery was uneventfull. The postoperative period was without complications. Suture removal was performed one year after the operation. He visited our clinic for slowly deterioration of vision in his left eye. He has no ocular history of trauma in the past. Topografic map of the cornea showed high irregular astigmatism. OCT of the cornea showed thinning at the graft-host junction and at perilimbal area of the recipient. We performed corneal collagen crosslinking centered at the thinnest area according to Dresden protocol.
Results: 2 years follow up after corneal collagen crosslinking he showed a stabilized keratometry of the cornea and no progression of wound dehiscence, the graft-host junction was well apposed.
Conclusions: Spotaneous late wound dehiscence after penetrating keratoplalty could be another indication for corneal collagen crosslinking .

EP-COR-34

The using of the VERION™ image guided system for femtosecond laser intrastromal keratoplasty

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Purpose: To evaluate practical significance of using digital marking-off of the VERION™ Image Guided System used in the technology of intrastromal keratoplasty used with a femtosecond laser.
Methods: 35 eyes of 27 patients having keratoconus of the second stage were operated on. The average age was 26 years old (from 18 to 35 y.o.). Before the operation all the patients had the usual tests: visometry, autorefractometry, keratotopography, measuring intraocular pressure, and an examination by VERION™ Image Guided System (Alcon, the USA). In 10 cases 1 ICRS of 160° arc was implanted, in 9 cases 1 ICRS of 210° arc, in 8 cases 2 symmetric ICRS of 160°, and in 7 cases 2 asymmetric ICRS of 160° and 90°. ICRS's thickness ranged from 150 to 300 μm.
Results: Before the operation the average UDVA was 0,2±0,15 (from 0.05 to 0,4). The average CDVA was 0,45±0,25 (from 0,1 to 0,7). The average values of minK were 47,5±3,2, the average values of maxK - 56,8±4,4. The values of pachymetry were 425±27μm in the thin zone.
After undergoing the operations using this method it was revealed the a patient's eye at the stage of aplanation of FS laser had a tendency to rotation and decentration. Insignificant decentration from the center of a pupil was corrected by pattern's offset of the intrastromal tunnel at working program of FS laser along the x axis by 0,1±0,05 mm and along the y axis be 0,1±0,04 mm.
The rotary component demanded the rotation of the intrastromal tunnel by an average of 11° (from 1° to 27°). During the postoperative period the increasing of UDVA and CDVA's values were measured. The stabilization of functional values and simK data were marked by the third month from the operation. The UDVA increased up to 0,5±0,16, the CDVA was 0,7±0,12. The average values minK decreased to 44,3±1,4, the average values of the maxK to 50.8±3,2.
Conclusions: The use of the VERION™ System allows positioning the ICRS according to a preoperative calculation with precision accuracy.

EP-COR-35

Fungal keratitis - treatment options, successes and failures

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Purpose: The fungal ketratitis is a worldwide clinical problem leading in majority of cases to the significant visual deterioration and in the most serious cases even to total blindness. Since the penetration of standard antifungal medicaments to the eyes tissues is poor and the resistance of microbes is often occured, the treatment results usually does not bring satisfaction for patients and ophthalmologist.
The aim: of the study is to present the clinical course of acute concomitant fungal keratitis in patient treated initially with standard generation antifungal medicaments compared to later introduced new generation drugs.
Case report: In this study a 37 years old patient with severe concomitant fungal keratitis (secondary to underwent *Acanthamoeba* keratitis) with *Fusarium* as the most common pathogen, treated with *Fluconazole/Amfotericin B* combination unfortunately without success, and further successful treatment with new antifungal medicaments - *Posaconazole/Amfotericin B* combination was described.
The patient required lamellar keratoplasty due to advanced thinning of the corneal scar. After the *Posaconazole* treatment, strong immune response as a secondary outcome of keratitis appeared to be a serious problem, however with a good response to introduced mofetil mycophenolate. Penetrating keratoplasty was done after successful antifungal treatment with additional antirejection therapy causing one year stabilisation of the clinical stage.
Conclusions: Treatment with Posaconazole - a new antifungal drug, seems to be an alternative therapeutic path for severe concomitant fungal keratitis. In the described case, Posaconazol contribute to maintain of the eyeball.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Education

EP-EDU-02

Diabetic retinopathy in Russia according to the federal register of patients with diabetes

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Aims: The aim of the study was to evaluate the epidemiological characteristics of DR and blindness in adult patients with type 1 (T1) and 2 (T2) diabetes in Russian Federation (RF) for period 2013-16 years.
Materials: Database of Federal Diabetes register, 81st regions included in the online register.
Results: In 2016 the DR prevalence in RF was T1 38,3%, T2 15,0%, with marked interregional differences: 2,6-66,1%, 1,1-46,4%, respectively.
The DR prevalence within 2013→2016 years was: T1 3830,9→3805,6; T2 1586,0→1497,0. Trend of new DR cases/per year increased: T1 153,2→187,8; T2 99,7→114,9. The structure of new cases of DR in 2016: non-proliferative stage (T1 71,4%, T2 80,3%), pre-proliferative stage 16,4%, 13,8%, proliferative 12,1%, 5,8%, terminal 0,2%, 0,1%, respectively, these data indicated the earlier detection of DR.
The mean age of DR diagnosis increased: T1 by 1,2 years, T2 by 2,6.
The average DM duration of DR determine increased T1 9,6→13,1 years, T2 6,0→9,1. The prevalence of blindness tends to decrease: T1 92,3→90,8; T2 15,4→15,2/10.000 DM adults.
The amount of new cases of blindness/per year increased: T1 4,3→4,6; T2 1,2→1,4, this fact may be associated with increasing duration of life in patients with diabetes (T2especially).
The mean age of blindness increased: T1 39,1→41,6 years, T2 64,4→67,4; the mean duration of diabetes before blindness occur (from the time of DM diagnosis) increased: T1 20,2→21,2 years, in T2 10,7→11,3.
Conclusions: DR and blindness develops at advanced age and with a longer duration of diabetes. As the main directions of eye care development in diabetes it is necessary to standardize primary care in the regions, to unify the examination algorithms and methods of early diagnostic, to increase the continuity and interaction of endocrinologists and ophthalmologists in managing patients with diabetes in order to prevent the development of new cases of vision loss.

EP-EDU-03

Touch surgery cataract simulation: a randomised controlled educational trial

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Purpose: Simulation supports skill enhancement at a time when exposure to actual surgical procedures and traditional apprentice based teaching has declined. The advancement of smartphone and tablet devices with rich, touch sensitive displays and increasing processing power, makes a compelling argument for expanding accessibility further by development of mobile virtual simulations for training on demand in any setting, at any time.
In this study, we investigated the educational efficacy of a tablet-based cataract surgery simulator developed by Touch Surgery.
Methods: A randomised, controlled, double masked trial was performed at Moorfields Simulation Centre. The participants included medical students and junior doctors who were naïve to catarace surgery. They were randomised to standard reading (control group) or standard reading in addition to completion of tablet-based simulator (intervention group). All participants completed multiple choice questions (MCQ) on cataract surgery before and after exposure to the learning materials. Candidates were then assessed on performing capsulorhexis, phacoemulsification and IOL insertion on the EyeSi simulator. Performances were marked by a masked observer according to the validated ICO-OSCAR assessment tool.
Results: Nine participants completed the pilot study. The percentage increase in MCQ scores after studying the relevant learning materials was 11.3% in the intervention group and 7.0% in the control group, p=0.76.
The scores obtained for simulated surgical tasks were as follows: Capsulorhexis (intervention: 18.5, control: 13.8, p=0.20), phacoemulsification (intervention: 26.5, control: 20.2, p=0.13), IOL insertion (intervention: 14.5, control: 11.0, p=0.51).
Conclusions: Touch-based simulation provided an efficient and superior method of learning cataract surgery for novices, and it is possible it helped in recalling steps involved in the surgery in a fluid manner that also improved their task performance.

EP-EDU-04

The knowledge of the diabetic patient about the importance of ophtalmologic evaluation in diabetes

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Purpose: To evaluate the knowledge of diabetic patients at the HEB-UNAERP endocrinology outpatient clinic about the importance of ophthalmologic evaluation in diabetes mellitus (DM)
Methods: Cross-sectional quantitative research study, conducted through a structured interview. The research instrument of the study was based on a questionnaire, with objective questions on the subject of study with patients from the endocrinology's outpatient clinic between October 2016 and February 2017.
Results: Fifty 50 patients were involved in this study of whom 31 were female (62%) and 19 males (38%). The mean age was 63 years, 70% of them being white; 42% had more than 10 years of diabetes diagnosis, 34% were diagnosed between 6-10 years and 24% between 1-5 years. The mean glycemic value was 130 mg/dl.
When asked about the knowledge about diabetes, the majority (68%) said that they knew what DM is and referred correct use of the medicines, but only 38% of them follow a proper diet. All patients reported having already had an ophthalmologic evaluation previously and 70% (35 patients) reported having been referred for eye fundus exam (fundoscopy); 62.8% said they were referred when complained of refractive error and 37.2% said they had requested referral.
Of the total, 22% had never had fundoscopy and 18% were unaware of the need for the annual exam and 92% did not know what diabetic retinopathy (DR) is.

Conclusions: Lack of knowledge about the importance of fundoscopy and DR prevention was observed despite of blindness being the most feared complication. Ophthalmologic assessment and screening of DR are fundamental for treatment and prevention of blindness as well as appropriate knowledge about the disease for adherence to treatment.

EP-EDU-05

Awareness of medical students regarding the binocularity level in the course of future specialization choice

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Purpose: Vision standards exist in many occupations with particular reference to medical science. Presence of a sufficient level of binocular vision is especially important in surgical specialty to perform visually demanding procedures. The purpose of our study was to reveal the level of awareness of one's binocular status among medical students and the significance of having binocular vision in terms of specialty choice.
Methods: A self-constructed questionnaire was given to all subjects enrolled in the study. First group comprised 53 students from 2nd and 3rd year of Medical University of Lodz who then underwent ophthalmological examination with binocularity assessment. Second group included 57 students of the last years of Medical Faculty who did the same survey and outlined of the Ophthalmology course improved their knowledge of stereoacuity and vision requirements for the chosen specialty. Statistical analysis was performed using Person's Chi-square test.
Results: 32% (n=17) of students from the first group and 84% (n=48) from the second group stated to be familiar with the term "binocularity" and its importance in performing surgical procedures. The awareness of existing occupational contraindications related to low visual acuity and binocularity declared 16% (n=9) and 54% (n=31) subjects of each group respectively. The university lectures were indicated as the main source of knowledge by 28% (n=15) of individuals from the first group and 59% (n=39) from the second group. 34 residents (60%) noted the Ophthalmology course to be sufficiently covering the basics needed for the future doctor.
Conclusions: The awareness of own binocular status among medical students is low. There is a strong need for implementation of at least the quality standards for visual assessment to decide if the student has an adequate eye function to participate in surgical procedures.

EP-EDU-06

Presentation of a case solved in ERN-EYE virtual clinic

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Purpose: The European Reference Networks (ERNs) are virtual networks involving healthcare providers across Europe. The aim is to facilitate discussion and management of rare or complex diseases. ERN-EYE is a network dedicated to rare eye diseases (RED). It comprises 29 healthcare providers in 13 countries. One of the most important tools of the ERNs is a web-based application called the Clinical Patient Management System (CPMS). The CPMS, also known as the virtual clinic, comprises a dataset dedicated to RED to be filled in by the treating physician. To review a patient's diagnosis and treatment, the ERN experts gather in a virtual panel through an online file review and an integrated video conference system. We present a case of a rare eye disease that was solved in the virtual eye clinic.
Methods: We will present the ERN-EYE virtual clinic through a demonstration of a real clinical case and a short introduction how to use some specific tools present in the virtual clinic. We will demonstrate some CPMS functions that can be helpful for the clinician. We will explain all the necessary steps to allow a physician confronted with a particular case to receive assistance from experts and solve it. .
Results: We will present the result of the expert panel discussion. This expert panel constituted of ERN-EYE healthcare professionals. All of the experts' contribution to the discussion was summarized in a recommendation for further management of the patient known as an outcome document available for the treating physician.
Conclusions: As this case illustrates, the CPMS is an effective tool for the clinicians who may encounter cases that need to be discussed with other experts. The CPMS is a secure clinical platform that facilitates the sharing of the information and communication between ERN-EYE experts.

EP-EDU-07

Computer users complains and objective findings show a need of suitable formatting parameters for e-materials

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Statement of the Problem: Based on large-scale studies, more recent data shown that by 2015 - more than 30% of the world population is myopic. Responsiveness for the progression of myopia is the high near work load and its impact on vision that is occurring today daily, especially by development of technology. All near work, especially viewing texts and images, reading, learning both print media and computer screen, are making effects on vision. Such smart and digital devices as computers, tablets, smartphones, book readers, etc. directly or indirectly are used not only for work needs or as the free time spending tool but also in both formal and non-formal education. It makes impact on myopia progress.
Purpose: Analyse of patient computer use habits coloration with complains and ocular symptoms and objective findings in examination and amount of refractive changes.
Methods: surveys and patient data record analyses.
Results: Most respondents chose a larger font size; even young people. Nearly a half of respondents use smart devices almost continuously all-day long as well as that at least 96,2% respondents use smart devices for getting knowledge in different ways. At least 89% of respondents are not satisfied with e-material text formatting in daily use. For computer users under 40 y.old, an average change of 0.45D (SD=0.2) was detected within 6 - 18 months. 98% of patient-computer users have different complains about vision after screen use, specially - reading. As more and longer time period patient have this complains as bigger is difference in refraction.
Conclusions: To successfully participate in e-learning and e-studies, users need both good e-skills and well-designed e-learning materials: high-quality content, comfortable, easy-to-understand and comprehensible text, suitable formatting parameters of text. It is believed, good formatted e-materials could improve users reading comfort and vision health, in addition prevent fast myopia development.

EP-EDU-08

Oculogyric crisis as a rare side effect of an antiemetic drug

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Purpose: To report a rare case of oculogyric crisis (OGC) as an extrapyramidal side effect of antiemetic treatment
Methods: History, slit-lamp examination, evaluation of clinical signs, neurologist consultation
Case report: An eighteen-year-old female with a history of headache and nausea was referred by a pediatrician to our department for suspected conjunctivitis. The patient was agitated, complaining of painful upward deviation of the eyes and backward flexion of the neck. She confirmed taking an analgesic for her headache and an antiemetic for her nausea.
Results: During history taking, the patient involuntarily deviated her eyes upward and flexed her neck backwards. Examination with a slit lamp revealed physiological findings. As she reported taking an antiemetic, side effects were suspected. The patient was referred to a neurologist for consultation, with a diagnosis of OCG and torticollis. The diagnosis was confirmed by and the patient received intravenous anticonvulsant and antianxiety treatment after which her condition resolved completely.
Conclusions: OCG is an acute dystonic reaction of the ocular muscles to certain drugs or medical conditions characterized by prolonged involuntary upward deviation of gaze lasting from seconds to hours. The initial symptoms include restlessness, agitation, malaise and a fixed stare, followed by sustained upward deviation of the eyes. In addition, the eyes may converge, deviate upwards and laterally, or deviate downwards. The most frequently associated findings are opisthotonus, torticollis, dysarthria, trismus, tongue protrusion and ocular pain. OGC may be triggered by some drugs, head trauma, multiple sclerosis, Tourette's syndrome, neurosyphilis, etc. The diagnosis is largely clinical. Intravenous treatment of drug-induced OCG with an anticholinergic agent is usually effective within minutes. The importance of a thorough history when certain drugs are taken is indisputable.

EP-EDU-09

Continuous improvement of eye disorder screening program in elementary students

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Purpose: The aim of this study was to increase the effectiveness of eye disorder screening program in elementary students. As part of Corporate Social Responsibility project of Dr. YAP Eye Hospital, this program has been implemented since 2016 in Special Region of Yogyakarta, Indonesia.
Methods: In 2017, hundreds of elementary school teachers were trained to examine eye disorder of their students. Among 6794 students, there were 586 students with refractive errors referred for further examination by ophthalmologist and 374 students (63,82%) were given glasses. Evaluation taken using questionnaire for students and parents whether they use the glasses or not. The result was analyzed to enhance the benefit of this program using PDSA (Plan - Do - Study - Action) cycle.
Results: The result showed that among 374 students who got glasses, 26% didn't wear it because they didn't like the eyewear model and their parents thought that the utilization of glasses could cause the visual aquity worse. This old paradigm still exists in our community and it must be changed. So we redesigned the process by bringing various examples of eyewear models and the students could choose the better one. We also provide education to parents by mass counselling and leaflets distribution. After that we conducted a follow-up survey which showed that 81% of parents understood the importance of using glasses and agreed to the application of glasses for their children.
Conclusions: Continuous improvement is very important to increase the effectiveness of eye disorder screening program. Redesign the process by bringing various examples of eyewear models and educating parents effectively enhance the usage of glasses in elementary students.

EP-EDU-10

the safety and efficacy of tele-clinic in ophthalmic emergencies

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Purpose: To assess the safety and efficacy of a proposed distant virtual emergency eye clinic (Tele-clinic) and to suggest criteria for case suitability and propose 3D system to conduct Tele-clinic safely.
Methods: Retrospective case notes and patients investigations review of 785 selected cases who attended the emergency eye clinic service from 1/11/2017 - 22/12/2017 and had at their presentation at least one photographic or other ophthalmic investigation. The history and investigations were reviewed and assessed by a second ophthalmologist who had not been involved at any stage at the patients' actual management. The management outcome of both, the real clinic and the presumed virtual clinic, were compared by a third ophthalmologist.
Results: Out of 785 case series reviewed, 449 (57.2%) of all cases- excluding DNAs -were safely managed by means of virtual clinic and 477 (60.8%) of cases including DNAs. Virtual emergency clinic savings are estimated to be £65,349 + £2666.43 = £68015.34 total minimum savings or £8949.39/wk minimum savings
Conclusions: Virtual clinics in various ophthalmic specialties have been proved to be safe and cost effective to both patients and health care providers. This study provides evidence that it is safe and cost effective to conduct a Tele-clinic for ophthalmic emergency presentations when specific criteria and requirements are met.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Electrophysiology

EP-EPH-01

Retinal thickness and electrophysiology alterations in patients with multiple sclerosis with and without previous optic neuritis

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Objectives: To assess differences in visual function, structural measurements and electrophysiological tests between three groups: healthy controls, patients with multiple sclerosis (MS) without previous optic neuritis (ON), and patients with MS and a previous neuritis episode.
Methods: A total of 57 eyes (18 healthy controls, 17 patients with MS without ON, and 22 patients with MS and previous ON) were included in the study and underwent visual function tests, including measure of visual acuity (VA) with ETDRS chart at 100, 2.5 and 1.25% saturation and contrast sensitivity (CS) with the Pelli Robson and CSV1000E tests; structural analysis of the retina with Spectralis Optical coherence tomography (OCT) and electrophysiological tests (pattern and multifocal electroretinograms [pERG and mfERG], and multifocal visual evoked potentials [mfVEP]).
Results: Worse results were observed in the VA in the three saturation ETDRS levels and in CS measured with the Pelli Robson test ($p < 0.05$), in patients with previous ON episode compared to non-ON patients, and in the latter compared to healthy controls. This same trend was also observed in the measurements obtained with OCT; in the amplitude of the N95 wave ($p = 0.020$) obtained with pERG; in the sum of the latency of the N1 wave ($p = 0.019$), the amplitude of the ring 2 of N1 wave ($p = 0.030$) and in the latency time of ring 4 of N1 ($p = 0.028$) of the mfERG, and in the latency time in ring 5 of P1 ($p = 0.034$) of mfVEP.
Conclusions: Patients with MS and previous optic neuritis present decreased VA and CS compared to patients without neuritis, and both groups present lower levels compared to healthy controls. Central macular and RNFL thickness are also decreased in almost all quadrants of the optic nerve in patients with neuritis. Additionally, patients with a previous neuritis episode present alterations in electrophysiological tests compared to the non-ON group.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: External Eye

EP-EXT-01

The consequence of both science and art is global and humanitarian

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Purpose: Ota nevus (ON),is described by Prof. Dr. Masao OTA. It is a hamartom which melanocytes is originated trigeminal nerve's ophthalmic and maxiller branch. It is at birth on %50 cases also develops in adult age or adolescent. It occurs in %0.4-1.4 rate in yellow race. We decided to make a case report because of it is rarely seen in white race, man and bilaterally.
Methods: 20 years old-man has bilaterally dark purple lesions which fluffy places in upper and lower eye lid. He has brown skin who suffer from congenital lesions that only cosmetic anxiety. He said that there was no one else in his family. In ophthalmological examination;scleral pigmentation generally medial region was determined. Visual acuity was bilaterally 20/20 and any glaucoma signs wasn't determined.
Results: Skin and underskin biopsy was taken in right upper lid sulcus.melanocytes community in dermis were monitored in pathology results. After dermatology consultation, any laser opportunities weren't available, %0.05 clobetazol included corticosteroid ointment took twice a day. He was followed up 1th, 2th and 6th months. Lesions turned pale and it's surface becomed smooth was observed in time. He was warned developing malign melanoma and glaucoma so he got out of observation.
Conclusions: ON is a disorder of unknown etiology,it has been suggested that results from failure of melanocytes migration from the neural crest to dermoepidermal junction before birth.Sex hormones have been implicated in the pathogenesis of the ON that's why it is more prevalent in female population. Only %5 cases are bilaterally, %10 cases may observes glaucoma. The sclera is affected in 2/3 of cases and is associated with an increased risk of glaucoma and uveal melanoma. It is more risk to develop malign melanoma in white race. Dr. Masao OTA was deal with art under the pseudonym of Kinoshita Mokutaro, he wrote poem, novels and he was also a painter. His paintings in botany were published in the book 'One Hundred Flower Sketches' after his death.

EP-EXT-02

Use of modern materials in a treatment of the eyelid necrosis

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Purpose: To describe excellent course and result of treatment of the massive eyelid necrosis with the use of modern types of dressings and preparations.
Methods: Case report.
Results: We present 49 years old male patient sent to our department with massive necrosis of the upper eyelid after previous injury. The eyelid lacerations were primarily sutured and treated by traumatologists. A few days later, partially because of the not ideal compliance of the patient, huge necrosis of the upper eyelid developed and progressed despite the antibiotic treatment. Due to this course of the disease was the patient sent to our department. We

did the smears and started treatment with extraction of the sutures, necrectomy, irrigation of the wound by povidonum ionidatum, application of the Floxal (Ofloxacinum) oinment and drainage with surgical glove drains with the Floxal oinment on it. We continued with already used peroral Augmentin 625mg three times a day (Amoxicillinum trihydricum and kalii clavulanas) and added Gentamicinum of the day dose 240mg intramuscularly. The next days in cooperation with our hospital wound specialist we used a few modern dressings and preparations to help the wound healing with prompt and excellent results even without the use of local antibiotics and with prolonged intervals between the drain exchanges, which will be showed in presentation. The dressings and preparations used: Aquacel Ag + Extra (the dressing with antimicrobial activity which is able to absorb the exudate and block the pathogens inside the gel), Bactigras, Aqvitox-D gel, Aqvitox-D, L-Mesitran Soft gel and classical gauze.
Conclusions: Modern dressing materials can reduce the patient discomfort from frequent drain exchanges and are able to provide quick wound healing with excellent results.

EP-EXT-03

Orbital cellulitis caused by spontaneous posterior rupture of purulent lacrimal sac

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Purpose: The aim of this study is to describe a case of acute dacryocystitis presenting as orbital cellulitis due to posterior perforation of lacrimal sac.
Methods: A case report included a patient presenting with orbital cellulitis and extraconal orbital abscess secondary to acute dacryocystitis. The patient underwent drainage of abscess under general anesthesia. External dacryocystorhinostomy is planned as the definitive treatment.
Results: The patient presented with periocular pain, erythema, and eyelid edema, especially overlying the lacrimal sac region, proptosis, diplopia, ocular movement restriction and blurred vision. She was immediately started on broad-spectrum antibiotics and 3 days after underwent surgical incision where it was found spontaneous posterior rupture of the lacrimal sac and formed abscess posterior to the sac.
Conclusions: Spontaneus posterior rupture of purulent lacrimal sac is rare, but serious complication requiring prompt intervention.

EP-EXT-04

Successful pterygium excision with a combination of conjunctival limbal graft (CLG) and amniotic membrane transplantation (AMT) in recurrent pterygium case

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Purpose: To report the effective excision technique for recurrent pterygium accompanied by simblefaron.
Methods: A 52 year-old man, based on history taking and ophthalmology examination was diagnosed as recurrent pterygium grade 4 flessy type and simblefaron on his right eye. Pterygium excision was performed using combination of Conjunctival Limbal Graft (CLG) and Amniotic Membrane Transplantation (AMT). CLG attached with 4 sutures, 2 at the limbal and 2 on the nasal side, using vicryl 6.0. AMT inserted beneath fornix without suture, covered the rest area of bare sclera, dissected cornea and conjunctiva graft. Observation was done up to 8 weeks after surgery.
Results: Visual acuity of the right eye improved from 2 meters finger counting before surgery become to 0.2 on 8 weeks after surgery. Triangular fibrovascular tissue and simblefaron appeared at the nasal side of the right eye were no longer exists after surgery, observation up to 8 months showed smooth cornea surface and absence of granuloma or neovascularization as the signs of recurrence. Restricted eyeball movement in the right due to the presence of simblefaron was getting free after surgery.
Conclusions: Recurrent pterygium accompanied by simblefaron was successfully excised with combination CLG and AMT. It improves visual acuity, good cosmetic result, free movement of the eyeball, and prevents recurrence. Longer observation is required after pterygium surgery to ensure no recurrence.

EP-EXT-07

Open globe injuries: the experience of tertiary referral eye care centre

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Purpose: To evaluate patients with open globe injuries admitted in the tertiary eye care centre.
Methods: A retrospective study was conducted including patients with open globe injuries from November 2017 till December 2018. A visual acuity was evaluated on admission and discharge. The Ocular Trauma Score (OTS) was calculated by assigning certain numerical raw points to six variables: initial visual acuity, globe rupture, endophthalmitis, perforating injury, retinal detachment, and relative afferent papillary defect.
Results: Of the 36 patients, 30 (83.3%) were males and 6 (16.7%) were females. The mean age of patients was 50.6± 18.8 years. The most of cases (58.3%) were secondary to work-related ocular injuries, 33.3% of patients were involved in accidents and 8.3% reflected criminal attacks.According to the data patients arrived in the hospital 1.81±3.67 days after trauma and were treated in the department for 5.28±3.17 days.
Initial visual acuity was ≥20/40, 20/40 < 20/200, 20/200- CF, HM- PL and NLP in 1 (2.8%), 4 (11.1%), 5 (13.9%), 21 (58.3%) and 5 (13.9%) eyes respectively. Final visual acuity was ≤20/40, 20/40 < 20/200, 20/200- 1/200, HM- PL

and NLP in 1 (2.8%), 6 (16.7%), 11 (30.6 %), 13 (36.1%) and 5 (13.9%) eyes respectively. The average loss of visual function was -73.69±35.20% comparing to the unaffected eye.
The following incidence of OTS categories was seen: 1st in 16.7%, 2nd in 58.3%, 3rd in 22.2%, 4th in 2.5% and none in 5th category showing that more than half of patients had the second worst prognosis for improvement of visual acuity.
Conclusions: In our population a typical patient with open globe injury is a male in working-age with poor prognosis for improvement of visual acuity.
Appropriate eye protection during work could decrease the incidence of permanent visual impairment and vision loss.
Relaying on OTS category for most of cases the prognosis is cautious while improvement is not always possible because of irreversible tissue damage.

EP-EXT-08

Fungal conjunctivitis - challenge for a doctor (case report)

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Purpose: The aim of our work is to present case of fungal conjunctivitis, being a young woman who has been long under local antibiotic therapy. The patient has responded well to local and general antifungal therapy.
Methods: A 38-year-old patient appeared for an examination with irritable symptoms, intense redness, tearing, itching, discharge of both eyes, photophobia. The patient stated that in the last 6 months continuously but at different times, she was using local antibiotic drops (tobramycin, neomycin, ofloxacin, ciprofloxacin, chloranphenicol) The young woman claimed that the reason for their use was microbiological examination of the eyes in which were isolated bacteria several times (Staphylococcus aureus, Staph. epidermidis) resistant to the applied therapy. She also referred having a dry eye and that her job required working on a computer for long hours.
In examination we observed conjuctival edema, hyperemia of both the tarsal and bulbar conjunctiva in addition with folicular papillar reaction. The discharge was mucopurulent to purulent of yellowish color. After examination a sample was sent to the microbiological testing where the candida species were identified. In management for this disease, we initiated use of topical antifungal therapy and in addition we used systemic antifungal agents. In treatment we had applied topical Fluconazole 0.3% and systemic Fluconasole 150mg by recommendation of a pharmacist.
Results: After the applied therapy, clinical signs of fungal conjunctivitis were completely withdrew and also in microbiological testing candida fungus was not isolated.
Conclusions: Fortunately, fungal conjunctivitis is not so common, but it should be noted that patients must take care of hygiene and particularly people wearing soft contact lenses. Furthermore avoid predisposing factors which are: prolonged use of topical steroids, chronic use of topical broad spectrum antibiotics and using shared cosmetic products.

EP-EXT-09

IgG4 Associated disease with orbital manifestation

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Introduction: IgG is the dominant antibody in the human body, it makes 85 percent of all immunoglobulins. IgG4 itself normally represents the smallest fraction of IgG subclasses, accounting for only < 5%.
Subject: Immunoglobulin G4-related disease (IgG4-RD) represents an immune-mediated fibroinflammatory condition with a characteristic histopathological appearance that can affect various organs. IgG4-RD is usually considered a rare disease, but its true epidemiology has not yet been fully clarified. The diagnostic workup of IgG4-RD is complex and usually requires a combination of clinical examination, imaging, histological, and serological analyses.
Work up: Diagnosis requires careful interpretation of examination results in context with the patient's clinical appearance as well as the exclusion of a broad variety of differential diagnoses. Still, a greater number of questions remain unanswered, and many recent developments require further discussion and proof from clinical trials. Flow cytometry CD19lowCD38+CD20−CD27+ plasmablasts represent a stage between B-cells and plasma cells.
A 42 old male with severe case of bilateral proptosis has been admitted to our Clinic after 2 years of no success in finding the correct diagnose in other Clinical centers.
Conclusions and Results: After thorough examination and blood analysis we have finally get the right diagnose. Once the diagnosed the adequate therapy has been administered to the patient. The follow up showed recovery and proptosis in regression.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Glaucoma

EP-GLA-01

Endoscopic laser cycloplasty in the treatment of patient with angle-closure glaucoma with plateau iris

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Purpose: To study efficacy and safety of endoscopic laser cycloplasty in treatment of patients with angle-closure glaucoma with plateau iris.
Methods: The study involved 30 patients (30 eyes) with angle-closure glaucoma with plateau iris. The first stage of glaucoma was observed in 36.7% of cases; the second - 33.3 %; the third - 30 %. Mean age was 69.1±8.7 years, 26 (87%) women, 4 (13%) men. Mean level of intraocular pressure (IOP) before surgery on the background of medical therapy - 22,23 ± 3,03 mmHg. Mean quantity of used hypotensive medicine - 3.1 ± 1.8. At first all patients underwent ultrasound phacoemulsification with IOL implantation, then endoscopic laser cycloplasty (power - 250-400 mW, continuous mode of exposure for 7-8 hour meridians). In postoperative period, all patients underwent tonometry, tonography, OCT of anterior segment and ultrasonic biomicroscopy (UBM). Follow-up was 12 months.

Results: All patients had improvement of visual acuity in the postoperative period. In all cases we observed a decrease in IOP from 22.1 ± 3.4 mmHg (before surgery) to 19.7 ± 1.9 mmHg (in 12 months) and increase the ratio of outflow lightness from 0.18 ± 0.06 mm3/min (before surgery) to 0. 32 ± 0.09 mm3/min (in 12 months). According OCT Visante in 12 months, anterior chamber angle remains open, mean value of its width is 34.5 ± 4.2 degrees. In according to results of UBM, an increase in morphometric values of anterior chamber angle with a reduction in length of ciliary processes from 512.1 ± 118.6 μm before surgery to 391.3 ± 99.5 μm in 12 months.
Conclusions: Endoscopic laser cycloplasty showed itself as an effective, minimal invasive and safe method of treatment of patient with angle-closure glaucoma with plateau iris in the early stages of the disease with normalized or moderately elevated IOP on the background of medical therapy.

EP-GLA-02

Effect of cold provocation on vessel density in eyes with primary open angle glaucoma: an optical coherence tomography angiography study

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Purpose: The cold pressor test (CPT) induces a cardiovascular response, which may affect ocular blood flow and neuronal function. This study assessed whether optical coherence tomography angiography (OCT-A) can be used to evaluate CPT-induced ocular hemodynamic changes in healthy eyes and in eyes with primary open-angle glaucoma (POAG).
Methods: Twenty-two healthy subjects and 23 subjects with POAG and a retinal fiber layer defect in only one hemifield underwent OCT-A imaging to evaluate CPT-induced vessel density (VD) changes in the peripapillary and macular areas. The CPT was performed by submerging a subject's right hand in cold water (0-4°C) up to the wrist for 1 minute. Mann-Whitney *U* tests and Wilcoxon signed-rank tests were used to compare study groups and CPT-induced changes, respectively.
Results: Baseline peripapillary and macular VD measurements were significantly lower in subjects with POAG than in healthy controls (all $p < 0.05$). Post-CPT VD measurements did not significantly differ from baseline in either healthy or glaucomatous eyes. Additionally, CPT-induced changes in VD did not differ among healthy hemifields in normal eyes, damaged glaucomatous hemifields, and undamaged glaucomatous hemifields (all $p > 0.05$). Changes in VD were also not significantly influenced by a subject's self-reported history of cold extremities.
Conclusions: The CPT does not induce significant VD changes, as measured by OCT-A, in the peripapillary or macular areas of either healthy eyes or eyes with POAG. The VD, an all-or-nothing flow measure, may not be sensitive enough for evaluating cold-induced ocular hemodynamic changes.

EP-GLA-03

Non-penetrating deep sclerectomy with EX-PRESS R-50 implantation for glaucoma treatment

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Purpose: Analysis of the medium- and long-term results of the mini-shunt Ex-Press implantation in glaucoma treatment
Methods: Non-penetrating deep sclerectomy with the mini-shunt Ex-PRESS R-50 implantation was performed in 176 eyes of 161 patients with uncontrolled and/or refractory to drug therapy glaucoma between 2011 and 2014. A standard planned ophthalmologic examination was performed for all patients prior to surgery and within 1 day, 7 days, 1, 2, 3, 6, 12, 18, 24 and 36 months after implantation of drainage. In a number of patients, examinations were also performed in 48 (n=44) and 60 (n=21) months after the operation. In addition, patients were divided into group I ("phakic" glaucoma, n = 53) and group II (pseudophakic glaucoma, n=108)
Results: Mean follow-up period was 43.7±2.9 months. Mean age of patients at the time of surgery was 72.4±9.6 years. IOP decrease compared with preoperative values at the follow-up period of 24 months, the IOP decreased to 15.3±6.6 mm Hg, at follow-up of 36 months to 17.5±6.8 mm Hg. (45.8%). In 44 patients (27.3%) 48 months later, the level of the "success" was exceeded - 22.4±8.0 mmHg. In the period of 60 months after the operation,mean level of IOP dynamics in 21 patients (13%) was 26.1±8.2 mm Hg. There was a significant decrease in the number drugs.
Conclusions: Implantation of the ExPress mini-shunt is indicated in complicated cases of refractory glaucoma with ineffectiveness of previous interventions or inability to compensate intraocular pressure at the maximum possible mode of antiglaucoma drugs.

EP-GLA-04

Correlation of total orbital fat volume and intraocular pressure in patients with graves orbithopathy

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Purpose: To investigate the correlation of total orbital fat volume (TOFV) with intraocular pressure (IOP) in patients with Graves orbithopathy (GO) and without clinical features of GO by magnetic resonance imaging (MRI).
Methods: We examined magnetic resonance images of 50 patients (100 eyes and orbits). 30 patients (60 orbits) with GO, and 40 orbits of 20 patients without clinical signs of GO (control group). Orbital MR imaging was performed on a 1.5 Tesla MR Signa Infinity (GE). T1-weighted (T1W) T2, Fat sat axial images and T1W coronal images were analyzed. Two operators (a neuroradiologist and an ophthalmologist) made manually creating a region of interest (ROI) comprising orbital fat in a T1-weighted axial image. IOP parameters were determined by the applanation tonometry (Maklakov's method).
Results: The TOFV in the group of patients without clinical signs of GO (control group) was Me 11.5 [9.8;12.9] cm^3. The analysis of TOFV in the group of patients with GO revealed a statistically significant difference be-

tween the control group (Mann-Whitney test, $p < 0.05$) and increased TOFV Me 17.2 [15.9; 21.7] cm³. TOFV increased due to edema of retrobulbar fat in 83% of cases, and in 17% by hypertrophy. IOP in the control group were Me 18[18; 19] mm Hg, in the group of patients with GO Me 20 [19; 23] mm Hg. Correlation analysis revealed the relationship between the IOP level and TOFV volume ($rs = 0.85$, $p = 0.0000$).

Conclusions: Patients with GO were revealed statistically significant increase of TOFV by 5.7 cm³ and IOP by 2 mm Hg. The revealed relationship between the level of IOP and TOFV also makes it possible to set patients increase of orbital fat with edema and hypertrophy to the risk group for developing ophthalmic hypertension and secondary glaucoma.

EP-GLA-06

Treatment of open-angle glaucoma and ocular hypertension with preservative-free tafluprost/timolol fixed-dose combination therapy: interim analysis (12-weeks) of real-world data (the VISIONARY study)

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Purpose: Evaluation of the effectiveness, tolerability and safety of a topical preservative-free tafluprost (0.0015%) and timolol (0.5%) fixed-dose combination (Taf-Tim FC) treatment in routine clinical practice in adults with open-angle glaucoma (OAG) and ocular hypertension (OHT) who demonstrated an insufficient response to previous monotherapy treatment with topical beta-blockers or prostaglandin analogues.

Methods: Interim analysis from an ongoing non-interventional, multicentre, European, prospective study. Mean intraocular pressure (IOP) change from baseline was measured, and signs and symptoms were evaluated at Weeks 4 and 12.

Results: The analysis included 161 patients (59.6% female) at 23 sites. Age (mean±SD) was 67.7±11.7 years. Mean IOP reduction from baseline was 5.32±3.45 mmHg (23.3%) at Week 4 and 5.73±3.45 mmHg (25.3%) at Week 12 (both $p< 0.001$; n=161). Week 12 responder rate (IOP reduction from baseline ≥20%) was 71.4% ($p< 0.0001$; n=161). Conjunctival hyperaemia decreased in 43.6% ($p< 0.001$; n=149) at Week 12 and improvements were seen in dry eye related symptoms (34.6%; overall improvement $p< 0.001$; n=130), irritation (34.1%; overall improvement $p< 0.001$; n=129) and foreign body sensation (31.8%; overall improvement p=0.005; n=129). Corneal fluorescein staining was reduced in 49.2% at Week 12 ($p< 0.0001$; n=63). Most physicians (92.5%) reported improved IOP control with Taf-Tim FC, versus prior medication. Among 161 patients, 1 serious and 9 non-serious adverse events (AEs) were reported; 3 AEs were treatment-related (TRAEs) (allergic conjunctivitis, moderate dry eye syndrome, itchy eyes). Tolerability was rated as good/very good by 87.1% of patients.

Conclusions: In routine clinical practice, Taf-Tim FC demonstrated statistically and clinically significant IOP reduction in patients insufficiently controlled on other medications, and was well tolerated with no serious TRAEs. Key symptoms of ocular surface health improved compared with previous treatments.

EP-GLA-07

The relationship between intracranial pressure and visual field clusters in high-tension glaucoma patients

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Purpose: To assess relationship between intracranial pressure (ICP) and visual field (VF) clusters in high-tension glaucoma (HTG) patients.

Methods: 83 HTG patients (56.7(11.1) y) with early VF defects (according to Hodapp-Parrish-Anderson scale) were included in the prospective study. During the study intraocular pressure (IOP), non-invasive ICP, translaminar pressure difference (TPD), perimetry (Humphrey 24-2) and retrobulbar blood flow (CDI, Accuvix, Korea; in central retinal (CRA) and ohthalmic (OA) arteries) were assessed. The VFs of each patient were divided into 5 clusters: nasal, temporal, peripheral, central, paracentral. The level of significance $p< 0.05$ was considered significant.

Results: HTG patients had mean ICP 7.83(2.3) mmHg, VF defects: nasal -2.61(2.1), temporal -1.69(1.4), peripheral -2.11(1.0), central -1.07(1.0), paracentral -1.70(0.6) dB. There were no significant correlations between ICP and VF clusters ($p>0.05$).

HTG patients with deeper central VF defect had lower ICP (median(min-max) 6.8 (4.3-13.6) mmHg), compared to HTG patients with other deeper VF clusters, however significant difference was with HTG patients with deeper temporal VF cluster (8.5(5.6-14.1)), $p< 0.05$. There were no significant differences in IOP between NTG patients with different deeper VF clusters, p=0.29. HTG patients with deeper central VF defect had higher TPD, compared to other groups, however the difference was not significant (p=0.26). HTG patients with deeper nasal and paracentral VF defects had higher OA resistive index, compared to HTG patients with deeper peripheral VF defect ($p< 0.05$). HTG patients with deeper central VF defect had lower CRA peak systolic velocity, compared to other groups ($p< 0.05$)

Conclusions: HTG patients with deeper central VF defects had lower ICP and CRA peak systolic velocity compared to HTG patients with other deeper VF clusters. Further studies are needed to analyze the involvement of ICP in high-tension glaucoma management.

EP-GLA-08

The difference in cerebrovascular autoregulation between normal-tension glaucoma, high-tension glaucoma patients and healthy subjects

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Purpose: To assess difference in cerebrovascular autoregulation NTG, HTG patients and healthy subject.

Methods: The perspective pilot study included 10 patients with NTG (age 67.5 (2.3) y), 8 patients with HTG (age 73.2 (2.7) y) and 10 healthy subjects (age 71.1 (5.1) y).During the study IOP, blood pressure (BP), perimetry, retrobulbar blood flow and cerebrovascular autoregulation were assessed.

Cerebrovascular autoregulation was measured using digital transcranial doppler (Delica EMS-9UA, Germany) and non-invasive blood pressure monitor (Finapres) assessing mean reactivity index (mVRx), duration of longest cerebrovascular autoregulation impairment (LCAI) (with VRx>0.5). The level of significance p< 0.05 was considered significant.
Results: NTG patients had statistically significantly higher mVRx (0.056 (0.168)), compared to healthy subjects (-0.179 (0.220)), p=0.025. HTG patients had higher mVRx (-0.079 (0.249)), compared to healthy subjects (p=0.360). NTG patients had statistically significantly longer duration of LCAI (107 (77) s), compared to healthy subjects (31 (29) s), p=0.006. HTG patients had longer duration of LCAI (75 (85) s), compared to healthy subjects (p=0.121).
There were statististically significant correlations between duration of LCAI and central retinal artery PSV (r = -0.756, p = 0.011) and systolic BP (r = 0.689, p = 0.027) in NTG patients.Higher mVRx correlated with higher PSD in HTG patients (r = 0.787, p = 0.021).There were significant correlations between duration of LCAI and temporal posterior ciliary artery PSV (r = -0.736, p = 0.038), BP (r = -0,798, p = 0,018) and VFI (r = -0.780, p = 0.022) in HTG patients.
Conclusions: NTG patients had higher cerebrovascular autoregulation impairment, compared with healthy subjects. Higher cerebrovascular autoregulation impairment correlated with lower retrobulbar blood flow. Further studies are needed to analyze the involvement of cerebrovascular autoregulation impairment in NTG and HTG management.

EP-GLA-09

The outcome of the Ahmad Glaucoma Valve implantation for refractory glaucoma in Kuwait

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Purpose: To assess the outcomes and incidence of postoperative complications of Ahmad Glaucoma Valve implant in eyes with complicated glaucoma performed in Kuwait.
Methods: This is a retrospective study done at the Al-Bahar Eye Center in Kuwait. Charts of all patients who underwent Ahmad Glaucoma Valve implant at the Al-Bahar Ophthalmic Center in Kuwait between 2006 and 2009 were reviewed. Surgical success was defined as intraocular pressure less than 22 mmHg and greater than 5 mmHg without additional glaucoma surgery and without loss of light perception.
Results: A total of 33 eyes from 30 patients with complicated glaucoma not responsive to conventional medical and non-implant surgical treatment received Ahmad Glaucoma Valve implant. The success rate was 79% (26 cases). 20/26 (77%) cases of them required antiglaucoma medications. The most common complication was encapsulated bleb (27%) and transient postoperative hypotony was found in 19% of the cases.
Conclusions: Ahmad Glaucoma Valve implant appears to be effective and relatively safe for complicated glaucoma in Kuwait. The success rate is comparable with those reported in other studies.

EP-GLA-10

The comparison of peripapillary choroidal thickness in glaucomatous and non-glaucomatous eyes

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Purpose: To evaluate the importance of peripapillary choroidal thickness (PPCT) measurements both in the diagnosis and follow-up of glaucoma patients.
Methods: Eighy-six eyes of 51 patients, who have been diagnosed as having primary open angle gaucoma (POAG) constituted our study group. Eight-four eyes of 42 age and gender matched healhy volunteers were used as controls. PPCT measurements were carried out by using an enhanced depth imaging optical coherence tomography (EDI-OCT). The optic disc rim area (ODRA), linear cup/disc ratio, and mean cup depth were measured by using Heidelberg retinal Tomography III. Retinal nerve fiber layer (RNFL) thickness measurement was performed by spectralis OCT and central corneal thickness (CCT) was measured by using a specular microscope.
The results compared between groups statistically by using SPSS 20.0 program. Statistical significance was accepted as p<0.05. We also investigated the correlation of studied values to each other within the groups by statistically.
Results: We found that PPCT was significanly thinner in POAG group compared to the controls. We also observed statistically significant correlation between the PPCT, RNFL thickness, and ODRA measurements in glaucoma group, but any correlation in terms of these parameters did not present in the control group.
Conclusions: Our study may implicate that PPCT measurement might be one of the most important methods in the diagnosis and follow-up of glaucoma. For this purpose, further studies must be carried out.

EP-GLA-13

Efficacy and safety of travoprost and timolol - 2 year clinical result

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Purpose: To compare intraocular pressure (IOP)-lowering efficacy and safety of travoprost 0.004% and travoprost 0.004% and beta-blocker 0.5% fixed combination ophthalmic solution in patients with open-angle glaucoma and ocular hypertension.
Methods: In this prospective, multicentre clinical trial, 62 patients received travoprost 0.004% (n=31) or travoprost 0.004% and beta-blocker 0.5% fixed combination (n=31). Efficacy and safety was compared across treatment groups over 2 years. IOP reduction and adverse events were examined at 3, 6, 12 and 24 months for each group.
Results: Mean IOP at the first visit in the travoprost 0.004% group was 26.4 (SD±2.1), and travoprost 0.004%/timolol 0.5% group was 26.3 (SD±2.1). Mean IOP after 24 months in the travoprost 0.004% group was 20.5 (SD±1.5) and travoprost 0.004%/timolol 0.5% group was 18.5 (SD±1.5). There were statistically significant difference in IOP in both eyes after third visit (after 1 year) and fourth visit (after 2 years).
Conclusions: After 2 year of treatment, travoprost 0.004%/timolol 0.5% produced clinically relevant IOP reductions in patients with open-angle glaucoma or ocular hypertension that were greater than those produced by travoprost 0.004% alone.

EP-GLA-14

iStent in practice - mid term outcomes

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Purpose: To evaluate the safety and efficacy of combined phacoemulsification and iStent in real world practice in the mid to long term.
Methods: Retrospective, uncontrolled, single centre evaluation of 134 eyes that underwent combined phacoemulsification and iStent insertion at Hinchingbrooke Hospital 2013 to 2018. 10 additional patients were analysed separately due to previous trabeculectomy and 8 due to previous selective laser trabeculoplasty (SLT). Number of eyes with follow up at 6m, 12m, 24m, 36m, 48m and 60m were 119, 73, 61, 40, 19 and 7 respectively.
Results: At baseline, mean IOP (off meds) was 24.4 (SD 5.0). At 12 months mean IOP was reduced to 14.9 (SD 3.8). This mean IOP was maintained up to 60 months (though sample small at 48m and 60m). At baseline, mean topical medication number was 1.77 (0.89). At 12m, this reduced to 0.83 (1.06). At 24m, 36m, 48m and 60m mean medication number were 0.89, 1.00, 1.50 and 1.67 respectively. Over the first three years approximately 50% of patients were medication free, but this fell to 30% in years 4 and 5. Patients with previous trabeculectomy or SLT had similar success rates as those without. One patient suffered a retinal detachment that was repaired without significant reduction in visual acuity.
Conclusions: Combined phacoemulsification and iStent remains an effective and safe procedure that reduces medication burden, maintains IOP control and delays further glaucoma procedures. This may have value as a secondary procedure in patients with previous trabeculectomy or SLT.

EP-GLA-16

Ocular bleeding as the first manifestation of hemophilia

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Purpose: We report a case of a neonate in whom the first manifestation of hemophilia was delayed suprachoroidal hemorrhage (SCH) after penetrating keratoplasty. To the best of our knowledge, this is the first case of post-keratoplasty SCH occurring in an infant with undiagnosed hemophilia.
Case report: A 4-day old neonate presented with bilateral corneal opacities. Examination showed right eye corneal opacification with a small perforation. The anterior chamber was shallow bilaterally with absent view posteriorly. A diagnosis of bilateral Peter's anomaly type 2 was made and the child underwent right eye corneal gluing.
Later, the child underwent right eye therapeutic penetrating keratoplasty (PKP) with lensectomy, and anterior vitrectomy without complications. Postoperatively, the child was found to have right eye total hyphema with high intraocular pressure (IOP). B-scan ultrasonography revealed hemorrhagic choroidal and retinal detachment.
He was started on anti-glaucoma drops and observed closely. Unfortunately, early corneal blood staining started to develop inferiorly and repeated B-scan ultrasonography showed resolution of the suprachoroidal hemorrhage; however, there was total closed funnel retinal detachment. At this stage, due to the poor prognosis, conservative management was advised.
Three months later, the patient was found to have high IOP in the left eye and glaucoma surgery was recommended. During the preoperative evaluation, the patient's coagulation profile showed two sets of high APTT. Detailed hematological evaluation showed low factor VIII. This directed the diagnosis towards hemophilia type A. Pediatric hematology service implemented an aggressive management plan and PKP was done to the left eye without any complications.
Conclusions: This case serves as a reminder that the occurrence of SCH, especially in the absence of other predisposing risk factors, should warrant detailed systemic assessment to exclude underlying bleeding disorders.

EP-GLA-18

Sequential filtration surgery secondary to bilateral intravitreal dexamethasone induced glaucoma

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Purpose: Sustained-release intravitreal dexamethasone (DEX) implant is approved in Europe for the treatment of macular edema related to diabetic retinopathy, branch retinal vein occlusion, central retinal vein occlusion, and non-infectious uveitis. Intraocular pressure (IOP) elevation and cataracts are the most common adverse effects of DEX implant. To our best knowledge, this is the first case undergone sequential filtration surgery secondary to bilateral intravitreal DEX induced glaucoma in the literatüre.
Methods: A 52-years-old woman referred at our glaucoma unit with refractory IOP elevation in spite of maximum medical therapy. She had diabetic macular edema and was followed up in our retina unit for four years. She had received 6 doses of ranibizumab and 7 doses of DEX implant in right eye, and 8 doses of ranibizumab and 7 doses of DEX implant in left eye during the entire follow up period.
Results: Her best-corrected visual acuity was 20/100 in both eyes and IOP was 50 and 47 mmHg in right and left eye, respectively. Ocular examination revealed bilaterally pseudophakia in anterior segment, and cup to disc ratio was 0.8 in right eye and 0.9 in left eye, bilaterally panretinal photocoagulation scars in posterior segment. We diagnosed the patient as bilateral steroid induced glaucoma and performed sequential express implantation surgery one week time interval. IOP was range from 7 to 10 mmHg in both eyes during the 3 postoperative months. There was no any intraoperative or postoperative complication.
Conclusions: IOP elevations due to sustained-release intravitreal DEX implant are generally transient and can be controlled with topical antiglaucomatous medication. Patients rarely require surgical intervention for DEX implant mediated IOP spikes. However, given their increased risk for refractory IOP elevations, repeated DEX implant should be used with more caution.

EP-GLA-19

Comparison of additional intraocular pressure-lowering effects of Ripasudil, a rho-kinase inhibitor versus selective laser trabeculoplasty in glaucoma and ocular hypertension patients

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Purpose: To compare the additive intraocular pressure (IOP) -lowering effects of Ripasudil, a rho-kinase inhibitor, and Selective Laser Trabeculoplasty (SLT) in Japanese glaucoma and ocular hypertension(OH) subjects.
Methods: Retrospective medical chart review of glaucoma and OH subjects who received Ripasudil, a rho-kinase inhibitor, or SLT in 2017 at all the visits during the follow-up period of months 1 to 12 was determined. We evaluated Intraocular pressure (IOP) and number of glaucoma medications at 0, 1, 3, 6, 9, 12 months. A repeated measures mixed model was employed to perform statistical analysis.
Results: Sixty-four medical carts were reviewed. Data collection terminated with 53 eyes (53subjects) reaching 6-12months follow-up. Twenty-four patients were in the SLT group, 29 patients were in the Ripasudil group. There was no statistically significant difference between both groups at base line [SLT: 18.6 (+/-5.4) mm Hg, Ripasudil 17.3 (+/-4.9) mm Hg, p-value=0.36] and at any time-point. Ripasudil group produced a statistically significant reduction in IOP until 12 months, SLT groups did until 9 months. There was no significant difference of the number of glaucoma medications between 2 groups after 1 month.
Conclusions: Ripasudil, a rho-kinase inhibitor appears to be substantially reduce IOP in patients with glaucoma poorly controlled with medical therapy.

EP-GLA-20

Long-term evaluation of Trabectome surgery

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Purpose: To evaluate the long-term results of Trabectome surgery performed on Japanese patients.
Methods: This was a retrospective nonrandomized observational study. Trabectome surgery was performed on 181 eyes from 142 patients (mean age 69.7±13.2, range 16-92, 78 males and 64 females) in Yamanashi University from March 2016 to September 2017.
Results: Primary open-angle glaucoma was observed in 108 eyes, secondary glaucoma in 29 eyes, pseudo-exfoliation glaucoma in 26 eyes, neovascular glaucoma in 2 eyes, primary angle-closure glaucoma in 7 eyes, mixed type in 8 eyes and developmental glaucoma in 1 eyes.
Trabectome surgery alone was performed on 70 eyes and Trabectome surgery combined with phacoemulsification was performed on 111 eyes. Mean preoperative IOP of 21.4±7.4mmHg decreased to 15.3±5.4mmHg at 1 months, 15.0±3.9mmHg at 3 months, 14.9±4.0mmHg at 6 months, 15.1±3.5mmHg at 12 months, 16.5±4.6mmHg at 18 months, respectively (P< 0.001).
Adjunctive medication decreased from 4.0±1.2 to 1.5±1.6 at 12 months, respectively (P< 0.001). BCVA was significantly improved from 0.22±0.39 to -0.005±0.09 at 12 months (P< 0.001). 19 eyes occurred short-term IOP elevation. 4 eyes received additional trabeculectomy.
Conclusions: Trabectome surgery is safe and effective for Japanese patients.

EP-GLA-21

Long-term efficacy and safety of express in our usual clinical practice

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Purpose: To analyze the efficacy and safety of the implant of the Express implant in our usual clinical practice.
Methods: Retrospective and descriptive study of all patients in our area with glaucoma who had an Express implanted in our center from January 2016 to December 2017, both included. Among other variables, preoperative and postoperative intraocular pressure (IOP), preoperative and postoperative hypotensive treatment and complications associated with the implant were studied.
Results: A total of 44 eyes of 42 patients were included, mostly with primary open angle glaucoma (56.81%). Combined surgery (phacoemulsification + Express) was performed in 43.18% of the cases.
We obtained an average preoperative IOP of 27 +/- 11.10 mmHg, which was reduced by 35.52% at 12 months (n = 24), and 49% at 24 months (n=8), reaching an average reduction of 31.82%.
The mean follow-up was 15.44 +/- 6.48 months. The average number of drugs decreased from 3.09 +/- 0.76 to 1.50 +/- 1.23. A 31.81% of cases did not require postoperative topical hypotensive treatment.
Most of the complications occurred during the first week, the most frequent being seidel and hypotonia secondary to seidel. 29.54% required needling, and 18.18% required a second surgery.
Conclusions: The Express implant has proven to be a safe and effective technique to consider in patients with glaucoma in whom medical or surgical treatment has failed.
It has comparable results to trabeculectomy, but with a simpler surgical technique that requires lower learning curve. In addition, it has a low rate of complications that are usually mild and transient, and an acceptable percentage of reoperations due to failure

EP-GLA-22

The incidence of glaucoma among healthy people in Lampang province, Thailand

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Purpose: To estimate the glaucoma incidence among healthy people who not known glaucoma before in Lampang province.
Methods: A population-based descriptive analytic study in all population from 36 communities of Lampang province was conducted between January 2017 and July 2018. The healthy people age between 40-70 years and was not known glaucoma before were included. Factors associated with glaucoma such as glaucoma family history, underlying disease and myopia were collected. The data was analyzed by two glaucoma specialist (LM and IT). If we found any glaucoma suspected persons, they will be sent to glaucoma specialist in Fort Surasakmontri hospital for further investigation (Slit lamp examination, GAT, CTVF 24-2 ,OCT(RNFL), Gonioscopy).
Results: A total of 1980 healthy people, 443 were excluded, finally 1492 were included. Glaucoma incidence rate was 1.74% (POAG n=11, NTG n= 14, PACG n= 1). Glaucoma suspected by disc (cup to disc ratio ≥ 0.5), Primary

angle closure suspect (PACS) and Ocular hypertension (OHT) were found in 8.31%, 2.21% and 0.27% respectively. We also found another disease, such as Dry Age-related macular degeneration (stage 1-2)1.14% , (stage 3-4) 1.21%, Wet AMD 0.07%, Epiretinal membrane (ERM) 0.8%, Cystoid macular edema (CME) 0.2%, Moderate Diabetic retinopathy(DR) 0.2%, Optic atrophy 0.07%, Macular scar 0.07% and Macular hole 0.07%.
Conclusions: The incidence rate of newly diagnosis glaucoma in urban of Lampang province (Northern of Thailand) was1.74%. Glaucoma suspected by disc, PACS and OHT were found in 8.31%, 2.21% and 0.27% respectively. These estimates are important in the future designs of glaucoma screening, treatment and public health strategies.

EP-GLA-23

Unilateral sulphasalazine-induced transient myopia: differential diagnosis of ciliochoroidal effusion

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Purpose: To report a case of unilateral sulphasalazine-induced transient myopia in the context of ciliochoroidal effusion.
Methods: Case-report: A 39 male patient on follow-up because of corticoresistent bilateral anterior uveitis begun treatment with sulphasalazine under Reumatology management. Three weeks later he started to complain of acute blurred vision of his right eye, presenting acute myopization with a narrow anterior chamber. Mild intraocular pressure elevation was detected and a drug-induced ciliochoroidal effusion was assumed.
Results: After discontinuing the medication and prescribing topical Atropine 1% the patient presented complete visual recovery and ciliochoroidal effusion resolution.
Transient myopia is commonly bilateral and is included as a differential diagnosis of uveal effusion syndrome. He referred no history of trauma or ocular surgery. Posterior scleritis was thought as the main differential diagnosis but no signs of choroidal or retinal serous detachment were found. No "T-sign" was found with the ocular ultrasonography.
Conclusions: Unilateral manifestation of drug-induced ciliochoroidal effusion is rare and it demands to perform differential diagnosis with other entities. Unilateral symptoms might be due to an asymmetric presentation or a very early stage diagnosis. Suspicion of drug-induced uveal effusion requires fast drug suspension and mydriatic drops start to promote the ciliary body retraction.

EP-GLA-24

Association between primary open-angle glaucoma and type 2 diabetes mellitus: a literature review

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Purpose: To assess the correlation between Type 2 Diabetes Mellitus (T2DM) and Primary Open-Angle Glaucoma (POAG).
Methods: A review of the literature was performed using PubMed as databases from August 1983 to May 2018. The following MeSh terms were used: ("Open-Angle Glaucoma"[Mesh]) AND "Type 2 Diabetes Mellitus"[Mesh]. In total, the search shows 42 results, which were all considered for review. Those not related to the association between POAG and T2DM were excluded from the review.
Results: A review of the literature suggests that patients who are diagnosed with type 2 diabetes mellitus have an elevated risk of subsequently developing primary open angle glaucoma. By identifying high-risk patients, those diagnosed with T2DM, preventative measures could be implemented, and this highlights the importance of controlling blood glucose levels. T2DM is associated with a higher risk of developing POAG; however, many other risk factors such as hypertension, age, female gender and family history may also increase the risk of developing POAG.
Conclusions: Most studies suggest that T2DM is a risk factor for POAG. Although, further studies are needed to understand mechanistically how they are associated.

EP-GLA-25

Glaucoma data collection in the square XV de Novembro in Ribeirão Preto

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Purpose: To report the experience and data collection of the members of the Academic League of Ophthalmology of the University of Ribeirão Preto (UNAERP) from the medicine course, during a campaign to raise public awareness about glaucoma in the square XV de Novembro on 05/26/2018 in Ribeirão Preto.
Methods: The awareness campaign consisted of data collection, pamphlet delivery and clarification on what the glaucoma disease is. Data collection was performed orally and documented by filling in the questionnaires elaborated by the members of the league and printed, during the interviews with the population present and which transited in the square
Results: A total of 431 individuals were interviewed. The questionnaires revealed that there is a prevalence of risk factors for the development of the disease in the studied population, such as age over 40 years (67%), afro descendant ethnicity (24%), diabetes mellitus (8%), arterial hypertension (24%), ametropias (46%) and family history (16%) in addition to the 7% diagnosed glaucoma patients. It is of great relevance the observation that, although the majority of the population had the knowledge of what an ophthalmologist is (94%), a minority (12%) had already been consulted by a professional. Another fact that calls attention to is the lack of knowledge of the population for what glaucoma disease means and causes, with 56% people proving that did not know about the disease and its complications.

Conclusions: Although it is a small study with only 431 scientific samples of individuals in the city of Ribeirão Preto, important observations can be made about the lack of knowledge about the disease, what highlights the importance of such campaigns and routine ophthalmological examination in both symptomatic and asymptomatic patients, willing for an early detection and management of glaucoma, which is one of the major causes of irreversible blindness in Brazil and worldwide.

EP-GLA-26

One-year outcome of micropulse laser transcleral cyclophotocoagulation in patients with refractory glaucoma

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Purpose: To evaluate one-year outcome of Micropulse Laser Transcleral Cyclophotocoagulation (MP-TSCPC) in Patients with Refractory Glaucoma
Methods: We retrospectively reviewed medical charts of glaucoma patients who underwent MP-TSCPC in 2017 at Caritas Medical Centre, Hong Kong. We collected data on demographic characteristics, pre- and post-treatment best-corrected visual acuity (BCVA), intra-ocular pressure (IOP) and number of glaucoma medications as well as rate of re-intervention and complications.
Results: We reviewed thirty eyes of thirty patients with mean age of 60.7 +/- 3.6; nineteen of them (63.3%) were male; 17 of them were right eyes. 20% of them had primary open angle glaucoma; 17% had primary angle closure glaucoma and 63% suffered from secondary glaucoma. The mean treatment duration was 170 +/- 8.0 seconds (with standardized settings: 2000mW power and 31.3% duty cycle). In one-year outcome, the mean Snellen BCVA dropped from 0.044 (pre-operative) to 0.033; the mean IOP dropped from 33.54 mmHg to 17.54 mmHg; mean number of medications reduced from 4.2 to 3.6. Nine eyes (30%) required further MP-TSCPC within 1 year. If we defined treatment success as IOP between 6 and 21mmHg or IOP reduction for more than 20% without further MP-TSCPC, the treatment success rate was 50% in 1 year. There was one eye which had history of traditional diode laser TSCPC developed phthisis bulbi during follow-up. There was otherwise no major complication documented.
Conclusions: This study demonstrated that MP-TSCPC could be considered as a safe treatment option for refractory glaucoma with comparable efficacy as in the literatures. Although 30% of eyes required re-intervention (MP-TSCPC), this showed that the procedure could be repeatable with satisfactory safety profile.

EP-GLA-27

Variation of anterior chamber angle and anterior chamber depth after phaco + IOL procedure in glaucomatous eye

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Purpose: To evaluate changes of camerular angle width and anterior chamber (AC) depth after uncomplicated cataract surgery in glaucomatous compared with non glaucomatous eye, when 3 different foldable mono-piece IOL's are implanted into capsular bag.
Methods: 65 patients (68 eyes) (POAG and CAG) underwent uncomplicated cataract extraction with phaco + IOL (stop & chop) technique, where IOL was placed into the capsular bag.
Single piece hydrophobic acrylic IOL (Tecnis 1-piece IOL J&J) was implanted in 20 eyes,
Four point fixation single piece hydrophilic acrylic IOL (Akreos Adapt, B&L) was implanted in 25 eyes.Single piece hydrophobic acrylic IOL (Acrysof Natural SA60AT) was implanted in 23 eyes.
Pre-operative and postoperative (30 days after surgery) Pentacam rotating Scheimpflug camera (Oculyzer Allegretto) data was examined and analysed.
Results: In all glaucomatous eyes (POAG o CAG) we obtained a significant widening of camerular angle and AC depth as well as AC volume enlargement. These parameters were more significant in eyes where 4 haptic point fixations IOL (Akreos Adapt) was implanted.
Medium angular width change was +17°, AC depth enlarged 1.6 mm, AC volume + 65.6 mm³ in Akreos Adapt B&L eyes.
Medium angular width change was +13.8°, AC depth enlarged 0.5 mm, AC volume + 46.4 mm³ in SA60AT Alcon eyes.
Medium angular width change was +16.8°, AC depth enlarged 1.5 mm, AC volume + 64.5 mm³ in Tecnis 1-piece IOL, J&J eyes.
10 closed angle glaucoma eyes included in our study gained significant widening of camerular angle (+25.0 °), enlargment of both parameters - AC volume (+66 mm³) and AC depth (+3.22mm).
Conclusions: Significant gain of camerular angle width and AC depth was noticed in eyes with angle closure glaucoma. Significant difference in gain of all 3 parameters was noticed in glaucomatous compared to non glaucomatous eye.

EP-GLA-28

Endothelial cell damage: anterior chamber versus ciliary sulcus ahmed glaucoma valve tube placement

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Purpose: Since there are no studies on the comparison and complications between these two options and at the same time an endothelial cell profile analysis, the objective is to compare endothelial damage after the implementation of Ahmed Glaucoma Valve (AGV) with tube placement in the anterior chamber (AC) or ciliary sulcus (CS).
Methods: Prospective study of patients who underwent AGV placement. The location of the tube was chosen according to the preference of the surgeon. Patients data were collected preoperatively, and postoperatively at 1, 6 and 12 months through glaucoma surgeon's evaluation [Best-corrected visual acuity (BCVA), number of different classes of glaucoma medications, intraocular pressure (IOP), postoperative complications] and non-contact specular microscope evaluation. Primary outcomes were determined 12 months after surgery: endothelial cell count (ECC) and morphology (polymorphism and polymegatism), success rates, IOP, number of different classes of glaucoma medications and postoperative complications rates.
Results: Sample with 28 eyes, 17 placed the tube in AC and 11 in CS, without intraoperative complications.Early/late postoperative complications were similar (p=0.129). At 12-months, all patients achieved therapeutic success without differences between groups (p=0.125).Postoperative IOP decreased to 11.79±3.18 mmHg, being similar in both groups (p=0.429).Although IOP reduction rate was higher in the CS group (AC vs CS: 56.55% vs 61.13%), this wasn't significant (p=0.275). ECC showed a mean reduction of 321.97±302.11

cells/mm2 (p=0.151). Rate of ECC reduction was 15.42% (p=0.100). Rate of variation of hexagonal cells percentage and coefficient of variation didn't differ (p=0.575 and p=0.173).
Conclusions: Placement of AGV in AC or CS does not show significant differences in surgical success, complication rate, or endothelial cell density and morphology 12 months after surgery.

EP-GLA-30

Combined surgery of vitrectomy and pars plana ahmed valve implant, our experience

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Purpose: Exposing the results we have obtained in our patients undergoing this combined procedure.
Methods: Descriptive, retrospective study of a case series, the diagnosis was recorded, the follow-up time, the presence of Complications, in addition to intraocular pressure (IOP), treatment and visual acuity (VA) both pre and post-surgical.
Results: All patients were on maximal treatment, neovascular glaucoma was the most common diagnosis (57.14%), the mean preoperative IOP was 42.14 mmHg passing to 17mmHg after surgery, the initial visual acuity was low (from perception of Light to 0.4) and remained low after surgery (0.001 to 0.4); 71.4% of the patients received laser treatment jointly and only 28.57% of them required pharmacological treatment after surgery (one single drug), the mean follow-up was 41 months (1-79 months); and only one of them presented a choroidal detachment as a postoperative complication.
Conclusions: The post-surgical IOP is 17 mmHg on average with a mean follow-up of 41 months.
We believe that the technique is safe and effective because the frequency of complications and the need for postoperative pharmacological treatment are both low.
We have not obtained an important AV gain, but we consider that the technique is effective in controlling pain and decreasing the need for both topical and systemic hypotensive treatments.

EP-GLA-31

XEN gel stent implantation as a primary surgical treatment for Chinese open angle glaucoma patients - 6-month results

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Purpose: To Evaluate the safety and effectiveness of XEN gel stent implantation as a primary surgical treatment for Chinese open angle glaucoma patients
Methods: Prospective case series. 15 Chinese patients with medically uncontrolled open angle glaucoma were recruited for XEN gel stent implantation as primary surgical treatments. Clinical outcomes and complications are documented.
Results: Early results demonstrated excellent outcomes in terms of intraocular pressure(IOP) reduction from a mean of 20mmHg to 14mmHg with average eye drops from 3.3 medication to 0. Needling rate was 30% and no serious complications noted.
Conclusions: XEN gel stent implantation is a safe and effective option as a primary surgical treatment for Chinese open angle glaucoma patients

EP-GLA-32

The results of the filtration bleb needling in patients with secondary glaucoma

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Purpose: to study the results of the needling in patients with secondary glaucoma
Methods: The study involved 50 patients (50 eyes) with various stages of secondary glaucoma, including men - 22 (48%), women - 26 (52%). Common ocular examinations were conducted that include visometry, perimetry, tonometry, biomicroscopy, gonioscopy, ophthalmoscopy, A-, B- scan, ultrasound biomicroscopy. An antiglaucomatous operation - deep sclerectomy with xenocollagen drainage implantation were performed to all patients. All patients were undergone needling of the filtration zone depending on the condition of the filtration bleb, Solution 5-Fluorouracil 5% - 0,04, Solution of Dexamethasoni - 0,4% - 0,4 ml were injected.
Results: Needling of the filtration bleb was performed to patients after 1 month and removing sutures with type of filtration bleb (according to classification of Yamamoto (1995). At patients with 2 and 3 type of filtration bleb needling with separation of cystic changed conjunctival adhesions, scleroconjunctival and sclero -scleral adhesions were performed a week after operation then after 2 week and 1 month respectively. In our practice a total number of injections of the 5-Fluorouracil in a poor dilution 0,04 ml to 0,4ml of Solution of Dexamethasoni in a certain cases were reached 6 injections during 6 months after operation. A spilled filtration bleb of the first type were observed in all patients during the examination after 6 month. IOP of the all patients were stable and at the level of 19±0,1 mmHg.
Conclusions: patients with secondary glaucoma recommended dynamic observation of postoperative filtration area with the mandatory procedure of needling at different times after surgery, depending on the severity of the processes of proliferation and degree of rise in IOP. Needling the filtration zone is an effective method of prevention of excessive scarring in the postoperative period in patients with secondary glaucoma.

EP-GLA-33

Ciliochoroidal detachment in patients with nanophthalm and angle-closure glaucoma

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Purpose: To describe the clinical findings and treatment of eyes affected by ciliochoroidal detachment (CCD) and angle-closure glaucoma most probably caused by scleral and choroidea abnormality.
Methods: We report clinical case patients with a history of high bilateral hyperopia, nanophthalmic eyes, angle-closure glaucoma and spontaneous CCD occurred on the non-operated eye. The first patient was treated in several stages to reduce the pressure on the left eye (OS): laser iridectomy, microinvasive non-penetrating deep sclerotomy and phacoemulsification. After a

while, during examination, we identified CCD on the non-operated right eye (OD), moreover OS was intact. The second patient did not treated surgically. He was suffered from total ciliochoroidal flat detachment in the both eyes as well. Diagnosis of ciliochoroidal detachment was based on routine ophthalmic examination, biometry and ultrasound biomicroscopy.
Results: Ciliochoroidal detachment is a complication that accompanies surgical intervention, associated with decompression of the eyeball, and ophthalmopathy of predominantly inflammatory etiology. However, in the both cases we did not have any surgery and inflammation. We assume that CCD is a component of uveal effusion syndrome (UES) and these patients belong to UES type 1.
Conclusions: Ophthalmologist should evaluate a patient with extremely short anterior-posterior axis not only for availability of glaucoma, but for the possible development of UES as well. Presented clinical cases are demonstrating the need for continued study of the relationship of the sclera, choroid affected by angle-closure glaucoma in CCD and uveal effusion pathogenesis.

EP-GLA-34

Effects of glaucoma medication on aqueous humor flare

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Purpose: The purpose of this study was to evaluate the effects of different number of intraocular pressure (IOP) lowering eye drops on aqueous humor flare.
Methods: Comparative cross-sectional study, including 15 subjects (15 eyes) with open angle glaucoma (treated for >2 years) and 15 gender and age matched healthy control subjects (15 eyes), with no glaucoma diagnosis or treatment. A full ophthalmic evaluation and non-invasive laser flare photometry (Kowa FM-700 ver. 2.01.200000, Japan) were performed (Flare measurement value is presented as photon count per millisecond (pc/ms)). None of the included glaucoma patients presented with conjunctival hyperemia or medication intolerance, IOP was controlled in all cases. A total number of prescribed antiglaucomatous medications was determined.We used Mann-Whitney U test for two independent non-parametric samples, Spearman's rank correlation coefficient for monotonic relationship between groups.
Results: The mean (SD) age was 76.6 (6.5) in glaucoma group and 75.1 (5.5) ($p > 0.05$) in healthy control group; male 40%, female 60% in both groups. The aqueous humor flare was significantly increased in glaucoma group (14.31 (1.49) (pc/ms)) comparing to healthy control group (10.34 (1.01)) (pc/ms) ($p = 0.045$). The mean number of medications in glaucoma group was2.73 (0.96), mode 3.0. A moderate positive monotonic correlation between the number of different substances used and aqueous humor flare was established (Spearman's rho = 0.529, p = 0.003), where higher number of medications used to control IOP correlates with higher flare measurement.
Conclusions: Glaucoma patients were showing increased aqueous humor flare, comparing with non-treated healthy subjects. Patients, who are prescribed with more antiglaucomatous medications, are more likely to have higher aqueous humor flare measurement. Further studies are needed to establish an exact impact of antiglaucomatous substances' effects on aqueous humor.

EP-GLA-35

Assessment of effectiveness of endonasal electrophoresis in treatment of patients with glaucomatous optic neuropathy

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Purpose: Assessment of clinical and functional effectiveness in complex treatment of GON with injecton of endonasal electrophoresis and tanakan
Materials and methods: The study involved 20 (40 eyes) patients with glaucomatous optic neuropathy in condition with compensate IOP aged 18 to 55 years. In the control group, 10 patients (20 eyes) received traditional treatment for 10 days. In the study group, 10 patients (20 eyes) took endonasal electrophoresis with tanakan per day for ten days additional to traditional treatment. Common ocular examinations were conducted research methods before treatment, 1 and 3 months after treatment and electroretinography studies as well as computer analyser of visual fields with Octopus(Interzeag AG, Swizerland) before and 1 month after treatment.
Results: The average visual field (AVF) in patients of two groups before treatment was 210◦ ± 15◦. In the control group of patients on 3 months of research visual field improved to ± 260, that is 1.23 times higher than the initial numbers. In the main group figures for AVF increased up to 300 ± 20◦ and 1.43 times higher than the rates before treatment. Index and latent oscillatory potential(OP) in electroretinography of main group before treatment was 5,6 ± 0,07 and 4,7 ± 0,01 (ms), respectively ($p < 0.05$) after treatment figures for index OP were 8,0 ± 0,03 and latent OP 4,4 ± 0,02 (ms) $p < 0.05$, characteristics of light sensitivity in the main group before treatment were 21,6±3,5 average for all sectors and 3,5 ± 3,4 average deviation from standard, respectively ($p < 0.05$) after treatment given findings became 24,5 ± 3,9 and 3,8 ± 1,9.
Conclusions: According to our results, inclusion of endonasal electrophoresis with tanakan in complex treatment of glaucomatous optic neuropathy has the effect of protecting from detrimental influence of IOP to retina, promotes prolongation of the main treatment and recovery of visual function of the eye.

EP-GLA-36

MRI diagnosis of superior ophthalmic vein enlargement in patients with graves orbithopathy and in glaucoma patients associated with graves orbithopathy

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Purpose: The aim of this study is to evaluate the association of superior ophthalmic vein (SOV) diameter and intraocular pressure (IOP) in patients with Graves orbithopathy (GO) and in glaucoma patients associated with GO.
Methods: We examined 132 eyes and orbits of 66 patients GO cases were classified as thyrotoxic exophthalm, myogenic, lipogenic and mixed forms. In control group include 40 orbits of 20 patients without clinical signs of GO. Orbital MR imaging was performed on a 1.5 Tesla MRSigna Infinity (GE). SOV diameter was measured in coronal T1-weighted images in the upper segment of the orbit between the upper rectus muscle and the optic nerve. IOP parameters were determined by the applanation tonometry.
Results: SOV diameter in control group was Me 1,2[1;1,3] mm. SOV diameter was significantly higher in orbits with a mixed form of GO by 0.4 mm (33.3%) Me 1,6[1.4;1.6]mm (U = 24.5,p = 0.000002) and in glaucoma pa-

tients associated with GO by 0.7 mm (63.6%) Me 1.8[1.4;2,5]mm (U = 39,p = 0.000005). Statistically significant IOP increased (p < 0.05) in the group of patients with a mixed form of GO Me 20[18.5; 21]mmHg, a myogenic form Me 20[18; 23]mmHg; and in glaucoma patients associated with GO Me 22[19; 24]mmHg in comparison with the control group Me 18[18;19]mmHg. Correlation analysis revealed a positive relationship between the diameter of SOV and the level of IOP; rs = 0.78(p = 0.00005).
Conclusions: This study suggests that patients with GO and with enlarged SOV are more likely to have increased IOP. So, we are considering that it is necessary to analyze the diameter of SOV during MRI examination of the orbits to predict the risk of developing secondary glaucoma in patients with GO.

EP-GLA-37

Clinical and functional results of two bifocal IOLs implantation during combined cataract and glaucoma surgery

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Purpose: Comparative analysis of the clinical and functional results of bifocal IOLs implantation during combined cataract and glaucoma surgery.
Methods: 41 patients (75 eyes) with presbyopia and POAG who underwent one-stage cataract phacoemulsification with implantation of a multifocal IOL and NDPS with lens capsule drainage were included in a prospective study.
Group 1 included 24 patients (44 eyes) with implantation of diffractive-refractive IOL.
Group 2 consisted of 17 patients (31 eyes) who were implanted with aspherical diffractive intraocular lens optics with asymmetric IOL.
Results: Mean IOP in both groups was 18.1±2.9 mmHg, while the difference with the preoperative parameters (26.1±2.8) was statistically significant (p< 0.05). On average, patients received 1.3±0.5 antihypertensive drug compared to 2.4±0.61 before surgery (0.05< p< 0.1). UCVAnd in group 1 was 0.51±0.12 (p=0.009), in group 2 0.53±0.1 (p=0.01). In group 1UCVAfd was 0.59±0.09 (p=0.043), in group 2 0.57±0.04 (p=0.021). BCVAnd in group 1 was 0.64±0.07, and 0.64±0.09 in group 2. In all studied groups postoperative BCVAnd after 1 year of observation was significantly higher than before the surgery (p=0.006 and p=0.009, respectively).
Conclusions: The main study goal (BCVAfd= 1.0 at 1 year after surgery) was achieved in 31.8% of cases in group 1 and in 29.1% of cases in group 2 (p>0.1). Implantation of multifocal IOL in the combination cataract and glaucoma surgery is a safe and effective surgical intervention in this group of patients.

EP-GLA-38

Comparison of ocular volume changes profiles with different treatment options in a patient with primary open angle glaucoma

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Purpose: The aim of this study is to compare continuous ocular volume change profiles in a 53 years old patient with history of primary open angle glaucoma. Profiles without therapy, with medical therapy and after glaucoma surgery was obtained and analysed.
Methods: Profiles were obtained using a continuous ocular monitoring system SENSIMED Triggerfish (Sensimed AG, Switzerland) over the 24-hour period. Fluctuation profiles were generated after the transmission of data from the recorder to the software installed on the computer. First monitoring was performed after 4 weeks washout of anti-glaucoma medication. IOP raised up to 25 mmHg. Then, tafluprost eye drops were used for six weeks. Medicated IOP was within normal range with maximum of 18 mmHg at multiple IOP assessments during the day. Sensimed Triggerfish monitoring was repeated. Due to progression of RNFL changes glaucoma surgery was scheduled Trabeculectomy with 0.1 % MMC and Ologen implant (Aeon Astron Inc.) was performed. IOP remained controlled without antiglaucoma therapy (range 12-14 mmHg). The third Sensimed Triggerfish monitoring was done 3 months after the surgery.
Results: First two profiles (without therapy and with medical therapy) showed significant ocular volume fluctuations with further elevations during nighttime. Last profile obtained after glaucoma surgery showed stabilization during 24 hour period (day time and night time).
Conclusions: Topical antiglaucoma treatment lead to significant IOP decrease, but fluctuations in ocular volume changes with further elevations during nighttime were still present. Successful glaucoma surgery leads to IOP control as well as stabilization of ocular volume changes during the 24 hour period.

EP-GLA-39

The results of trans-scleral diode laser cyclo-photo-coagulation in the treatment of diabetic neovascular glaucoma decompensation

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Purpose: to study the results of trans-scleral diode laser cyclophoto-coagulation in the treatment of diabetic neovascular glaucoma decompensation.
Methods: 41 eyes of 41 patients who had the treatment and were analysed with follow-up after initial treatment about 21.5 months (range of 18-24).
Results: Mean intraocular pressure (IOP) before was 35.4 mm Hg (9.5)/ which reduced after coagulation to 19.0 mmHg (12.4) at the end of follow-up. The mean number of antiglaucoma drops after procedure was significantly lowered from 3.9 (0.3) to 1.2 (1.3). Six patients had visual acuity ≥ 0.1 of before the treatment and in four of them the same level of vision maintained, the other one obtained improved vision up to 0.1, other one of them none deteriorated beyond 6/60. 26 out of the remaining 35 patients who had vision of counting fingers or worse before treatment progressed to no perception of light at the final index visit. Other 9 cases showed the same level of visual acuity. Let us note that A total of 10 patients had previous pars plana vitrectomy (PPV). Patients with two or more PPVs developed hypotony There were 6 patient with revealed severe hypotony (IOP < /=10). after multiple pars plana vitrectomies in 4 history.
Conclusions: Trans-scleral diode laser cyclophotocoagulation is a useful and reliable procedure for management of diabetic neovascular glaucoma decompensation. The current regime of coagulation must be carefully adjusted to each patient to avoid the high risk of hypotony and phthisis, spatially in eyes that have had.

EP-GLA-40

Unilateral pseudoexfoliation syndrome: microstructural analysis of retinal change

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Purpose: To evaluate peripapillary retinal nerve fiber layer (RNFL) and macular ganglion cell complex (GCL+ ,and GCL++) thickness by spectral-domain optical coherence tomography (OCT) in both eyes of clinically unilateral pseudoexfoliation syndrome (PEX).
Methods: Twenty pseudoexfoliative eyes of twenty clinically unilateral PEX patients, 20 fellow eyes of same cases, and 20 eyes of 20 healthy subjects were recruited in this study. Peripapillary RNFL and macular GCC thickness measurements by 3D Topcon 2000 FA plus OCT were performed on all subjects.
Results: Peripapillary RNFL thickness was significantly different between groups and it was thinner in PEX than healthy subjects. GCC parameters were also significantly different between groups. GCC parameters were significantly thinner both in PEX eyes and in fellow eyes than in healthy subjects.
Conclusions: Even in eyes with normal IOP, PEX is related with thinner RNFL and GCC. Further studies are necessary to evaluate whether pseudoexfoliation itself could play a role as an independent risk factor for glaucomatous optic disk changes.
Keywords: retina, pseudoexfoliation syndrome, optical coherence tomography

EP-GLA-41

Clinical approach and its variables - an online national survey on 3 particular glaucoma cases

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Purpose: With continuously changing guidelines and new and more accurate diagnostic tools the question remains: can glaucoma still be a probable diagnostic and is the decision to treat a matter of following the best clinical practice or one of relying on one's clinical experience?
Methods: We conducted an online national survey for romanian ophthalmologists, consisting of a series of three challenging glaucoma cases with different possible solutions and we encouraged our colleagues to respond with a personalized approach. All cases had well documented investigations, including images of the optic nerve, visual field and OCT.
The first case was a young woman with a positive family history of glaucoma and an abnormal C/D.
The second case was a woman, age 65, with a high IOP on the right eye and a borderline value on the left eye, a thick cornea, an abnormal C/D in both eyes and a superior RNFL thinning- right eye.
The third case was a man, age 69, with a personal history of glaucoma, treated with a fixed antiglaucomatous combination, with normal IOP and C/D, but with RNFL thinning in both eyes and atypical visual field defects for glaucoma.
Results: We had a total of 150 survey responders, the majority being specialists (n=91).
For the first case most of our participants - 66.67%, chose watchful waiting.
The second case received a more variable response: 54,05 % chose to treat both eyes and 31,76% chose to treat the right eye.
The last case was the most challenging with 36.91% of the participants choosing to investigate further and then treat, and 32.21% deciding to continue the current treatment.
Conclusions: In our study young physicians had a more decisive approach in borderline cases, choosing to treat sooner and risk less, whereas senior doctors, based on their clinical experience, preferred watchful waiting.

EP-GLA-42

Esnoper-clip implant in surgical treatment of secondary open-angle glaucoma associated with bilateral juvenile chronic idiopathic anterior uveitis

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Purpose: To report a case of successful use of Esnoper-Clip implant in surgical treatment of uncontrolled secondary open-angle glaucoma in 15-years old patient with bilateral juvenile chronic idiopathic anterior uveitis.
Methods: Case report
Results: The patient has been treated since 12 years of age for bilateral chronic anterior uveitis. No systemic disease was found. Elevated intraocular pressure (IOP) was noted 6 months after continuous administration of corticosteroid drops. As the secondary glaucoma could not be controlled by topical medication, patient underwent at the age of 14 years elsewhere bilateral transscleral cyclophotocoagulation. As this procedure did not lead to IOP control, patient was then referred to our tertiary care centre.
When examined, best corrected visual acuity was 1.0 in right eye and 0.2 in left eye. IOP was bilaterally elevated to 23 mmHg despite combination of four glaucoma medications. Static perimetry showed advanced glaucomatous changes in left eye and normal visual field in right eye. Slit-lamp examination of both eyes showed active inflammation in anterior chamber, band keratopathy, posterior synechiae and in left eye glaucomatous atrophy of optic disc.
Uveitis was controlled by combined immunosuppression (adalimumab, mycophenolate mofetil, corticosteroids). Trabeculectomy with Ologen implant in left eye and two months later in right eye was performed. Filtration gradually failed in both eyes in one year. Therefore, additional glaucoma surgery was indicated. Based on favourable anatomical conditions deep sclerectomy with Esnoper-Clip implant and adjunctive mitomycin C was done in right eye.
At the latest follow-up examination, satisfactory IOP was reached without glaucoma medication. The same procedure was done in left eye recently.
Conclusions: Suprachoroidal filtration resulting from deep sclerectomy with Esnoper-Clip represents an option how to reach IOP control in uveitic open-angle glaucoma after failure of trabeculectomy.

EP-GLA-43

Preferential computed visual field test in advanced glaucoma

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Purpose: Percive at,compare and analyze values of global visual field indices in advanced glaucoma obtained by usinig of G1X and M2 test-programs.
Methods: The global visual field indices (Mean Sensitivity-MS,Mean Defect-MD,Loss Variance-LV and Reliability Factor-RF)of 34 eyes affected with advanced glaucoma(AG limited by-20dB< MD < -12dB) obtained by application of G1x and M2 test program(Octopus 123,TOP strategy),have been retrospectively analyzed.The comparison of the numerical values of the aforementioned visual field indices was made by statistical method of Student t-test.
Results: In the analyzed group of patients using the G1x and M2 programs,the following average values of global visual field indices have been obtained: MD=15.73dB//8.47(sd=3.16//4.2)RF=23.23%//(sd=15.1//16.1),MS=10.05dB //18.9dB(sd=3.5//5.6) with a statistically significant difference to p< 0.05 and LV=54dB//40dB(sd25//19) with not statistically significant difference to p< 0.05.As much as 75% of the examined visual fields,according to MD values firstly obtained by G1X then M2 test-program,are transformed from advanced to moderate glaucoma phases.
Conclusions: The M2 test- program application,in advanced glaucoma phase,will give more credible and accessible visual field indices than G1X application.The method of choice in AG is utilization of M2 test-program.

EP-GLA-44

Bovine pericardium: the solution to treat conjunctival erosion after XEN

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Purpose: To report a case of conjunctival erosion and XEN Gel Stent exposure after implantation in a refractory primary open-angle glaucoma. Minimally invasive glaucoma surgery (MIGS) is a new approach in glaucoma surgery so there is lack of information regarding management of complications.
Methods: Clinical case elaborated through the review of clinical file, ophthalmological examination and analysis of ancillary tests.
Results: 82 year-old caucasian woman with history of arterial hypertension, atrophic age-macular degeneration and primary open angle glaucoma treated with topical and oral hypotensive medication, was referred to Glaucoma department for MIGS surgery. The XEN Gel Stent implantation was performed on left eye under topical anesthesia. On the first postoperative day ocular hipotony and bleb leakage were detected due to conjunctival erosion and XEN exposure. Autologous conjunctival autograft was performed without success. A new technique with Tutopatch and conjunctival autografting was performed. One month later, intraocular pressure was 17 mmHg on medical therapy with a nonleaking well-formed bleb.
Conclusions: This is our first described case using Tutopatch to treat chronic conjunctival erosion after XEN implantation. It highlights one of the possible MIGS complications management.

EP-GLA-45

Cyclo G6 glaucoma laser system as a new alternative for glaucoma patients - case study

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Purpose: Glaucoma is a progressive optic neuropathy that is considered one of leading causes of vision impairment in the world. Despite the fact that origin of this disease might have different backgrounds, in a majority of cases the combining agent in a different type of glaucoma is intra ocular pressure (IOP). IOP depends on balance of production of the aqueous humour and its drainage. When it is affected, IOP might increase. Increased IOP is regarded as an important risk factor of glaucoma that can be controlled and modified. Nowadays variable methods of treatment are available and should be individually considered. Sometimes universally-used treatment is insufficient or inadequate for patient's health or needs. Recently a new alternative for demanding patients appeared - Cyclo G6 Glaucoma Laser System that uses MicroPulse Technology. It is considered a safety-profile procedure because it changes the function of the eye, but does not impact its anatomy.The aim of this investigation is to verify efficacy and durability of Cyclo G6 Glaucoma Laser System in patients with different types of glaucoma.
Methods: Eight patients (13 eyes) were qualified for the treatment based on their main symptoms, medical history, undergone insufficient glaucoma treatment, visual acuity, IOP, visual field and OCT of optic nerve results. The lowest IOP was 20 mmHg and the highest 51 mmHg (+/-27,08). Glaucoma with 6 different derivations was analysed during 5 months of observation after Cyclo G6 Laser therapy.
Results: After the treatment a significant lowering of the IOP was reported (20-50%) during the observation time. No side effects were observed.
Conclusions: Cyclo G6 Glaucoma Laser System is an alternative for patients whose treatment is insufficient, who cannot undergo commonly used treatment (for the reasons of allergy, pregnancy, health condition) or does not want to do the incisional surgery. As it is non-invasive laser the treatment can be repeated to achieve expected IOP.

EP-GLA-46

Sir William read and his work diseases incident to the eyes, with the causes, symptoms, and cures

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Purpose: In the 17th and 18th century, many empirical practitioners or 'charlatans' practiced medicine in England and one of them was Sir William Read .Many of them just survived, but some became wealthy and famous.
In this work we present how Sir William Read had confroted ocular cases, his life and his practice for diagnosis and treatment of numerous ophthalmic conditions.
Methods: His work, "A SHORT BUT EXACT ACCOUNT OF ALL DISEASES INCIDENT TO THE EYES", is believed to be a copy of the work 'Treite des maladies de TREATISE OF ONE HUNDRED AND THIRTEEN DISEASE OF THE EYES AND EYE-LIDDES' l'oeil) of Guillemeau where Banister describes the hardness of the globe in glaucoma.

Results: Read, a nobleman, enjoyed immunity from his colleagues' attacks and influenced the progress and changes in the treatment of many ocular ailments of his time. He taught the characteristic signs of glaucoma according to Richard Banister, advertising his own healing methods and relying on his only work 'DISEASES INCIDENT TO THE EYES'
Read's work is inexplicable and some copies have substantial differences attributed to the different editions.
Conclusions: Sir William Read expresses in this account the prevailing practice in the treatment of ophthalmic diseases and as such that constitutes a presumption of the evolution and progress of Ophthalmology in the 17th and 18th century. Thus, despite any reservations about the scientific validity of the contributors, it is a valuable record of the icon of ophthalmology in the 18th century.

EP-GLA-47

Health related quality of life in glaucoma patients measured with glaucoma quality of life - 15 questionnaire

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Purpose: The aim of the study was to evaluate Health Related Quality of Life(HRQoL) in patients with glaucoma by using Glaucoma Quality of Life - 15 (GQL-15) questionnaire and to asses the ability of the GQL-15 to differentiate different stage of the disease.
Methods: The study was designed as a cross-sectional study with a total of 177 patients with a different stage of the disease. Patients with primary open angle glaucoma (POAG), primary angle-closure glaucoma (PACG), normal tension glaucoma (NTG), pseudo-exfoliative (PEX) and pigmentary glaucoma (PG) were included in this study. According to the Nelson's staging system all patients were stratified into three stages of glaucoma: mild, moderate and advance. All patients completed the GQL-15.
Results: The total of 177 patents were enrolled with the mean age of 62.83±13.60years and the majority of patients were women (63.8%). The mean total score for the GQL-15 was 20.68±7.31 indicating that HRQoL of glaucoma patients was rather good. The highest mean score was registered in the advanced stage of the diseases (27.26±10.00), then in the moderate stage (20.68±7.19) and then in the mild glaucoma group and measured 18.20±3.90. The difference in the mean scores were statistically highly significant between the advanced and the moderate and also between the advanced and mild stage of the disease (p=0.001 and p=0.002, respectively). There was no statistically significant difference in the mean GQL-15 score between the mild and moderate group.
Conclusions: The GQL-15 is a valid instrument for evaluation of HRQoL among persons with glaucoma and has a very good discriminating power to differentiate different stages of glaucoma. It can be applied in everyday clinical settings.

EP-GLA-48

Assessment of tear film and corneal epithelium thickness in patients with pseudoexfoliation glaucoma treated with preservative-free latanoprost

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One of the specific aspects of topical hypotensive therapy in patients with pseudoexfoliation glaucoma (PEG) is to take into account the presence of dry eye symptoms and diseases of the ocular surface, common among the appropriate age group and patients long-term treated with topical hypotensive drugs with preservatives.
Purpose: to assess the central tear film and corneal epithelium thickness in patients with pseudoexfoliation glaucoma treated with preserved and preservative-free latanoprost
Methods: The study enrolled 29 patients (37 eyes) with PEG who received Benzalconium-chloride-preserved Latanoprost 0.005% for at least 6 months. 15 patients (18 eyes) were switched to preservative-free latanoprost 0.005% (Monoprost) treatment. In addition to routine ocular examination, central tear film thickness (Diez-Feijóo and Duran, 2015) and central corneal epithelium thickness (Francoz et al,, 2011; Liang et al., 2016) were assessed by means of optical coherent tomography (RTVue-100, Optovue, USA) before switching to preservative-free Latanoprost and at 4 weeks after switching.
Results: The average central corneal epithelium thickness in patients treated with Benzalconium-chloride-preserved Latanoprost, was 50,54±2,62 μm; in the patients who were switched to preservative-free Latanoprost it was 53,44±3,18 μm ($p< 0,05$). In 4 weeks after switching to preservative-free Latanoprost central tear film thickness significantly increased from 4,4±0,4 μm to 5,1±0,6 μm. No significant difference in hypotensive effect was noted in the Latanoprost-containing-Benzalconium chloride and preservative-free Latanoprost groups after switching.
Conclusions: The use of the preservative-free Latanoprost in patients with pseudoexfoliation glaucoma helps to increase the tear film and central corneal epithelium thicknesses, thereby improving the condition of the ocular surface in patients who have been treated with local Benzalconium-chloride-preserved Latanoprost for a long time.

EP-GLA-49

Management of acute primary angle closure and mature cataract

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Purpose: to report a case of acute primary angle closure (PAC) with coexisting mature cataract and its management
Methods: A 47-years-old woman came with chief complaint pain oh her rigjt eye (RE) since 3 days before admission, gradual blur since 6 months ago and has been getting worse. There were eye redness, tearing, nausea and vomiting. Visual acuity (VA) on RE was hand motion. Ophthalmologic examination on RE showed : conjungtival mix injection, corneal edema, shallow anterior chamber (AC), posterior synechiae, homogenous lens opacity, high intraocular pressure (IOP). From biometric examination on RE showed anterior chamber depth 2.87mm and lens thickness 2.91mm. While on LE we found: VA 6/15 improved with pinhole, shallow anterior chamber and imature cataract.

Results: cataract extraction is the best choice in case of acute PAC with coexisting mature cataract because it can effectively improve VA, deepen the anterior chamber, open the angle and reduce IOP
Conclusions: acute primary angle closure, mature cataract, cataract extraction

EP-GLA-50

Combination the trabecular micro-bypass iStent implantation and phacoemulsification for patients with open-angle glaucoma and cataract

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Purpose: The aim of this study is to evaluate efficacy and safety of combined phacoemulsification cataract surgery with intraocular lens implantation and iStent by Glaukos implantation into the Schlemm's canal for coexistent open-angle glaucoma and cataract.
Methods: In 2017 and 2018, 79 treatments were performed at the University Clinical Center Professor K. Gibinski of the Medical University of Silesia in Katowice and at the Okulus Plus Center of Ophthalmology and Optometry in Bielsko-Biała. The procedures were performed in patients with coexistent uncontrolled open-angle glaucoma of low or medium degrees and cataract.
Before the surgery eye diagnostics were performed. Subjects underwent phacoemulsification and intraocular lens implantation along with implantation of iStent. The variables recorded before surgery and during 3 months (79 eyes), 6 months (48 eyes) and 9 months (27 eyes) of follow-up were: intraocular pressure (IOP), the amount of anti-glaucoma medications and postoperative complications.
Results: After 3 months of observation a reduction of IOP was achieved by 4,73 units, after 6 months by 7,44 units and after 9 months by 7,91 units in comparison to the IOP before surgery. The required number of IOP-lowering medications has been reduced by 1,26 after 3 months, by 1,62 after 6 months and by 1,50 units after 9 months. The most common side effects were: subconjunctival hemorrhages, hyphema, temporary IOP increase after surgery and foreign body sensation.
Conclusions: The combined treatment of iStent implantation and phacoemulsification with intraocular lens is an effective and safe procedure to treat coexistent open-angle glaucoma and cataract. After 3 Months, 6 months and 9 months of observation most patients experience a significant reduction of IOP and a reduction of the amount of IOP-lowering medications.

EP-GLA-51

One year results of an ab-interno gelatin XEN stent for the treatment of primary open angle glaucoma

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Purpose: To establish the success of an ab-interno gelatin implant, as a standalone procedure and in combination with cataract surgery.
Methods: This is a retrospective study involving patients who underwent XEN45 implantation in James Paget Hospital, England. All 30 eyes were diagnosed with primary open angle glaucoma. Primary outcome measures were the intraocular pressure (IOP) and the number of medications. Complete success was defined as IOP reduction ≥20% from preoperative baseline at year one without any glaucoma medications while partial success as IOP reduction of ≥20% at year one with medications. Safety was assessed by assessing complications at routinely scheduled exams.
Results: The mean preoperative IOP was 22 mmHg and patients were on 2.7 medications preoperatively. This has reduced to 12.4 mmHg in implant only group ($P< 0.005$) and to 13.45 mmHg in cases where implantation was combined with phacoemulsification surgery. Number of drops was reduced to 1 drop in first and 1.3 in second group ($P< 0.005$). Complete success was 50% in patient with standalone procedure and 42% in patients with combined procedure. Partial success was seen in 30% of patients in implant only group and 42% in combined surgery group. Bleb needling intervention was required for 50% of eyes in patients with implant and 60% in patients with implant and cataract surgery. Hyphema was seen in one patient and hypotony in one patient (IOP≤5 mm Hg) at day one which spontaneously resolved by week four.
Conclusions: The XEN45 implant proved to be an effective treatment with a good safety profile. Better success outcome in standalone implantation versus combined intervention. The high rate of postoperative bleb needling procedure suggest need of postoperative bleb management.

EP-GLA-53

PERK inhibition as a new strategy for developing novel glaucoma therapy

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Purpose: Accumulation of overexpressed or misfolded proteins (e.g. myocilin or other proteins associated with age-dependent onset of glaucoma) leads to ER stress when the unfolded protein response (UPR) pathway fails to remove these proteins and can cause cells death. We hypothesize that PERK-dependent UPR cellular pathway is important factor in glaucoma pathogenesis. In the presented study we wanted to develop new strategy of small molecular inhibitor usage for glaucoma treatment. Presented research is going to address the issue of detrimental PERK activity in the optic nerve.
Methods: Study material consist of retinal ganglion cell line (RGC-5). We developed TRF-FRET based that uses the principles of both TRF (time resolved fluorescence) and FRET (fluorescence resonance energy transfer) to select the best fitted inhibitor of PERK dependent pathway. Then the XTT assay was performed to assess the cytotoxicity of investigated compound and western blot analysis was made to confirm the inhibitory effect at various concentrations.
Results: Nine compounds were initially selected based on HTS and IC50. One, the most promising of selected inhibitors, presents high specificity (docking score -59,5797081) and was tested for the toxic effect on RGC-5 cell line. There was no statistical difference between control cells and cells treated with selected inhibitor in the range of 0.15 - 50 μM ($p>0.05$), what indicates that it is non-cytotoxic compound Then we performed western blot to assess the level of the specific proteins involved in PERK dependent pathway activation. As a result we observed decreased eIF2alpha phosphorylation in RGC-5 cell line, what confirms inhibition of direct substrate of PERK and thus inactivation of PERK related UPR branch.
Conclusions: Small molecular PERK-inhibitors may constitute a novel, targeted treatment approach against glaucoma, whose pathogenesis is associated with PERK-dependent signaling pathway dysfunction.

EP-GLA-54

Standard automated perimetry. The role of accurate consulting in getting the best out of every patient

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Purpose: Standard automated perimetry is the gold standard for evaluating visual function in glaucoma. Taking into consideration that clinical decisions should only be made based on reliable results, the purpose of this study is to emphasize the importance of pre-perimetry consultation in achieving patients' understanding, therefore accuracy during an exam, that is stressful for most individuals.
Methods: 118 patients (69 female) with glaucoma participated in the study and were divided in two groups. Group A consisted of 79 patients who had undergone perimetry before and group B of 39 who had not. Mean age was 67,9 and 65 years for group A and B respectively. Regarding group B, before starting perimetry we provided the standard information leaflet plus a thorough 5 minute consultation concerning the dos and donts,whereas group A only got the information leaflet with some brief oral explanation. Afterwards we compared the reliability indices (RF-calculated from the false possitive/false negative values) of the two groups and distributed a questionnaire concerning their experience.
Results: 41,7% of group A experienced anxiety before and during the test, 40% encountered difficulty coping with it and 69,6% felt sure about their results.For group B the values were 35%,25%, and 79,4% respectively (which were statistically significant). Group's A mean RF score was 8,5% and group's B 5,8%, also statistically significant.
Conclusions: It was interesting to observe that the inexperienced group achieved better RF score than the experienced one, as a result of a less stressful,more patient friendly procedure. It is therefore made clear that giving our perimetry patients a little extra time will be rewarding.

EP-GLA-55

Effect of latanoprost 0.005% without benzalkonium chloride vs latanoprost 0.005% with benzalkonium chloride on intraocular pressure, visual field mean defect score, and cup-to-disk ratio

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Purpose: To compare the efficacy of a new formulation of latanoprost 0.005% without benzalkonium chloride (BAK) vs latanoprost 0.005% with BAK (reference) in a phase 3 study in patients with open-angle glaucoma and ocular hypertension.
Methods: In this 1:1 randomized, open label, active-controlled study, patients received latanoprost BAK-free or reference, 1 drop once-nightly for 4 weeks in affected eye(s). Intraocular pressure (IOP), the primary efficacy variable, was measured at baseline and each visit (days 8, 15, and 29); trough IOP was measured before administration of study medication, and peak IOP was measured 12−18 hours after administration. The secondary efficacy variables, visual field (VF) mean defect score and cup-to-disk (C/D) ratio, were measured at screening and end of study (day 29−31). Safety assessments included adverse event (AE) reporting.
Results: At baseline, the mean ± standard deviation (SD) for trough and peak IOP were 24.6 ± 4.7 and 26.1 ± 6.0 for latanoprost BAK-free (n=53) vs 24.6 ± 4.7 and 25.0 ± 5.5 for reference (n=51). At day 29, the trough mean change from baseline ± SD for BAK-free vs reference was −6.9 ± 4.6 vs −7.6 ± 3.8; and −8.3 ± 6.8 vs −8.4 ± 4.3 for peak mean change from baseline, respectively (P>0.1 for all comparisons of BAK-free vs reference).
The baseline VF mean defect score ± SD was −8.9 ± 8.0 vs −7.3 ± 6.0 for BAK-free vs reference, respectively (P=0.2371); and 0.6 ± 0.2 vs 0.6 ± 0.2 for C/D ratio (P=0.0631). Both BAK-free and reference group showed a slight decrease from baseline in VF mean defect score at the end of study (−1.8 vs −0.4, P=0.0374). There was no significant change from baseline for C/D ratio in both groups (P=0.4943).
Overall, 16 patients experienced AEs; none were serious. The most common AE was eye irritation; 4 (7.6%) vs 0 for BAK-free vs reference, respectively.
Conclusions: Latanoprost BAK-free is an effective treatment for IOP reduction and has a safety profile comparable to reference.

EP-GLA-56

Safety and intraocular pressure lowering of latanoprost 0.005% without benzalkonium chloride vs latanoprost 0.005% with benzalkonium chloride: subgroup analysis based on baseline intraocular pressure

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Purpose: To compare the efficacy and safety of latanoprost 0.005% without benzalkonium chloride (BAK) to latanoprost 0.005% with BAK (reference) in patients with open-angle glaucoma and ocular hypertension.
Methods: In this phase 3 noninferiority study, 578 patients were randomized 1:1 to latanoprost 0.005% BAK-free or reference and dosed once daily (pm) in the affected eye(s) for 12 weeks. Intraocular pressure (IOP) was measured at 8 am, 10 am, and 4 pm at baseline and on days 7, 28, 56, and 84. Mean IOP reduction was analyzed in 2 subgroups—low baseline IOP (22−28 mmHg) and high baseline IOP (29−35 mmHg). IOP measurement was based on the study eye (eye with higher IOP at eligibility visit; if equal, left eye if patient had even randomization number or right eye if patient had odd randomization number).
Latanoprost 0.005% BAK-free was considered noninferior to reference if the following 3 criteria were all met: 95% confidence interval (CI) of the mean treatment difference (MTD) in IOP included 0 for all 12 time points (N1), the upper limit of the 95% CI of the MTD was < 1.5 mmHg for all 12 time points (N2), and MTD < 1 mmHg for ≥7 of 12 time points (N3). Safety assessments included adverse event (AE) reporting.
Results: Each treatment arm had 235 patients in the low IOP group and 54 patients in the high IOP group. The overall mean IOP reductions in the latanoprost 0.005% BAK-free and reference groups were 6.6 vs 7.1 mmHg, respectively. In the high IOP group, 9, 0, and 0 time points met the N1, N2, and N3 noninferiority criteria, respectively. In the low IOP group 8, 12, and 6 time points met the N1, N2, and N3 noninferiority criteria, respectively. The most common ocular AE was eye pain, seen in 64% of latanoprost 0.005% BAK-free patients vs 47% of reference.
Conclusions: Although latanoprost 0.005% BAK-free did not meet the predefined criteria for noninferiority in either subgroup, it showed similar mean IOP lowering effect and tolerability to reference.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Neuro-ophthalmology

EP-NEO-01

Corneal hysteresis: a new risk factor in idiopathic intracranial hypertension?

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Purpose: Corneal hysteresis (CH) is a biomechanical property measured by the Ocular Response Analyzer (ORA) associated with glaucoma disease risk and severity. This factor is postulated to approximate the tissue properties at the lamina cribrosa, a structure also implicated in idiopathic intracranial hypertension (IIH). We conducted a study to investigate the association of CH with disease severity in IIH.
Methods: All adult patients between 18 and 50 with IIH presenting to a neuro-ophthalmology practice over a 4 month period were recruited. Those with glaucoma, corneal, and retinal diseases were excluded. A historical survey, measures of axial length (AL), central corneal thickness (CCT), and CH were conducted. Those with Logmar visual acuity (VA) ≥ 0.30 (Snellen ≤ 20/40), mean deviation on visual fields ≤ -3.00, or optic nerve pallor on exam were considered moderate-severe, while all others were considered mild and groups thus divided.
Results: Twenty-two mild and 19 moderate-severe cases were then analyzed. All participants were female. There were no differences in age, race, family history of glaucoma, or years since diagnosis. Body mass index was significantly different at 38.19 and 43.86 in the mild and moderate-severe groups respectively ($p < 0.05$). Corneal hysteresis was 10.95 and 10.91 in the mild and moderate-severe groups respectively ($p = 0.45$). Significant correlation was not demonstrated with CH and either visual field mean deviation or LogMAR VA. There were no significant differences in AL, CCT, opening pressure, or translaminar pressure gradients. However, disc edema grade on diagnosis was grade 2 in the mild group and grade 3 in the moderate-severe group ($p = 0.01$).
Conclusions: There were no differences in CH when comparing IIH patients with moderate-severe visual dysfunction to those with milder disease ($p = 0.45$) There was no notable correlation between CH and either visual acuity or visual field changes.

EP-NEO-03

Leber's hereditary optic neuropathy (LHON) - an atypical presentation

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Purpose: To report a challenging case in a 67 year-old man with the diagnosis of Leber hereditary optic neuropathy.
Methods: A 67 year-old man presented to the ophthalmology department with a bilateral and progressive vision loss, two years evolution and no other symptoms associated. No past ocular history was revealed. Ophthalmologic examination and imaging evaluation were performed.
Results: Under observation, his best corrected visual acuity was 1/10 in the right eye (RE) and 6/10 in the left eye (LE). Pupils were symmetric but slowed down reactive to light. Ocular motility was painless and no restrictions were found. Intraocular pressures were within normal limits. Eyelids had no abnormalities. Slit lamp examination was unremarkable, except incipient cataracts. Fundoscopy revealed bilateral optic atrophy. Spectral domain optic coherence tomography of the retinal nerve fiber layer (SD-OCT RNFL) showed generalized loss of nerve fiber layers in the both eyes. Visual field (Humphrey 24:2) was coincident with OCT but demonstrated low reliability. Visual evoked potentials (VEP) revealed a significant reduction in amplitude of P100 wave bilaterally (RE: 3mV, LE: 2mV) and a high latency only in the RE (116ms). A normal full field electroretinogram (ERG) were recorded in the both eyes. Brain and orbital magnetic resonance imaging showed a moderate reduction in the volume of the brain. Blood tests were normal, with a low folate level. Genetic results for the most common causative mutations associated with LHON phenotype (MT-ND1 - m3460G>A, MT-ND4 - m1778G>A, MT-ND6 - m14484T>6) weren't found. However, in the MT-ND1 gene, the mutation m.3394T>C and m.4216T>C were identified.
Discussion: This case shows that the diagnosis of LHON should be considered in all cases of unexplained optic neuropathy, even if there is no family history, late age of onset or clinical findings atypical.

EP-NEO-04

Evaluation of the retinal nerve fiber layer thickness and its relation to magnetic resonance imaging changes in multiple sclerosis patients: 5 years follow up

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Purpose: To evaluate the retinal nerve fiber layer (RNFL) thickness changes in 5 years by optical coherence tomography (OCT) in multiple sclerosis (MS) patients and to assess the relationship between RNFL thickness and linear brain atrophy markers.
Methods: From 2013 till 2018 a prospective study involved 32 patients with relapsing remitting MS, diagnosed applying McDonalds criteria 2010. Study was conducted in Vilnius University Hospital Santaros Klinikos. RNFL and papilomacular bundle (PMB) thicknesses were performed with Spectralis-OCT (Heidelberg Engineering). From routine 1,5T Magnetic resonance imagining (MRI) in MS patients three linear brain atrophy markers were measured: third ventricle width (TVW), Huckman's index (HI) and inter-caudate distance (ICD). Statistical analysis was performed using SPSS statistical software (version 22.0). $P< 0.05$ was considered significant.
Results: In total 64 eyes were included. Patients mean age at baseline was 41.7±10.3 years. Most of subjects were females (N 25; 78%). Optic neuritis (ON) was diagnosed in 9 eyes (14%). RNFL average thickness was significantly lower after 5 years (respectively 86.4±10.7 μm; 83.7±10.3 μm; $p=0.00$). The mean EDSS score at baseline was 3.3±1.3, at follow up 4.1±1.4 ($p=0.00$). All brain atrophy markers changed significantly from baseline to follow up ($p=0.00$). Statistically significant correlation was found between temporal segment RNFL thickness and HI at baseline and after 5 years (respectively $r=0.38$; $p=0.04$; $r=0.45$; $p=0.02$); No statistically significant changes was found comparing RNFL thickness changes and MRI measurements with ON.
Conclusions: OCT is an important method in assessing RNFL thinning in patients with MS and evaluating disease progression. Brain atrophy marker HI correlates with temporal segment RNFL thickness measured with OCT. RNFL thinning could be related with brain atrophy directly. ON did not have impact on these changes regardless of their potency to increase RNFL thinning.

EP-NEO-05

Acute ophthalmoplegia in herpes zoster ophthalmicus: clinical features and radiographic findings

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Purpose: To report and describe the clinical features and radiographic findings of a series of patients with herpes zoster ophthalmicus (HZO) and associated acute ophthalmoplegia.
Methods: Medical records of 4 cases and existing literature on HZO with acute ophthalmoplegia were reviewed.
Results: Three males and one female with a median age of 64 years (range 59 to 68) presented with herpes zoster ophthalmicus. 3 of the 4 patients were diabetic, and another one of them had systemic lupus erythematosus (SLE). The onset of acute ophthalmoplegia from initial presentation of HZO was 16 days (range 7-35 days). Clinical findings of ophthalmoplegia included oculomotor nerve palsy (3, 75%), abducens nerve palsy (3, 75%) and a mixture of both (2, 50%). All patients were found to have acute iritis as well. MRI features demonstrated enhancement of the cavernous sinus (100%), orbital apex (75%), superior orbital fissure (50%), myositis (25%) and enhancement of lacrimal gland (25%). Interestingly, one of the patients was found to have enhancement along the route of the trigeminal nerve extending from the brainstem. 3 patients had lumbar puncture, which showed pleocystosis with positive polymerase chain reaction (PCR) of varicella zostoer virus (VZV) in 1 patient. Treatment with intravenous acyclovir was administered in all patients and in 2 cases systemic corticosteroids were also given. Ophthalmoplegia improved in all patients over weeks to months.
Conclusions: Ophthalmoloplegia is not an uncommon complication of HZO, with third nerve palsy and sixth nerve palsy being the commonest. Systemic diseases such as diabetes or immunosuppressive status predispose the patients with HZO to central nervous system involvement. Cavernous sinus involvement indicates a more severe form of HZO. MR imaging provides further support of the diagnosis and helps to delineate the multi-factorial pathogenesis. Improvement of symptoms and signs with systemic antiviral therapy can be expected.

EP-NEO-06

Pituitary adenomas: opthalmic findings

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Purpose: Pituitary adenomas are common neoplasms comprising approximately 10-20% of intracranial tumors.
Objectives: To describe the ophthalmic findings in patients with pituitary adenomas.
Methods: A retrospective study with 47 patients with pituitary adenomas was performed. Patient data were collected: presentation symptoms, hormonal activity, treatment modality, best-corrected visual acuity (BCVA), pupillary response, ocular motility, visual fields, and retinal nerve fiber layer (RNFL) thickness.
Results: Mean age at diagnosis was 59 years and 55% were female. In 6 patients pituitary adenoma was a incidentaloma. Most common presentation symptoms were headache (57,4%) and asthenia (46,80%). Hormonal activity was present in 59,6 % of cases while 12,77% showed hormonal deficiency. At first ophthalmologic examination, mean BCVA was 0.8. Abnormal pupillary responses were present in 29,79% and oculomotor defects/diplopia were observed in 12,77%.
Campimetric defects respected vertical meridian and were observed in 61,70%, of which temporal defects were the most frequently found. RNFL thickness was reduced in 42,55% of patients.
With tumor growth there was deterioration of the visual acuity in 12,76% of cases, functional decline in 29,79% and additional structural damage in 23,40%. 1 case was associated to pituitary apoplexy.
Conclusions: It is important for the ophthalmologist to realize his changing role in the diagnosis of pituitary adenoma.

EP-NEO-07

Prognostic factors of leber hereditary optic neuropathy: a literature review

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Purpose: To elucidate prognostic factors of various therapeutic strategies in Leber Hereditary Optic Neuropathy in the literature.
Methods: In this study, we surveyed the published literature from "PubMed" with search words "prognosis" and "Leber Hereditary Optic Neuropathy." All articles (clinical trials, review articles) were considered for the review, and subsequently, those that failed to mention "Leber" in the title were discarded.
Results: A total of 60 articles from 1963 to 2019 were retrieved for the literature review. When filtering for only those that mentioned "Leber" in the title, this reduced the number of articles to 40. From these articles, it is suggested that there are several factors associated with predicting patient prognosis. Different genotypes (G11778A, T14484C and G3460A) have been found to be significantly related to the patients' visual prognosis. Visual evoked potentials have been shown to be a good predictor for visual loss. Optic nerve head size has also been associated with prognostic outcomes; specifically, LHON affected patients with a larger disc is correlated with visual recovery. Children with LHON have also been reported to have differences in prognosis compared to adults.
Conclusions: Leber Hereditary Optic Neuropathy has a poor visual outcome prognosis for patients; however, a better understanding of the positive prognostic factors of LHON may allow for the development of more effective therapeutic strategies in the future.

EP-NEO-08

Retinal oxygen saturation changes in multiple sclerosis patients with optic neuritis

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Purpose: The aim of the paper is an assessment of a retinal oxygen saturation, a retinal nerve fiber layer thickness (RNFL) and functional changes occurring in the optic nerve during optic neuritis (ON). ON is an optic nerve disease, that manifests as a decline in visual functions and a relative pupillary afferent defect in the affected eye. ON is the presenting feature in 15-20% of patients with multiple sclerosis (MS) and almost a half of the patients develop ON during the disease evolution.
Methods: Twenty-five patients with ON as a first manifestation of MS were enrolled during 2016 (14 females, 11 males, mean age 33,2; mean EDSS - Expanded Disability Status Scale - 1,19). All patients were examined using optical coherence tomography (OCT model 4000, Carl Zeiss Meditec, Dublin, CA), automatic optical oximetry (Oxymap, ehf. Reykjavik, Iceland), and using visual evoked potentials (Metronic Keypoint®, Minneapolis, USA).
Results: A significantly larger difference between an arterial and a venous saturation in the retina in the affected eye was detected, while there were no significant changes of the RNFL thickness in our study group. Results were not influenced by patient's gender. Optic nerve conduction velocity deceleration was detected more frequently in the affected eye in the acute stage of the disease.
Conclusions: The results of the present study suggest that in the early stage of ON oximetry reflects the inflammatory changes in the affected eye earlier. Thus, it is more appropriate to assess pathological changes than perform OCT. These results seem to be promising for the future investigation in this field.

This work was supported by the Institutional support of the Research Organisation - Ministry of Health, Czech Republic, RVO - FNOL 2017 and present study was partially supported by grant project IGA_LF_2016_020,IGA_LF_2017_020.

EP-NEO-09

Relationship between retinal thinning, disease duration and disability status in multiple sclerosis patients

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Purpose: To assess changes in the pattern of the neuro-retina thinning during the evolution of multiple sclerosis (MS).
Methods: 47 eyes of healthy controls and 83 eyes of patients with MS without previous episode of optic neuritis were included in the study. Measurements were performed using the Posterior Pole Retinal Thickness Map protocol [shows the thickness of the retina throughout the posterior pole (volumetric examination of 30 ° x 25 ° OCT]) with the Heidelberg Spectralis optical coherence tomography (OCT) device. We analysed the 8x8 grid placed along the fovea symmetrically with the papilla, dividing patients with MS into 5 different groups at intervals of 5 years of disease duration and a group of patients with a few months of diagnosis.
Results: MS patients presented a significant thinning of the retinal nerve fibre layer (RNFL), the ganglion cell layer (GCL) and the inner nuclear layer (INL). This thinning is visible and significant even in the first year after symptoms onset in RNFL and GCL. In addition, an inverse relationship between the thickness of these layers and the time of disease evolution was found, existing cells with a moderate-strong relationship mainly in the GCL and RNFL and mild in the INL. In contrast there is negative but poor correlation between retinal thinning of these 3 retinal layers and *Expanded Disability Status Scale* (EDSS).
Conclusions: Although there is no significant damage at the level of the optic nerve in the first months of the disease, we can find a significant thinning in the RNFL and GCL around the macula. GCL seems to be the layer that presents a significant thinning earlier than the RNFL and stronger relationship with disease duration. On the other hand, EDSS does not seems to be so influent on retinal thinning than disease duration.

EP-NEO-10

Atypical optical neuropathy associated with the carotid artery aneurysm

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Purpose: To present a case of an atypical optic neuropathy associated with carotid artery aneurysm
Methods: We present the case of a 54-year-old female patient with progressive decrease of visual acuity in her left eye for about 2 months, occipital headache and suspect optic disc (glaucomatous-like cupping).
Results: Initially, clinical evaluation excluded the diagnosis of glaucoma, the patient presenting with a suspect optic disc with a cup-disc ratio of 0.7 (horizontal > vertical) , a relative afferent pupillary defect of the left eye and Humphrey visual field testing of left eye revealed amputation of the superotemporal quadrant. Optic nerve examination with OCT did not show changes of the retinal nerve fiber layer. Also the red-green color vision was deficient. The presence of such signs should alert one to the possibility that a patient may be rather harboring a compressive lesion than suffering from glaucoma**.** Blood work and complementary examinations revealed no significant changes. It is decided to perform a brain MRI that reveals an unruptured sacciform aneurysm of the left internal carotid artery's, 15 mm in diameter, compressing the left side of the optic chiasm. In the absence of treatment, the evolution is slowly unfavorable with decrease of visual acuity (0.2 vs 0.5logMAR), with further visual field defect progression and increase of optic disc cupping and pallor. Neurosurgical evaluation, confirms an increase in aneurysm size , significant compression of the optic chiasma
Conclusions: Careful clinical evaluation has led to exclusion of diagnosis of glaucoma and shifted attention to a pathology requiring additional imaging evaluations. It is a case of a rare association of internal carotid artery aneurysm and atypical compressive optic neuropathy; in the published literature there are few cases described. Taking into account the vital and ocular prognosis, neurosurgical treatment is urgent.Key words: optic neuropathy, carotid artery aneurysm

EP-NEO-11

Van Rijn Rembrandt, the mystery in his paintings, his visual perception and the possibility of his eye disease

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Purpose: We examine some of the Van Rijn Rembrandt's works, and try to detect if he could suffer by any ophthalmic disease.
Methods: Rembrandt's works, his life and his way of visual perception in his compositions are the elements that can lead us in our conclusions. There is the suspicion that Rembrandt was suffered by stereopsis blindness.The details of his self-portraits, the use of the color, the light and the perspective are the key features for the researchers to consider the possibility of eye disease.
Results: Rembrandt may have stereopsis disability and his works show the possible defect in his ability to compose subjects with 3D conception. But because the paintings were two-dimensional this was an advantage for his works. He also painted the self-portraits depicting himself with exotropia in many of them.
Conclusions: Rembrandt was a master painter, with or without a disability in his vision. Cataract and stereopsis blindness were some of the key features in Rembrandt's work but in the art, these can be advantages making his talent unique and his paintings masterpieces.

EP-NEO-12

Vitamin D for the management of multiple sclerosis and impact on RNFL thickness

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Purpose: Vitamin D deficiency has been associated with both increased risk and severity of Multiple Sclerosis (MS) as it has a modulating effect on the immune process that causes inflammation/demyelination and axonal damage. Disease occurrence and progression are considered by some to be associated with low serum levels of vitamin D.
Optical Coherence Tomography (OCT) offers a quick, reliable and non-invasive way to assess the Retinal Nerve Fiber Layer (RNFL) and identifies axonal loss generated by either direct inflammation or from neurodegeneration.
To determine the association of vitamin D and RNFL in MS patients by comparing RNFL thickness in patients that are vitamin D deficient with those traeated with vitamin D.
Methods: The cohort of 46 MS patients underwent OCT testing to assess the RNFL thickness and macular volume, and measurement of serum25-OH Vitamin Dlevel.Vitamin D deficiency was defined as ≤30 ng/ml and sufficiency as ≥30 ng/ml.
Results: A total of 92 eyes were divided in two groups: vitamin D deficient (n= 29 eyes, mean=18.9ng/ml) and vitamin D sufficient (n=63 eyes, mean=40.3ng/ml). Eight eyes had previous ON. Vitamin D deficiency was identified in 61% of the participants. RNFL thickness was similar for the vitamin D deficient and sufficient groups (85.5 vs 86 μm respectively, p=0.89). Significant differences were present for age with the deficient group being younger (42 years vs 51years, p=0.005) and having shorter disease duration (7.5 years vs 11.4 years, p=0.006).
Conclusions: Our results showed, in subgroup of patients, that there was relationship between vitamin D levels and the extent of retinal axonal loss as quantified with RNFL using OCT. A potential way of measuring disease progression in MS is quantification of retinal axonal loss over timeas measured by OCT. It is reliable, quick, inexpensive, and offers a quantitative measure of changes in neuronal loss and axonal damage over time.

EP-NEO-13

The retino-hypothalamic ultrastructure and functional signs of traumatic optic neuropathy's pathogenesis and treatment

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The purpose was to study the retino-hypothalamic ultrastructural AND functional changes in traumatic optic neuropathy's pathogenesis and treatment.
Methods: There was reproduced the experiment traumatic to the optic nerve crush by surgical clips for 90 mature rabbits. There were groups: intact (I), experimental (II) and two groups with two types of treatment (III and IV). There were 30 individuals in each group (there were 120 animals). The group III took infusions of Methylprednisolone in dose 30 mg/kg for three days. The group IV took infusions Methylprednisolone in dose 15 mg/kg for 3 days in combination with phosphine-elecric stimulation (PES) from the third till the 13th day. The power of electrical impulsive supply was 800 mA in affected side and 300 mA in opposite. The morphological analysis included electron microscopy of the semi-thin and ultrathin sections and the morphometry of the retina and suprachiasmatic nucleus of the hypothalamus. It was conducted an analysis of the content of cortisol and adreno-corticotrope hormone (ACTH) in the blood serum of experimental animals. Also it was studied pupilary reflex of all groups in the dynamics up to one month after an injury. .
Results: Combined treatment with phosphine electro stimulation characterized by reduction of retina thickness and regeneration processes of ganglionic neurons of retina. There was found changing architectonics and increasing the number of neurosecretory granules of the suprachiasmatic nucleus of the hypothalamus under combine treatment. The content of ACTH in the peripheral blood decreases and the IV group, the content of hormones is more consistent with the group without treatment.
It was found pupilary reactivation in IV group.
Conclusions: Thus, the complex treatment of TON with the use of phosphine electrostimulation can be an alternative to traditional treatment, since it allows to reduce the dose of infusion of corticosteroids and provides the necessary neuroprotective effect.

EP-NEO-15

Ocular involvement secondary to mycoplasma pneumoniae infection

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Purpose: Mycoplasmapneumoniae is an atypical pathogen that mainly causes respiratory infection.The absence of respiratory signs has been reported in 21% of cases and is often associated with neurologic involvement. Ocular manifestations are typically limited to conjunctivitis.Other manifestations have been reported such as cranial nerve palsies, homonymous hemianopia, nystagmus, anterior uveitis but very rarely an optic neuritis.
We report a case of confirmed mycoplasma pneumoniae infection in the setting of unilateral optic neuritis in a 38-year-old woman.
Methods: case report
Results: A young woman had a typical retrobulbar optic neuritis of the right eye, treated with corticosteroid therapy at high doses. Two months later, she consulted for visual loss of the same eye associated with ptosis and conjunctivalhyperaemia. A recent pneumoniae mycoplasma infection was found. The patient was treated with corticosteroids and fluorquinolones. His visual acuity dramatically improved to 20/20 and she did not develop recurrence during the 13 months of follow-up.
Conclusions: Unilateral Optic neuritis in a young adult should prompt consideration of and serologic testing for Mycoplasma pneumonia infection even in the absence of systemic manifestations, particularly in endemic regions.

EP-NEO-16

Pseudo tumor cerebri in children: diagnosis and management approach

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Purpose: to review clinical presentation, diagnosis and management of idiopathic intracranial hypertension or pseudotumor cerebri in children.
Methods: Retrospective study of six children with the diagnosis of idiopathic intracranial hypertension.
Results: Our study included six girls. The average age was 8.5 years. Three patients were in the peri-pubertal period (11 years, 10 years, 11 years). All patients complained of headache, blurred vision, often associated with vomiting. Two patients had binocular diplopia. The neurological examination was normal in all girls. Visual acuity was decreased in two patients. Bilateral papilloedema was found in all patients and two patients presented limitation in abduction. The visual field of goldmen was performed in three patients and found an enlargement of the blind spot. Brain MRI showed partial empty sella in one patient and was normal in five patient. Lumbar puncture was done in all patients and showed a high cerebrospinal fluid opening pressure (25-51 cmH2O). The body mass index and the endocrine balance were correct. All patients received acetazolamide. The evolution was favorable in all cases.
Conclusions: Idiopathic intracranial hypertension is a rare neurological disorder in children. It is characterized by raised intracranial pressure in the absence of brain parenchymal lesion, vascular malformations, hydrocephalus, or central nervous system infection. The most common presenting symptom in children is headache. Other complaints are blurred or double vision, nausea and vomiting. Children with suspected idiopathic intracranial hypertension should have careful ophthalmological and full neurological examination. The diagnosis is usually confirmed by high opening pressure of cerebrospinal fluid with exclusion of secondary causes of intracranial hypertension. If not treated properly, it may lead to severe visual dysfunction.

EP-NEO-17

Acute bilateral ptosis and ophthalmoplegia revealing neurolupus in a pediatric patient

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Purpose: to report an unusual case of neuro-ophthalmologic manifestation of systemic lupus erythematosus in very young child revealed by acute bilateral ptosis and ophthalmoplegia.
Methods: case report
Results: A four-year -old girl, with a normal history of pregnancy and delivery was consulted for acute bilateral ptosis and diplopia. The Neurologic examination showed right facial paralysis associated with bilateral major ptosis. The patient was not feverish and had no headaches, seizures or other neurological signs. The motility exam revealed a limitation of adduction, anelevation in the left eye and an inability to abduct in the right eye. The brain magnetic resonance imaging showed multiple white matter lesions with increased signals in the T2 weighted sequences. The lumbar puncture, nerve conduction studies and electromyography were normal. Immunological tests revealed positive and mottled anti-nuclear antibodies : anti-ribosomal P antibodies at 1/1280. The Patient was treated by intravenous steroids relayed by a high dose of oral steroid with a progressive degression. A slight improvement was noted.
The patient was finally diagnosed with neurolupus. No general treatment was indicated. After 2 years of follow-up, the patient remained stable without any neurological recurrence.
Conclusions: Systemic lupus erythematous(SLE) is an autoimmune disease of the young woman with heterogeneous clinical manifestations. Neurolupus is not uncommon and can even reveal the disease. About 20% of SLE starts in childhood and systemic manifestations such as neuro-psychiatric disease are more common in children at presentation than adults. So, it Must be suspected in front of a neurological symptom, especially if it takes on a recurring or unusual character in a young girl like ours. The management of a neurolupus often requires a multidisciplinary collaboration such as the case of the ocular involvement of our patient.

EP-NEO-18

Optic disc drusen mimicking intracranial hypertension in a young patient- surprise in the emergency room - case report

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Purpose: To present the case of a 24-year-old patient with symptoms of intracranial hypertension and vertigo and incidental finding of optic disc drusen upon registration to the neurology emergency department.
Methods: The patient presented to the emergency room for vertigo, nausea, vomiting, double vision and acute onset of headache, symptoms that started approximately 6 hours prior to registration. Neurological examination showed no significant modifications. A CT scan was requested and calcifications of the optic disc were observed. Ophthalmic examination revealed a best corrected visual acuity of 20/20 in the both eyes. The slit lamp examination and Goldmann applanation tonometry were normal in both eyes. Orthoptic examination revealed congenital divergent strabismus with no diplopia detected. Direct and indirect ophthalmoscopy showed elevated optic disc with white deposits in both eyes. Fundus photography, B scan ultrasonography, visual field and OCT were also performed.
Results: ENT and internal medicine consults were requested and revealed mild arterial hypertension, mild hepatic cytolysis syndrome and benign paroxysmal positional vertigo.
Conclusions: Optic disc drusen is a diagnostic challenge as it can mimic papilloedema in patients with intracranial hypertension symptoms and careful examination and a multidisciplinary approach is essential to distinguish between a benign condition and a presumably life-threatening one. The particularity of the case is the accidental discovery of the optic disc drusen on a CT scan in a young patient upon presentation to the neurology emergency room.

EP-NEO-19

Isolated oculomotor nerve palsy during herpes zoster infection

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Purpose: In this case report 62 years old male patient with isolated oculomotor nerve palsy during herpes zoster infection was presented with its systemic treatment and his clinical course during infection.
Methods: The patient was admitted to our clinic due to pitosis in the left eye and diplopia complaints,oculomotor nerve palsy was diagnosed based on his examination.Vesicular lesionsover left half of the forehead associated with concurrent herpes zoster infection was also detected. Cranial imaging was also evaluated to examine other pathologies that may also cause oculomotor nerve palsy.
Results: Diplopia and pitosis in the left eye were resolved completely within a month with early onset systemic antiviral therapy. .
Conclusions: Herpes zoster infection should be considered in the differential diagnosis of oculomotor nerve palsy associated ophalmoplegia.Oculomotor nerve palsy associated with herpes zoster ophtalmicus could be recovered without a sequelae within 1month systemic antiviral treatment that was started early.

EP-NEO-20

Visual function alterations in type 2 diabetes mellitus patients without diabetic retinopathy

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Purpose: To evaluate subclinical visual dysfunction in type 2 diabetic mellitus (DM2) patients without diabetic retinopathy.
Methods: Endocrine variables such as glycosylated hemoglobin, blood pressure, body mass index, microalbumin, blood cholesterol, age at diagnosis and disease duration from 30 patients with DM2 and 30 healthy subjects were registered. Best corrected visual acuity (BCVA) was measured with the 100%, 2,5% and 1,25% saturation ETDRS tests. Contrast sensitivity (CS) was evaluated with the Pelli Robson and CSV100E tests, and color vision with the Farnsworth 15D and Lanthony 15D tests. Automated perimetry was evaluated with the Easyfield perimeter.
Results: Singnificant differences were found in BCVA (2,50% and 1,25% saturation ETDRS tests, p=0.002 y p=0.007 respectively), in CS as measured with the CSV 1000E (at 12 and 18 cycles per degree, p=0.007 and p=0.011 respectively) and in different indexes of the Farnsworth and Lanthony color vision tests ($p< 0.05$). No significant differences were observed in the Pelli Robson results. There was a significant correlation between the chromatic evaluation parameters and endocrine variables (age at diagnosis and blood colesterol levels).
Conclusions: DM2 patients without diabetic retinopathy present a subclinical visual dysfunction compared to healthy controls. Patients with an early age at diagnosis and/or with higher cholesterol levels present worse color vision parameters.

EP-NEO-21

Uncommon presentation of idiopathic intracranial hypertension - a case report

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Purpose: Idiopathic intracranial hypertension is a condition characterized by increased intracranial pressure without clinical, laboratory or radiological evidence of intracranial pathology. Early management can prevent irreversible out comes.
Methods: A 24 years old woman presented with 3 weeks history of worsening headache and a 5 days history of transient visual obscuration, it was associated with vomiting, and she denied any decreased vision. Examination revealed normal visual acuity and normal visual fields with bilateral normal appearing optic disc. The headache did not subside with any medications. All routine laboratory investigations were normal. Increased intracranial pressure was confirmed by lumber puncture with opening pressure (450 mm H2o). The cerebrospinal fluid composition and imaging of brain were normal. The diagnosis of idiopathic intracranial hypertension was confirmed and patient was treated with oral acetazolamide 250 mg three times per day. The headache resolved within 3 days.
Conclusions: Awareness of such uncommon presentation of idiopathic intracranial hypertension emphasize the critical importance of detailed ophthalmic examination and shows the good prognosis of early management.

EP-NEO-22

Morsier's syndrome

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Purpose: Morsier's Syndrome, also called septo-optic dysplasia, is a congenital anomaly characterized by optic nerve hypoplasia (ONH) combined with hypothalamic-pituitary and/or midline abnormalities (pellucid or corpus callosum agenesis).
Methods: We describe the case of a patient, 40 years old, with septo-optic dysplasia.
Results: His best corrected visual acuity was 1.0 in the right eye (RE) and hand movements in the left eye (LE). A small disc with a good rim was observed on de RE; in the LE, the disc was small, pale and with double-ring signal. The ratio of disc diameter/distance between fovea and temporal disc margin (DD/DM) was 0.22 in the RE and 0.18 in the LE. Perimetrically, there was loss of temporal sensitivity in the RE and tubular vision in the LE. Retinal Nerve Fiber Layer thickness was decreased in the RE (55 µm) and in the LE (23 µm). Cranio- Encephalic Magnetic Resonance demonstrated agenesis of the pellucid septum, thin optic nerves and optic chiasm, and no signs of hyploplasia of pituitary gland. The analytical study excluded endocrine changes.
Conclusions: After a optic nerve hypoplasia has been diagnosed, it is essential to carry out a systemic evaluation to exclude anomalies of the hypothalamic-pituitary axis, since untreated Morsier syndrome can cause severe hypoglycemia, adrenal crisis, convulsions and sudden death

EP-NEO-23

In vivo assessment of retinal microstructure as a potential noninvasive biomarker in neurodegenerative diseases: multiple sclerosis

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Purpose: As a protrusion from the brain, the retina might reflect neurodegenerative diseases such as multiple sclerosis (MS). This pilot study aims to determine retinal microstructure with Spectral Domain optical coherence tomography (OCT) in MS patients and to compare this to healthy controls.
Methods: Fourty consecutive patients with definite relapsing-remitting (RR) MS and fourty healthy controls of same age were recruited in this pilot study. Comprehensive standardized ophthalmic examinations included visual acuity, cycloplegic refraction, color vision and intraocular pressure. Structural measurements of the retina were obtained using using 3D Topcon 2000 FA plus OCT. Retinal microstructural parameters were detected with the inbuild software. Mean values for the thickness of peripapillary RNFL, macular RNFL, ganglion cell complex (GCL + and GCL++), macular total volume, average macular thickness and center macular thickness were calculated and compared between study groups.
Results: The RNFL thickness in each quadrant, ganglion cell complex (GCC) and macular parameters in MS patients were all decreased compared to healthy controls, with statistically significant differences.
Conclusions: Our OCT measurements reveal a neuroanatomic difference in the peripapillary RNFL, and macular parameters in studied groups. Such a finding implies that change in OCT parameters, proof of retinal neurodegeneration, could promote OCT as a possible biomarker of disease severity in MS patients. OCT could be a useful clinical and valuable research tool for evaluation and monitoring the progression of neurodegenerative disorders by measurement of the RNFL as purely axonal structure (indicative for axonal loss) and the macular ganglion cell complex (evidence of neuronal loss).
Keywords: neurodegenerative diseases, optical coherence tomography, multiple sclerosis

EP-NEO-24

Ophthalmic symptom as first symptom of chronic lymphocytic leukemia - case report

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Purpose: To describe a rare case of chronic lymphocytic leukemia (CLL) represented first in the central nerve system; when the first symptom was ophthalmological.
Methods: A central nerve system CLL, which manifested first at the optic nerve was observed for one year. For follow up haematological, neurological and ophthalmological examination were performed. Fundus photographs, OCT-, MRI scan, and histopathological examination were included.
Results: The 67 year-old woman was examined because of blurred vision and tearing. The BCVA was 1,0 bilateral. During the fundus examination bilateral chronic optic nerve head swelling was detected. Neurological examination was normal and computer tomography showed small old vascular lesions. One month later on the brain MRI scan at the area of the brainstem and the cerebellar peduncule a 1,8 mm diameter lesion was seen with bilateral optic nerve inflammation. Few days after the MRI scan, because of acut severe bilateral visual impairment systemic high dose intravenous steroid was indicated. The visual acuity improved by this treatment. Lumbal puncture showed chronic lymphocytic leukemia, what was treated haematologically. After one year follow up, after the remission of CLL, the BCVA is 1,0/0,8 with an atrophic optic nerve head, and concentric visual field defect.
Conclusions: In case of unusual MRI examinations in case of bilateral optic nerve head swelling, optic nerve inflammation, we should think about haematological disorders in time, to rescue the life and the vision of the patient.

EP-NEO-25

Different neuro-retinal affectation of multiple sclerosis disease: a case of two non-identical twins

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Purpose: The risk of developing multiple sclerosis (MS) increases from typically 1 in 1,000 in the normal population to 1 in 4 or so for identical twins where one twin is affected. The aim was to compare neuro-retinal damage in 2 non-identical twins with MS.
Methods: Retinal thickness was measured in a case of two non-identical twin sisters. Posterior Pole Retinal Thickness Map protocol was performed [shows the thickness of the retina throughout the posterior pole (volumetric examination of 30 ° x 25 ° OCT]) with Heidelberg Spectralis optical coherence tomography (OCT) device.
Results: Both sisters were diagnosed practically at the same time during 2018, but the debut of symptoms were very different, sister A debut was an optic neuritis episode on left eye in 2017 and sister B debut was a cerebellar syndrome in 2013. OCT was performed in the following months after diagnosis, at this point *Expanded Disability Status Scale* (*EDSS*) of sister A was 0 and 3.5 for sister B. We compared retinal nerve fibre layer (RNFL) and ganglion cell layer (GCL) thicknesses of right eye between both sisters, to avoid the possible retinal changes induced by optic neuritis in left eye of sister A. The posterior pole retinal thickness map showed RNFL and GCL thinning on sister B.
Conclusions: Posterior Pole Retinal Thickness protocol could be a great tool for MS management, the colour scale and the segmentation of retinal layers, specially GCL provides more information than an isolated peripapillary RNFL analysis, even on the first years of disease or absence of previous optic neuritis episode.

EP-NEO-26

Spectralis optical coherence tomography findings in diabetic patients. Evaluation of retinal nerve fiber layer

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Purpose: to detect retinal neurodegeneration in type 2 diabetic patients without diabetic retinopathy (DR) using Spectralis Optical coherence tomography (OCT)(Heidelberg Engineering) device.To compare retinal thickness and retinal nerve fiber layer (RNFL) changes in patients with type 2 diabetes mellitus(DM) without DR with healthy controls.
Metods: Sixty DM eyes without DR were studied and underwent examination of retinal measurements using Spectralis OCT. A control group of 60 eyes of healthy volunteers was included for comparison. Macular and peripapillary retinal thickness were analyzed with different protocols: fast-macular, RNFL-glaucoma and RNFL-N axonal protocol (especifically designed to detect neurodegenerative changes). Additionally, the RNFL-N protocol provides measurements of the papillomacular bundle and the nasal/temporal sector index.
Results: Despite DR was not present in any of the patients eyes, a significant reduction in all retinal ETDRS areas was observed in DM patients ($p< 0.05$). A significant reduction of the RNFL thickness was observed in patients in the average, temporal (T, $p< 0.05$), inferotemporal (TI $p< 0.01$), inferior (I $p< 0.01$) (RNFL-glaucoma, RNFL-N) and inferonasal (RNFL-N $p< 0.05$) sectors. The papillomacular bundle showed a significant thinning in DM patients compared to controls ($p< 0.01$)
Conclusions: Retinal neurodegeneration can precede visible vascular signs of DR in type 2 Diabetes Mellitus patients. Spectralis OCT is a useful tool for identifying early neurodegenerative retinal changes in these patients.

EP-NEO-27

Particular case of optic neuropathy in the context of Horton arteriopathy

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Purpose: To report a case of arteritic anterior ischemic optic neuropathy- suspicion of Horton arteritis
Methods: A 74-year-old patient with temporal headache and anxiety under treatment for 2 years, with recent weight loss and declared visual field loss, is referred to the Ophthalmology Clinic. Clinical examination revealed dilated, thickened tract and reduced pulse of the superficial temporal artery with tenderness of the scalp. Visual acuity and intraocular pressure were within normal limits. Fundoscopy of right eye showed pale disk swelling, with dilated veins and constricted arteries, whereas Humphrey visual testing of right eye detected concentric narrowing in all quadrants. Eco Doppler of carotid artery demonstrated the presence of atheromatous plaques and reduced blood flow of 50% at bifurcation. MRI was without pathological changes. The patient was immediately started on systemic corticosteroid therapy and had right temporal artery biopsy performed which did not support the diagnosis of Horton arteritis.
Results: Visual field showed improvements and the patient was discharged with a recommended treatment of methylprednisolone. Five days later, the patient is admitted to the emergency room with symptoms of abdominal pain, pneumoperitoneum, sepsis, sigmoid perforation which required surgical intervention.
Conclusions: This case showed no correlation between clinical and pathological findings. Increased erythrocyte sedimentation rate and C-reactive protein, patient's symptoms and clinical aspect of the right temporal artery were highly suggestive of giant cell arteritis, despite the negative biopsy. The patient has to discontinue corticosteroid therapy due to complications after discharge. This has negative consequences as corticosteroids are the only proven effective therapy in stopping vision loss in patients with giant cell arteritis and the visual prognosis in the absence of the treatment is reserved.

EP-NEO-28

Evaluation of neurodegenerative retinal changes in type 2 diabetes mellitus patients without diabetic retinopathy using Swept-Source Optical coherence tomography

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Purpose: To detect retinal neurodegeneration in type 2 diabetic mellitus (DM2) patients without diabetic retinopathy (DR) using Swept Source Optical Coherence tomography (SS-OCT) Triton device.To compare macular and peripapillary retinal thickness in these patients compared with age and gender matched healthy controls.
Methods: Sixty DM2 eyes without DR underwent examination of retinal measurements using Triton 3DH wide scan. A control group of 60 eyes of healthy volunteers was included for comparison. Macular and peripapillary retinal thickness was analysed. Automated segmentation by Triton OCT was performed to evaluate the affectation of the different retinal layers (total retinal thickness, retinal nerve fiber layer [RNFL] and Ganglion cell layer [GCL+: between th RNFL and inner nuclear layer; GCL++ : from the inner limiting membrane to the inner nuclear layer]). Macular volume and macular choroidal thickness were also evaluated.
Results: Despite DR was not presented in any of the patients eyes, a significant thinning in all retinal ETDRS areas (except in the outer temporal and central areas) was observed in DM patients ($p< 0.05$).All macular layers and also choroid layer showed significant decrease in DM2 patients compared to healthy controls. Significant reduction of peripapillary RNFL and GCL layers were found in the patients group ($p< 0.05$).
Conclusions: Retinal neurodegeneration can precede visible vascular signs of DR in DM2 patients. Triton OCT is a useful tool for identifying early neurodegenerative retinal changes in these patients.

EP-NEO-29

Clinical assessment of using cycloferon in complex treatment of patients with acute optic neuritis associated with herpesvirus infection

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Purpose: Improving effectiveness of complex therapy of patients with herpesvirus optic neuritis (ON) by incorporating the immunotropic drug cycloferon.
Materials and methods: 55 people aged from 17 to 36 years old with acute ON associated with herpesvirus infection.
Dynamics of inflammatory process in optic nerve was determined on the basis of the ratio of the absolute number of mononuclear cells (lymphocytes) in blood to granulocytes (Lf/g). Coefficient Lf/g equal to 0.5 was taken as the norm, obtained in healthy people of similar age.
Treatment regimen of all patients included leading to the optic nerve through irrigation system of dexamethasone solutions according to a decreasing scheme, 1% emoxipin 0.5 ml and 12.5% dicynon 0.5 ml in combination with acyclovir, according to indications - antibiotics and neuroprotection drugs (picamilon and semax). Course dose of dexamethasone was 60 mg.
Depending on characteristics of antiviral therapy, all patients were divided into 2 groups. The 1st (main) group consisted of 28 patients who received additional intramuscularly cycloferon. The 2nd (control) group - 27 patients treated according to the above scheme.
Results: When cycloferon was included, therapeutic effect was observed: duration of relief of signs of inflammation in optic nerve decreased by 2 times, average index of visual acuity increased by 1.3 times both immediately after the end of antiviral therapy and in the remote period of clinical recovery.
Favorable dynamics of infectious inflammation in optic nerve under the influence of cycloferon (92.8% of full recovery of visual functions) is confirmed by reduction in the normalization of the hematological coefficient Lf/g by 2 times, which allows considering herpesvirus ON as a local manifestation of herpes disease of the body.
Conclusions: Our tactics of etiotropic therapy for herpes-associated ON reduces recovery time and improves functional results of treatment.

EP-NEO-30

The effectiveness of contrast-enhanced MRI scans in diagnosing neurosarcoidosis in an end-stage primary open angle glaucoma (POAG) patient: a case report

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Purpose: In cases of end-stage glaucoma, it is often easy to overlook changes to the optical nerve and vision field due to already low vision field, low visual acuity (VA), and pale discs. In this case new legions of neurosarcoidosis were successfully diagnosed in an end-stage POAG patient using an MRI.
Methods: The patient was a 48-year-old male who was referred to us by his local clinic due a sudden decrease in visual acuity in the right eye 3 days earlier.
He is also being treated for skin sarcoidosis and 10 years ago suffered from iritis with unknown cause.
There were no cataracts or uveitis, and the pressure in both eyes was 15mmHg with pale discs.
Compared with his last visit, the patient exhibited a decrease in VA (from 1.4plogMAR to counting finger) and critical fusion frequency of flicker (CFF; from 17Hz to 5Hz) in the right eye. Although this could have been caused by the glaucoma, we decided to perform a contrast-enhanced MRI to check for optic neuritis.
Results: The MRI showed signs of both optic neuritis, nodules in the cerebral aqueduct and lateral ventricle, staining of the left occipital lobe, and asymmetry of the lateral ventricle. These findings pointed to neurosarcoidosis. The patient was admitted and underwent a 3-day course of solu-medrol (1g/day). As a result, the staining in the left occipital lobe was significantly reduced, and the lateral ventricle began to shrink and regain its symmetry. However, we were unable to record any measured improvement in VA or CFF.
Conclusions: If unusual and sudden changes occur in end-stage glaucoma patients, MRI scans can be effective in diagnosing other conditions present in the optic nerves or brain. We cannot rule out the possibility that the past iritis may have been caused by sarcoidosis. Further examination is thus warranted.

EP-NEO-31

Homonymous quadrantanopsia as a presenting symptom of Creutzfeldt-Jakob disease

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Purpose: Human transmissible spongiform encephalopathies (TSE) or prion diseases are group of neurodegenerative disorders, characterized by tissue deposition of a misfolded form of the cellular prion protein. Creutzfeldt - Jakob disease (CJD) is the most important form of TSE in humans and can have various clinical presentations. Some patients report visual symptoms, such as poor vision, disturbed perception of colors and structures, optical distorsions and hallucinations. The purpose was to present a patient with a sporadic form of CJD, that first presented with visual symptoms.
Methods: Case report.
Results: 65-year old patient presented to the Eye Clinic with three weeks of progressive visual disturbances, characterized by poor vision and disturbed perception of colors and structures. Visual acuity was 0.5 on both eyes and right inferior incongruent homonymous quadrantanopsia was noted on perimetry. Neurological exam and head CT scan were normal. Later on, the visual acuity worsened to 0,2. Diagnostic workup excluded common autoimmune and infectious diseases and MRI was normal. Electrophysiology showed reduced PERG N95 and reduced and prolonged VEP P100 wave, indicating visual pathway pathology. In the further two weeks, the patient displayed severe progressive cognitive impairment. Lumbar puncture showed elevated cerebrospinal fluid proteins t -tau and 14-3-3 levels, nasal brushing of olfactory epithelium for RT-QuIC testing was positive; FDG PET/CT imaging was indicative of prion disease. In the following weeks, the patient developed cerebellar signs, dysphagia and delyirium. MRI revealed subtle changes including left occipital cortex. The patient died 2 months after the onset of visual symptoms.
Conclusions: CJD may present with isolated visual symptoms such as homonymous quadrantanopsia and normal MRI exam. Abnormal electrophysiology is helpful as it can indicate central nervous system pathology, differentiating such cases from non-organic visual loss.

EP-NEO-33

Optic neuritis in a child with microphthamia

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Purpose: To report a case of optic neuritis in a young girl suffered from micophthalmia.
Methods: case report
Results: A 5-year-old girl with unilateral micophthalmia presented with sudden onset of vision loss relayed to optic neuritis in her best eye. Infectious disease was suspected and treatment lead to good prognosis.
Conclusions: Infectious optic neuritis should not be mistaken for any congenital causes in such patients.

EP-NEO-34

Misleading persistent foreign body sensation as a good example of crucial patient-doctor communication

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Purpose: Neuro-ophthalmology departments are often perceived as a "last-chance" station for complex and "non-fitting" any pattern patients in ophthalmology. We would like to present a case of 49-year-old woman complaining over few months of unilateral foreign body sensation, being treated with several series of lubricants with final neuro-ophthalmological diagnosis.
Methods: Slit-lamp examination and BCVA were checked, followed by the full-field Humphrey visual field. Based on the aforementioned tests results we broaden the differential diagnosis and performed OCT of the optic nerve and macula, Visual Evoked Potentials, MRI of the brain and orbits with contrast material.
Results: After several month of persistent symptom we decided to perform the visual field examination. Non-specific scotoma in 5-20 degree in nasal half of right-eye visual field that does not respect vertical meridian was fund with subsequent neuro-ophthalmology referral.
Giant tumor 58 mm at the longest plane in fronto-temporal lobe was found and patient underwent surgical excision with meningioma being finally confirmed althought primarily multiforme glioblastoma was suspected. The patient afterwords explained that "this persistent black spot" which she called foreigh body disappeared from her right eye vision.
Conclusions: Our results show that any positive persistent symptom should be thoroughly discussed with the patient and taken into consideration in differential diagnosis.

EP-NEO-36

Clinical features and risk factors of ophthalmic involvement in giant cell arteritis

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Purpose: To describe clinical, biological and radiological features among patients diagnosed with giant cell arteritis (GCA) with ophthalmological involvement and to establish associated factors.
Methods: A retrospective comparative study including patients with GCA with or without ophthalmological involvement, who presented in the Internal Medicine and Ophthalmology departments of Fattouma Bourguiba University Hospital, Monastir over a period of 13 years from January 2004 to December 2016.
Results: Among 29 patients with GCA, 17 patients (58.6%) had ophthalmic involvement. The sex-ratio was 1.12. The mean age was 68.8 ± 9.9 years (range, 52-86 years). General impairment was noted in 29.4% of cases and headache in 82.3% of patients with a temporal location in 40% of cases. Visual loss was the most common complaint (58.8%). Ophthalmological examination revealed an acute anterior ischemic optic neuropathy in 47% of cases and a central retinal artery occlusion 35.3% of cases. Fluorescein angiography revealed choroidal ischemia in 36% of cases. Doppler ultrasound of the temporal arteries showed abnormal findings suggestive of GCA in 60% of cases. A biological inflammatory syndrome including accelerated erythrocyte

sedimentation rate was found in 82.4% of the cases. A positive temporal artery biopsy was found in 20% of patients. Univariate analysis showed that ophthalmological involvement was significantly associated with headache and negative biopsy (p = 0.008 and p = 0.015 respectively). On multivariate analysis, headaches and absence of inflammatory arthralgia were significantly associated with ocular involvement (ORa = 40.8, 95% CI = 2.23-746.25, p = 0.012) (ORa = 0.076, 95% CI = 0.006-0.919, p = 0.043).
Conclusions: According to our study, GCA mainly affects elderly males, and ocular involvement is significantly associated with headache in the foreground and the absence of inflammatory arthralgia.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Ocular Surface

EP-OCS-01

Conditional reprogrammed human limbal epithelial cells represent a novel in vitro cell model for drug responses

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Purpose: To provide a novel and reliable in vitro physiological cell model for corneal toxicity assessment.
Methods: methods used aimed at
1) Establishing human limbal epithelial cells (LECs) from normal limbal tissues by using Conditional Reprogramming (CR) technology,
2) Cell grown curve, karyotype analysis, DNA damage experiments and matrigel 3D culture were used to detected the stability of CR-LEC cell,
3) Monolayer cultures were performed to analysis the cytotoxicity of IFN a2b, Ganciclovir and 5-Fluorouracil.
Results: We have successfully established CR-LEC cell strains from three human donors (3 out of 3), and normal rabbits (2 out of 2) and pig (1 out of 1) as well. CR-LEC cells sustained a continuous and stable proliferation status with a normal karyotype, normal response to DNA damage, well-defined structured spheres in matrigel 3D culture. Responses of CR-LEC cells to IFN a2b, Ganciclovir and 5-Fluorouracil were different, suggesting that these drugs had different toxicities to these cells as expected.
More important, there was no significant difference of responses to drugs between early and late passages of CR-LEC cells ($p>0.05$), indicating CR-LEC cells can serve a stable normal human cell model for toxicity assessment. Toxicity tests with monolayer cultures of CR-LEC cells were measured by staining the F-actin and Dsg-1 expression. Toxicity of three drugs at LD50 concentration resulted in a gradually increased destruction of monolayer, which is, in accordance with the irritation grade of three drugs on human cornea epithelium.
Conclusions: Therefore, CR-LEC cells provide a novel and reliable in vitro physiological cell model for corneal toxicity assessment

EP-OCS-02

To investigate and compare tear film fuction in healthy pregnant and non pregnant women

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Purpose: To study tear film functions in healthy pregnant and non- pregnant women and assess the need for intervention to alleviate symptoms of dry eye in healthy pregnant women.
Methods: A Prospective case control study was conducted on 200 patients divided in two groups GROUP A (cases) comprising of 100 healthy pregnant females between age group 20 - 35 years and GROUP B (control) comprising of 100 healthy non pregnant cases between age group 20 - 35 years. All subjects underwent detailed history and examination and tests, namely, schirmer's test-1(ST-1) and conjunctival impression cytology (CIC) for goblet cell density (GCD).
Results: A statistically insignificant difference ($p>0.05$) was found on comparing control with first visit and a statistically significant difference ($p<0.05$) on comparing with second visit of 2nd trimester subjects . However, a statistically significant difference ($p<0.05$) was found when comparing 3rd trimester subjects with controls and 2nd trimester subjects on both the visits. On comparing MGCD Inferior,. It is seen that there is a statistically significant difference ($p<0.05$) between 3rd trimester and 2nd trimester as well with control group.
Conclusions: Taking into account Schirners 1 test and Mean goblet cell density, it was concluded that pregnant women suffer more from lacrimal dysfunction than non pregnant women. The role of sex hormones on the eye is not limited to lipid production by the meibomian glands, they act on local inflammatory process causing ocular surface inflammation and dry eye disease. As the level of hormones increases with each trimester, possibility of dry eye disease increases with progression of pregnancy. Thus females should be educated during pregnancy about the possibility of dry eye changes with progression of pregnancy and timely therapeutic measures should be taken to avoid complications due to dry eye disease during pregnancy.

EP-OCS-03

The effect of trichiasis surgery on quality of life: a literature review

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Background: Trachoma is the leading infectious cause of blindness globally. It is endemic in 37 countries and estimated to cause blindness or visual impairment in 1.9 million people. The World Health Organization (WHO) recommends corrective eyelid surgery for trichiasis, to correct the inturning of eyelashes that if uncorrected places individuals at high risk of blindness from corneal opacification. This review aimed to assess the impact of surgery on vision-related quality of life (VRQoL) and health-related quality of life (HRQoL.)
Methods: A systematic search of MEDLINE, EMBASE, Global Health and LILACS databases was performed. There were no geographical, language or time restrictions. All relevant studies were screened and their full-texts were assessed using the Critical Skills Appraisal Skills Programme (CASP) Qualitative Checklist. Findings from the studies were narratively synthesized.
Results: 4 studies were included in this review. They conclusively found the non-blinding burden of trachoma is immense, including detrimental impacts on social, economic and religious aspects of daily life. Surgery was perceived

as a life-changing experience with a statistically significant improvement in both VRQoL and HRQoL after surgery, independent of improvement of visual acuity ($p< 0.05$).
Conclusions: Despite strong evidence that trichiasis surgery substantially improves VRQoL and HRQoL, more studies are required to evaluate the longitudinal impacts of surgery.
Keywords: trachoma; quality of life; vision related quality of life; health related quality of life

EP-OCS-04

Subconjunctival ocular filariasis—case report

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Purpose: We report a case of ocular worm diagnosed clinically and treated surgically.
Methods: A 68-year-old man presented to the ophthalmology clinic, complaining of redness, foreign body sensation and lacrimation in the left eye since 1 week. Slit-lamp examination disclosed a subconjunctival whitish cord like structure with movement. Presentation, clinical, surgery removal, and treatment are described.
Results: At the time of surgery, an alive and still intact worm was extracted through conjunctiva incision.
Conclusions: As a not yet known endemic region, we would like to emphasize the importance of this zoonosis with its ocular manifestation, knowing previously the diagnostic difficulties. From this perspective, we conclude that the incidence of ocular dirofilariasis may be much higher than that is reported in our region.

EP-OCS-05

Long term refractory unilateral allergic conjunctivitis with demodex infestation

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Purpose: The aim of this study was to present a case of refractory long term allergic conjunctivitis due to chronic demodex infestation.
Methods: A 46-year old man patient presented with itching, tearing and redness in the right eye for almost 6 month. He had used many topical steroids and anti-allergic agents, and he had only limited relief and remained refractory to these medications. Biomicroscopic examination revealed marked chemosis, hyperemia and papillary reaction of the tarsal conjucntiva in the right eye. Left eye was unremarkable. Demodex infestation and their potential influence were suspected and his lashes were sent for examination. The removed eyelashes were examined under light microscopy and positive result was observed with presenting demodex mites in the right eye only.
Results: Lid scrubs with tea tree oil was started, but it induced contact sensitization and allergic contact dermatitis. Therefore ivermectin ointment once daily at night was started. After 4 weeks of treatment he was free of symptoms and the chemosis was disappered. No recurrence was seen at 12 months follow-up.
Conclusions: Demodex infestation is often overlooked in differential diagnosis of conjunctival and ocular surface diseases. Demodicosis should be considered as a potential cause of refractory allergic conjunctivitis. Topical ivermectin could be an effective treatment regimen in selective cases.

EP-OCS-06

Influence of topical prostaglandin F2α analogues on antioxidative status of the tear film

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Purpose: The aim of the study was to assess the effect of topical latanoprost, bimatoprost, and tafluprost on superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) activities as well as advanced oxidation protein products (AOPP) content, protein sulfhydryl (-SH) groups content, total oxidant status (TOS), total antioxidative response (TAR), TOS/TAR ratio, and total protein (TP) concentration in the tear film.
Methods: The patients were divided into 5 groups:
- group 1 (n=25) - control group - patients who did not use anti-glaucoma eye drops
- group 2 (n=22) - patients with glaucoma using drops with latanoprost
- group 3 (n=25) - patients with glaucoma using drops with latanoprost + benzalkonium chloride (BAC)
- group 4 (n=17) - patients with glaucoma using drops with bimatoprost + BAC
- group 5 (n=19) - patients with glaucoma using drops with tafluprost

The samples of the tear film were collected by a glass micropipette. The oxidative stress markers in the tear film samples were evaluated: SOD, CAT, GPx activities, AOPP content, protein (-SH) groups content, TOS, TAR, TOS/TAR ratio, and TP concentration.
Results: The SOD, CAT, and GPx activities in groups 3 and 4 were higher as compared to group 1. The TP concentrations, TOS, TAR, TOS/TAR ratio and AOPP contents in groups 2, 3, 4, and 5 were higher in comparison with group 1. The protein -SH groups contents in groups 2, 3, 4, and 5 were lower when compared to group 1.
Conclusions: Topical latanoprost, bimatoprost, and tafluprost cause oxidative stress in the tear film. BAC increases the activity of the antioxidative enzymes escalating oxidative stress caused by these eye drops.

This study was supported by grant no. KNW-2-033/D/8/N.

EP-OCS-07

Lerprat eye irrigation

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Background: Eye contact with chemical subtances can lead to visual impairment. The most important step is immediate and copious irrigation of the ocular surface with clean wateror balanced saline solution then visit your nearest hospital. At the emergency room,hospital staff measures pH of the patient's eye.If the pH value is not normalized (pH≠7), further the eyelid should be immobilized with eyelid speculum and topical anesthetic should be instilled. Irrigation may be accomplished using handheld intravenous tubing with at least 2000 cc of 0.9% Normal saline solution. Irrigation should continue until the pH of the conjunctival sac normalizes (pH =7). This process requires 1-2 nursing staff and takes at least 15-20 minutes while there are other patients waiting. Not only this is time consuming, but also creates fatigue to nursing staff. This method will be referred to as "the original method" in this paper.
Purpose: To present Lerprat eye irrigation.
Methods: Measure novel eye irrigation to reduce the period of nursing staff workload and satisfation evaluation of nursing staff/patients.
Results: Lerprat eye irrigation can reduce the period of nursing staff workload from 15-20 minutes to 1 minute by comparison of the duration time of "the original method" (eye irrigation by nursing staff use 0.9 percent NSS with handheld intravenous tube) to novel method (nursing staff prepare lerprat eye irrigation until start eye irrigation with 0.9 percent NSS) using the same amount 0.9 percent NSS 2000 cc. The survey of 9 nursing staff show max satisfaction evaluation 100 percent, convenient evaluation 88.9 percent and reducing workload evaluation 100 percent. On the other hand, the survey carried out with 38 patients is max satisfaction evaluation 92.1 percent and convenient evaluation 84.2 percent. (score 8-10 : max satisfaction evaluation).
Conclusions: Lerprat eye irrigation was satisfactory by reduce the period of nursing staff work and satisfaction evaluation of nursing staff/patients.

EP-OCS-08

Bulbar conjunctival sporotrichosis: a rare presentation

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Purpose: To describe cases of bulbar conjunctival sporotrichosis from a hyperendemic area.
Methods: Retrospective study of patients with conjunctivitis due to culture-proven *Sporothrix* spp. infection, evaluated in an ophthalmology reference center, from January 2007 to December 2017.
Results: Twenty-six (21.6%) patients with bulbar conjunctivitis were identified among 120 cases of granulomatous conjunctivitis related to *Sporothrix* spp. Twenty-one patients (80.8%) presented primary ocular sporotrichosis and 5 patients had associated cutaneous disease. The age ranged from 6 to 80 years, with a median of 25 years. Adults were more affected (53.8%), followed by adolescents (26.9%). There was a predominance of women (73.1%). Twenty-four patients reported contact with cats with sporotrichosis[AA1] ; only 1 patient had bilateral disease. Five patients presented associated eyelid lesions and 21 (80.8%) tarsal conjunctivitis. Parinaud oculoglandular syndrome was observed in 17 (81%) patients. Eight patients (36.4%) reported use of steroid drops before diagnosis. All patients were treated with oral itraconazole. In 1 patient itraconazole was replaced by posaconazole due to CNS disseminated disease. Twenty-three patients (88.5%) were completely cured and 3 (11.5%) were lost to follow-up. Eight patients (33.3%) presented ocular sequelae after treatment: 3 had conjunctival fibrosis, 2 symblepharon, 1 ectropion, 1 paracentral leukoma and 1 pannus at the limbus.
Conclusions: Bulbar conjunctivitis is a rare clinical presentation of ocular sporotrichosis, with high prevalence of sequelae. Misdiagnosis could delay treatment, and the use of steroid drops may predispose to this more severe form of the disease, but further evidence is needed.

EP-OCS-09

Ocular surface dysfunction in patients before cataract surgery

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Purpose: To evaluate ocular surface in patients before cataract surgery.
Methods: Study design type was prospective. We evaluated patients before cataract surgery by performing slit-lamp examination of ocular surface, Schirmer's test and tear break-up time. Positive Schirmer's test was considered when there was less than 15 mm of moisture on the filter paper in 5 minutes. Tear break-up time less than 10 seconds was considered abnormal. Dry eye symptoms were evaluated using Ocular surface disease index questionnaire. Subject information including gender, age, medical history were recorded. Patients who underwent ophthalmic surgery in last 2 months were excluded.
Results: 44 patients were enrolled in this study, 30 (70.5 %) of them were women. Mean age ± SD - 73.2 ± 7.1 years. 14 (31.8 %) patients were diagnosed with glaucoma. Based on ocular surface dysfunction index questionnaire data, 17 (38.6 %) patients reported no significant dry eye symptoms, 19 (43.2 %) - mild, 7 (15.9 %) - moderate symptoms and only 1 (2.3 %) had severe ocular surface dysfunction symptoms. However, Shirmer's test was positive in at least one eye in 38 (86.4 %) patients. 31 (70.5 %) patient's tear break-up time was below average. Out of 17 patients who had no complaints of dry eye, 13 (76.5 %) had positive Shirmer's test and 8 (47.1 %) - abnormal tear break-up time. There was no significant difference between gender groups ($p>0.05$). We observed punctuate epithelial erosions in 6 (13.6 %) patients corneas.
Conclusions: Most of the patients presenting for cataract surgery felt mild dry eye symptoms or none at all. Nevertheless, ocular surface dysfunction was diagnosed using objective tests, such as Shirmer's test or tear break-up time, in most cases.

EP-OCS-10

John Vetch, his work a practical treatise on the diseases of the eye and his contribution to understanding trachoma or Egyptian ophthalmia

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Purpose: John Vetch (1783-1835) was a famous physician, with a deep knowledge of the ophthalmic diseases and also a skillful ophthalmic surgeon. In this presentation we give details of the work *'A Practical Treatise on the Diseases of the Eye'* his contribution to understanding of trachoma and generally to the whole field of Ophthalmology. We also mention some details of his life.
Methods: In 1807 he published *'An Account of the Ophthalmia Which Has Appeared in England Since the Return of the British Army from Egypt'*. In 1820 he published the final *'A Practical Treatise on the Diseases of the Eye'*. These works are mainly dedicated to trachoma (conjunctival inflammation) and its notifications have established Vetch as the scientist who gave the most complete description of the disease.
Results: John Vetch was a military surgeon and after his graduation accompanied the English army against Napoleon in Egypt as an Assistant Surgeon. Vetch made observations of the symptoms and the progress of the 'military ophthalmia' and most important he established the epidemiology of the disease, supporting that wherever the army visited, the disease appeared.
Conclusions: The work is a compendium of 'Ophthalmias' mainly of the 'military ophthalmia' and Vetch gave the most complete description and definition of the disease. Vetch during his military service noticed every detail, manifestation or symptom of the disease and also its epidemiology, supposing also the way of the contagion.

EP-OCS-12

Innovation in dry eye disease: a dual patent and bibliographic analysis with focus on the past decade

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Purpose: Dry eye disease (DED) is a rapidly evolving field in ophthalmology with launch of new products and multiple global consensus efforts (e.g. DEWS I & II) in the recent years. In order to understand the evolution of research and innovation in DED, a combined analysis of patents and scientific bibliographic trends was performed from 1970 to nowadays, with a focus on the past decade.
Methods: For bibliometric analysis, Scopus database was used to retrieve all articles and reviews related to DED. Search strategy used "DRY EYE" or "KERATOCONJ* SICCA" in title-abstract-keywords fields. Sub-analyses looked at various topics (e.g.: "biomarkers", "quality of vision") in title field. Orbit database was used to search for patents related to DED in title/abstract/object fields. Overall trends were drawn from 1970 to 2017 while detailed sub-analyses focused on 2007 to 2017 search period.
Results: Over the entire search period, we found roughly 2,300 patents and 8,700 publications. Over the past decade, almost 1,800 patents and 5,600 articles were identified. A steady growth of #articles/year was observed from a dozen in the 70's to a hundred in 2001, with a rapid yearly increase then to >700 articles in 2017. Similarly, #patents/year also started to increase significantly from early 2000. Detailed analyses showed that >50% of patents were covering formulation/drug delivery while 28% and 12% were for new drugs and devices/implants, respectively.
Conclusions: Analysis of patent and bibliographic searches were complementary. Bibliographic trend evidenced that research interest in DED is significantly increasing with a booming number of articles during the past decade. Emerging fields included biomarkers, lipids and new molecules. Number of patent filings also increased over the past decade. Patent statistics also revealed to be a good indicator of innovation fields and trends providing insights into intellectual property strategies of academia and industry.

EP-OCS-13

Ragweed (Ambrosia elatior) seasonal allergic conjunctivitis- raised incidence in urban areas

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Purpose: Ragweed allergic conjunctivitis is a frequent inflammatory condition, usually associated with nose and throat symptoms, concerning a close collaboration between specialists for a complete monitoring and a proper treatment. Highly allergenic small pollen particles of Ambrosia elatior induces an IgE mediated type 1 hypersensitivity reaction due to direct contact with conjunctiva, with mast cell activation and release of pro-inflammatory mediators.
We establish the current lines in controlling the allergic process for patients refered to our outpatient departments of ophthalmology, allergy, otorhinolaryngology and pediatrics in august-October 2018.
Methods: monitoring a group of patients belonging to urban areas, from 5 to 60 years old. All patients undergone complete eye examination, allergy skin tests and blood tests (total and specific IgE titers).
Results: 70% of patients had mild to moderate eye symptoms, with good response to topical antihistamine- olopatadine 1mg/ml 3-4 times/daily; better efficiency we reported when associated with mast cell stabilizer as sodium cromoglicate 20mg/ml 4-5 times/daily or N-acetyl-aspartyl glutamic acid 49mg/ml 4-5 times/daily. For moderate to severe symptoms, topical glucocorticoids- fluorometholone 2mg/ml 3-4 times/daily with tapper for 10-14 days, were effective. Last generation oral H1 antihistamine, nasal drops and inhalers with bronchodilator were associated for allergic rhinitis (60% of our cases) and asthma (20 %). Skin prick tests revealed positive skin reactivity to ragweed pollen; in 40% of cases the test was positive for multiple allergens (grasses, mugwort, ash, cat epithelia, house dust mites). Blood tests showed high titers of IgE.
Conclusions: Ragweed allergic conjunctivitis is a increasing health problem in urban population. Multidisciplinary team represents an important issue in managing not only the acute symptoms, but to improve patient's comfort along the allergic season.

EP-OCS-14

A comparison of clinical and histopathological diagnosis in ocular surface neoplasias: is it possible predictability?

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Purpose: The aim of this study was to compare the preoperative predicted diagnosis and histopathological diagnosis in corneal and conjunctival lesions.
Methods: The medical records of patients with corneal-conjunctival masses referred to tertiary eye care clinic at Turkey, from January 2013 to February 2018 were reviewed retrospectively. Pathologic material was evaluated for cell type, degree of dysplasia and margins of excision. Clinical records were reviewed for demographic features, presenting symptoms, clinical appearance, applied surgical method, medical therapy, and follow-up time.
Results: Sixty-one eyes of 61 patients (32 male, 29 female) were included. The mean age at diagnosis was 50.43± 22.64 years (7-85 years). According to clinical findings, 38 eyes (62.29%) were predicted to be premalign or malign lesions. Majority of these lesions was seen that generally appears slightly elevated, well demarcated and accompanied by feeding blood vessels at the corneoscleral limbus temporally or nasally. It was seen that the limbal lesion could extend to the adjacent cornea to a variable extent. Histopathological diagnosis was malign or premalign in 25 eyes (%41). [malign lesions 18% (11 eyes, squamous cell carcinoma); premalign lesions 23% (14 eyes; dysplasia in 8 eyes, in situ squamous cell carcinoma in 1 eye, solar degeneration in 3 eyes, inverted papilloma in 1 eye, blue nevus in 1 eye)]. Histopathological diagnosis of 14 lesions that were thought to be preoperative malign or premalign were reported as benign. Histopathological diagnosis of a lesion in 1 eye which was considered as preoperative benign nevus was shown as squamous metaplasia.
Conclusions: The aim of this study is to emphasize that the features of the lesion in the corneal-conjunctival masses are descriptive. Clinicians should be careful in terms of clues to malignancy.

EP-OCS-15

Evaluation of the impact of intravitreal injections of VEGF inhibitors on the selected tear film parameters

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Purpose: To determine the influence of recurrent ocular surface exposure to povidone iodine during the intravitreal injections of the VEGF inhibitors on the tear film osmolarity and the non invasive tear break-up time (N-BUT).
Methods: 32 patients receiving a series of a monthly intravitreal injections of VEGF inhibitor due to the wet AMD were enrolled to the study. For the sterile preparation before intravitreal injection the solution of 5 % povidone iodine was used each time before the injection. The measurement of the tear film osmolarity and N-BUT were performed prior tothe injection and one month after each of 5 intravitreal injections.
The tear film osmolarity measurement was performed using the TearLab Osmolarity system, N-BUT using the Keratograph 5M, Oculus. The control group include the fellow eye that had not been subjected to the intravitreal injection.
Results: The study grup included 32 eyes , the control group included 32 fellow eyes. The tear film osmolarity before injection was 298.15 mOsm / L (SD = 12.30) in the study group vs 301 mOsm / L (SD = 9.80) in the control group, N-BUT was 14.07 sec. (SD = 3.08), vs 13.01 sec. (SD = 4.30) in the control group. After a series of 5 injections, the tear film osmolality in the study group was 319 mOsm / L (SD = 5.07) vs 294 mOsm / L (SD = 6.30) in the control group, N-BUT was 10.35 (SD = 2.40)in the study group, vs. 14.40 sec. (SD = 3.45) in the control group. There was a statistically significant increase of the tear film osmolarity and a decrease of N-BUT in the study group compared to the control group.
Conclusions: Repeated intravitreal injections of the VEGF inhibitorsaffects on the tear film osmolarity and the tear break-up timewhich increase the risk of dry eye syndrome development due to the tear film instability.
Disclosure: I have no conflict of interest to disclose.

EP-OCS-16

Real-world clinical effectiveness, tolerability and safety of cyclosporine eye drop emulsion in patients with dry eye disease and severe keratitis (the PERSPECTIVE study): 12-week interim analysis

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Purpose: Evaluation in routine clinical practice of the effectiveness, tolerability and safety of cyclosporine (CsA) eye drop emulsion in the treatment of adults with dry eye disease (DED) and severe keratitis who failed to respond to previous artificial tear treatments.
Methods: Interim analysis (4 and 12 week data) from a European non-interventional, multicentre, prospective, ongoing study. The primary study endpoint being change of corneal fluorescein staining (CFS) grade (Oxford grade scale) from baseline to 12 months from initiation of CsA treatment. Assessments during interim follow up included objective and subjective ocular measures.
Results: The analysis included 162 subjects (76.5% female) from 29 study sites. Age (mean±SD) was 63.7±14.48 years. Statistically significant reductions in mean CFS score, from baseline (2.64±1.16; n=162), were seen at Week 4 (1.77±1.21; P< 0.001; n=94) and Week 12 (1.36±1.10; P< 0.001; n=117).
At Week 4, subjects showed improvements (71.8%) or no change (22.9%) in CFS grade. Week 12 CFS grade was improved for 75.0% and unchanged for 23.1%. All subjective symptoms were improved at Weeks 4 and 12.
For example, statistically significant improvements were seen at Week 12 in severity of foreign body sensation (P< 0.001; n=111), which was mostly improved (45.9%) or maintained (42.3%), and blurred vision (P< 0.001; n=112), where 42.0% showed improvements while 51.8% were unchanged.
Week 12 conjunctival erythema was reduced (45.8%) or unchanged (46.6%) from baseline (change in severity P< 0.001; n=131). Among 162 patients, 53 non-serious adverse events (AEs) were reported in 31 subjects, of which 23 were considered treatment-related. Most AEs were localised at the administration site (e.g. eye irritation) and 50.9% recovered without issue.
Conclusions: In routine clinical practice, CsA eye drop emulsion provides effective treatment and is well-tolerated in adults with DED and severe keratitis.

EP-OCS-17

To evaluate dry eye parameters in Type-2 diabetes mellitus patients with any complications

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Purpose: To compare dry eye parameters between Type-2 Diabetes Mellitus (DM) and controls.
Methods: This prospective study has been included 108 Type 2 DM patients with any diabetic complication (such as retinopathy, nephropathy or neuropathy) and 127 age-sex matched control patients. For all participants, demographic data, HbA1C values, systemic disease, medications have been recorded and then detailed ophthalological examination has been performed including best-corrected visual acuity (BCVA), refractive error, intraocular pressure, tear osmolarity, break-up time (BUT), Oxford corneal staining grading score, Schirmer test and Ocular Surface Disease Index Questionnaire (OSDI) respectively. SPSS 21.0 software (SPSS Inc., Chicago, IL, USA) was used for statistical evaluation. Baseline values were compared by using independent samples t-test between two groups, and significance level of p-value was accepted as 0.05 ($P \leq 0.05$).
Results: No statistical significant difference between groups fora ge and sex. (p:0,075; 0,064 respectively) All dry eye parameters were found in favor of dry eye in diabetic group compared to controls. In diabetic group and control; tear osmalarity was 315.59 ± 13.99 mOsm/L, 306.75 ± 18.86 mOsm/L (p: 0,02); BUT was 11.73 ± 4.34 sec, 12.47 ± 4.18 sec (p: 0,219); Oxford corneal grading score was 0.15 ± 0.43, 0.05 ± 0.27; Schirmer test was 22.72 ± 10.02 mm, 14.44 ± 8.71 mm (p:0,072); OSDI score 18.30 ± 16.81, 17.19 ± 17.37 (p:0,502) respectively. In Pearson correlation analysis in diabetic group, there was a positive correlation between Hba1c value and dry eye parameters even any complications were found in diabetics. (R = 0.42-0.71)
Conclusions: Diabetes mellitus may lead to severe ocular complications if can not be managed with a tight control. Although, the most important complications is diabetic retinopathy, it could cause ocular surface diseases especially dry eye. A good systemic regulation may avoid patients from all known complications.

EP-OCS-18

Influence of polarized light on the eye anterior surface inflammation in a combined experimental model of dry eye disease in rats

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Purpose: to study of pathophysiological mechanisms of action and clinical efficacy of poly- and monochromatic Bioptron-Piler-light of dry eye disease.
Methods: here, we used rats with an experimental model of the dry eye induced by inflammation of eye anterior surface. Alkaline burning was used to induce the development of inflammation. The adult rats of the Wistar line and males of the body weight from 250-300 gr were used for the experiments. Bioptron-piler therapy was performed using the red filter of the Bioptron (Bioptron AG, Zepter Group, Swiss) at 1 day after induction of DED. The animals were fixed and the left eye was shielded. Only the right eye was treated from the distance of 30 cm for 3 min. Each animal received a course of treatment for 10 days.
Results: The results are showed that a fluorescein test carried out immediately after alkali application and on 1, 5 and 10 days demonstrated a gradual increase in corneal epithelization and vascularization. We observed substantial and statistically significant increase of lacrimation in experimental rats on a first day after induction of inflammation compared to naïve animals. By the seventh day, the lacrimation decreased to a level with subsequent tendency to further decreased tear production. At the same time, there was no significant reduction in tear production on 7th day (compared to the first day) in a group of rats with the anterior surface inflammation that received polarized red light treatment, which may indicate a possible anti-inflammatory effect of such treatment.
Conclusions: Obtained evidence of the positive anti-inflammatory effect of Bioptron-Piler-light in experimental model of the dry eye disease. The biological effect of light energy is realized by photochemical transformation in mitochondria through the interaction of cytochrome oxidase and affects the energy processes inside the cell, proliferation, cell migration, neutralizing reactive oxygen compounds.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Oncology & Pathology

EP-ONC-01

Mohs micrographic surgery for high-risk basal cell carcinomas of periorbital zone

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Purpose: To analyze the effectiveness of the Mohs micrographic surgery for the treatment of basal cell carcinomas of the skin.
Methods: Results of Mohs micrographic surgery treatment of 70 patients with high-risk basal cell carcinoma (H-zone of the face, aggressive histological subtypes, recurrent tumors), performed in 2016-2017 years were analyzed.
Results: The analysis of observations including sex and age of patients, histological subtype, tumor size and location, the number of micrographic surgical stages, and the type of reconstructive closure of the wound defect are presented.
The average age of patients was 59.25 ± 10.88 years, women - 47 (67.14%), men - 23 (32.86%). Tumor size: in 49 (70%) cases ≤1.5 cm, in 21 (30%) cases was ≥1.5 cm. Histological subtype: morpheaform - 37 (52.8%) cases, nodular - 13 (18.5%) cases, micronodular - 7 (10%) cases, combined variant - 7 (10%) cases, superficial - 6 (8.5%) cases.
Conclusions: High-risk basal cell carcinoma is a serious medical problem, a high percentage of recurrences is observed, which leads to a progression of the disease, a decrease in the quality of life and overall survival, and an increase in financial burden. Mohs micrographic surgery is the treatment of choice for the high-risk basal cell carcinoma, especially in the periorbital area, as it allows a complete assessment of the peripheral and deep margins of resected tumor and preserving of the unaffected tissue surrounding the tumor for maximal functional and aesthetic postoperative results.

EP-ONC-02

Survival of uveal melanoma patients in the long term follow-up after enucleation, depending on molecular genetic aberrations

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Purpose: To determine the survival of patients with UM after enucleation, depending on molecular - genetic aberrations.
Methods: 30 patients with UM at the age from 23 to 83 years were examined and treated. In all cases, enucleation was performed. The removed eyes underwent morphological and molecular genetic and cytogenetic analysis (loss of heterozygosity on chromosomes 1, 3 and 8, methylation of the *RASSF1A* gene, mutations in *GNAQ/11* genes, polymorphism of the *ABCB1* gene). The median follow-up was 61 months.
Results: The cumulative 3-year percentage of surviving patients with UM was 77.8%±8.0%, and the 5-year proportion was 63.0%±9.0%. The average survival time was 52.8 months ± 3.9 months. Patients with chromosome 3 monosomy showed significantly lower 5-year survival rates than patients with partial monosomy and without loss of heterozygosity in chromosome 3 (Log-rank test, $\chi 2 = 14{,}111$, $p = 0.001$). The loss of heterozygosity on chromosomes 1 and 8, the methylation of the *RASSF1A* gene, the mutations in *GNAQ/11* genes and the polymorphism of the *ABCB1* gene were not associated with the worst vital prognosis.
Conclusions: Molecular - genetic aberrations play an important role in predicting the course of the tumor process and determining the risk of hematogenous metastasis in patients with UM. The significant role of monosomy of chromosome 3 has been proved. Due to the relatively small cohort (30 patients) and the time factor (analysis of 5-year survival), the role of other molecular genetic changes is not confirmed, which requires assessment of not only genetic, but also clinical, echographical and morphological prognostic factors.

EP-ONC-03

Combined treatment of juxta- and parapapillary choroidal melanoma

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Purpose: Estimation of the local efficacy of the combined treatment - brachytherapy (BT) with laser coagulation (LC) in choroidal melanomas of juxta and parapapillary localization in the long-term follow-up
Methods: In 2009-2013, 50 patients with choroidal melanoma of juxta and parapapillary localization were examined and treated, 32 women and 18 men aged from 32 to 76 years old. The averaged tumor height was 3.8 ± 1.3 mm, basal diameter - 11.2 ± 2.4 mm. The combined organ-preserving treatment included a LC from the optic disc with subsequent BT was performed. The indications for this method were choroidal melanomas of juxta and parapapillary localization (the distance between the optic disc and the central border of the tumor was no more than 1.5 pd), with the absence of subretinal exudate and retinal detachment in this zone. The follow-up period after the combined treatment ranged from 18 to 102 months.
Results: Complete tumor resorption was achieved in the majority - 38 (76.0%) of cases, partial - in 11 (22.0%) patients, stabilization of the process - only in one (2.0%) patient, continued growth was not observed in any patient. The initial size of melanoma in patients with complete and partial tumor resorption showed similar averaged values, amounting to 3.8 ± 1.3 mm and 3.6 ± 1.1 mm ($p > 0.05$), respectively, basal diameter - 11.1 ± 2.4 mm and 11.4 ± 2.4 mm ($p > 0.05$), respectively. In the spectral Doppler flow analysis study, an increase in the linear characteristics of the blood flow in the tumor's own vessels after LC was recorded. Complications included optic neuropathy (88%), hemorrhage (36%) and secondary glaucoma (6%).
Conclusions: The combined treatment allowed to achieve high therapeutic results - 76.0% of the total resorption of choroidal melanomas, which have unfavorable localization for BT.

EP-ONC-04

^{106}Ru - plaque radiotherapy for large uveal melanomas

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Purpose: To analyze the outcomes of ^{106}Ru-plaque brachytherapy for large posterior uveal melanomas.
Methods: 60 patients, 33 (55%) women and 27 (45%) men, aged from 24 to 83 years (mean - 52,4±11,9) with large UM underwent BT. Tumor thickness before BT was from 6,1 to 10 mm (mean - 7,5±1,0 mm), diameter - from 7,6 to 20 mm (mean - 13,4±2,9 mm).
Second cancer was diagnosed in 4 (6,7%) patients.
Mean follow up period was 48 months (12-78 months).
Results: Local tumor control was achieved in 57 patients. 7 (11,7%) patients underwent additional BT and 2 (3,3%) - TTT. Secondary enucleation was performed in 3 (5%) patients due to tumor regrowth and neovascular glaucoma. Metastatic disease developed in 6 (10%) patients in 18 to 39 months (mean - 24 months) after brachytherapy, one patient died of another condition.
Conclusions: Despite of using 106-Ru radioactive plaques does not yield destruction doses to the tumor's apex in patients with large UM (thickness more than 6 mm), however in some cases it is possible to achieve good therapeutic effects, keep the patient eye without impairing the survival.

EP-ONC-05

Secondary enucleation due to postradiation complications after stereotactic radiosurgery at linear accelerator

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Purpose: To evalute numbers of secondary enucleations in patients treated by radiosurgery. Irradiation on linear accelerator is the standard treatment care for patients with uveal melanoma. We use one-day session stereotactic radiosurgery at linear accelerator C LINAC.

A single fraction of 35.0Gy administered with a spatial accuracy using a collimating system is used. Neurosurgeon, ophthalmologist, medical physicist and radiotherapist all are responsible for SRS planning scheme. The images taken by a contrast-enhanced magnetic resonance imaging (MRI) and computed tomography (CT) are aligned to same coordinate system so that information obtained from the fused images can be passed into a coordinate system used for treatment planning.
Methods: Retrospective analysis of secondary enucleations in group of 230 patients who passed LINEAR accelerator irradiation. We analysed association between the secondary enucleating and the presence of secondary glaucoma or hemophtalmus as well with the radiation-induced optic neuropathy.
Results: Secondary enucleation in 1 to 5 year interval due to secondary glaucoma and other complications was in 17%.
The presence of optic neuropathy per se was significantly associated with a higher dose on the optic nerve (P=0.0123 in invariable and 0.0049 in multivariable analysis, respectively).
Conclusions: Complications after irradiation can lead to visual acuity loss and secondary enucleation. Precise planning is very important to determine the stereotactic coordinates of radiation beams that are going to be applied into targeted tumor mass while trying to avoid critical structures (lenses, optic nerves, chiasm), because it can lead to complications.

EP-ONC-07

Successful surgical treatment of malignant eyelid tumors under local anesthesia in patients in their 90s

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Purpose: Surgery under local anesthesia is less invasive than general anesthesia and should be considered for people over 90-years-of-age. We report four cases of 90-year-old patients with malignant eyelid tumors that were successfully resected under local anesthesia.
Methods: The resection of the eyelid tumor was performed under local anesthesia with 1% lidocaine including epinephrine. After the surgery, ofloxacin ointment and topical 0.1% levofloxacin were used to prevent postoperative infections. In three cases, topical 0.02% mitomycin was used before and after the surgery to reduce the size of the lesions and prevent recurrences. The remaining patient had basal cell carcinoma (BCC) on the exterior surface of the eyelids.
Results: Case 1 was a 93-year-old man who had a 6 mm black tumor in the left conjunctiva of the upper eyelid of three months duration. He was diagnosed by histopathology to have a sebaceous gland carcinoma (SGC). Case 2 was a 93-year-old woman who had a 4 mm yellow tumor in the conjunctiva of the lower left eyelid of three months duration. She was also diagnosed with SGC. Case 3 was a 90-year-old man who had a 5 mm black mass in the lower left eyelid conjunctiva of a few weeks duration. He was diagnosed with SGC. Case 4 was a 94-year-old woman who became aware of a mass in her left lower eyelid several months earlier. The mass was associated with an 8 mm rodent ulcer and pigmentation. It was rapidly increasing, and it was resected under local anesthesia. She was diagnosed with BCC. In all cases, a simple tumor resection with a pentagon shape was performed without any complications. The surgical margins were histopathologically negative in all cases.
Conclusions: A complete surgical resection combined with topical mitomycin before and after surgery can be performed under local anesthesia with good success for eyelid tumors in patients in their 90s.

EP-ONC-08

Invasive parotid tumor and neurotrophic keratopathy - a case report

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Purpose: To report a case of parotid carcinoma and radiotherapy treatment that led to a trigeminal nerve damage with keratopathy.
Methods: We present a case of a 76 year-old male with a history of invasive right parotid carcinoma with involvement of skin, eyelid and masticator muscles. The tumor had previously been treated with chemotherapy and radiotherapy. He was referred to our Ocular Oncology Department for painless decreased visual acuity on the right eye. Ophthalmologic examination and properly treatment were performed.
Results: Best corrected visual acuity was 20/70 on the right eye and 20/20 on the left eye. Pupils were equal and reactive. Ophthalmologic examination revealed skin and palpebral edema with a solid and adherent node on the superior right eyelid, which led to ptosis. Biomicroscopy disclosed madarosis, blepharitis, cataract and a central epithelial corneal defect. Fundoscopy was normal in both eyes. Eye patching with application of antibiotic and lubrification were prescribed at first, without a significant improvement, that's the reason why amniotic membrane transplantation was performed. Some visual recovery and reduction of inflammation were achieved, but amniotic membrane extrusion occurred due to palpebral tumor and abnormal function. As our patient was asymptomatic, had had several comorbidities and a short lifetime survival, no other treatment was tried.
Conclusions: Tumors of the masticator space may direct or indirectly affect ocular surface. Perineural spread is often clinically silent and frequently missed at imaging and leads to tumor recurrence. In this context, diagnosing persistent epithelial corneal defects/neurotrophic keratopathy may contribute to review of systemic and local treatment and improve prognosis.

EP-ONC-09

Why not both? A case of a 61-year old male with a neglected basosquamous cell carcinoma on the left upper eyelid

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Purpose: Basosquamous Cell Carcinoma (BSC) is a rare type of Basal Cell Carcinoma (BCC). This particular type of tumor, as defined in a literature review of various electronic journals, histopathologic & dermatologic references, presents with histologic features of both BCC and Squamous Cell Carcinoma (SCC).
We present this case given the rarity of the condition and how its dimensions elevate our perception of 'large' eyelid tumors.
Methods: This is a case report on a 61-year old male with BSC on the left upper eyelid.
Results: BSC is a rare cancer that shares features of BCC and of SCC. BSC is defined as a tumor with features characteristic of BCC and of SCC with a transition zone. Areas of BCC typically show hyperchromatic cells, peripheral pallisades, and stromal clefts. SCC-specific keratin pearls are also seen in BSC. This tumor has high rates of local recurrence and of metastasis.
There is no management specific to BSC, most agree that surgical removal is the choice treatment w/ wider margins than of low-risk BCC. Local recurrence rates range from 32-47%. Mohs Micrographic Surgery tumor excision show

lowest rates of recurrence at 4.1% among BSC patients w/ excellent preservation of uninvolved tissue.
Positive surgical margins, male, lymphatic invasion, perineural invasion and size of the mass are said to be risk factors for recurrence. Prognosis is excellent if caught and managed early, while guarded prognosis is advised for those w/ local lymph node invasion.
Conclusions: BSC is a rare subtype of BCC with a reported incidence of 1.2-2.7%. This specific type of carcinoma shares characteristics of both BCC and SCC. BSC has a high local recurrence rate like BCC and is highly metastatic like SCC. These tumors are not clinically distinct and definitive diagnosis can only be clinched through biopsy. There is no treatment guideline specific for BSC however excision biopsy with wide margins was the preferred approach in our case.

EP-ONC-11

Sudden ocular pain as initial manifestation of choroidal melanoma: a case report

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Purpose: To raise awareness of rare unusual clinical appearance, such as secondary glaucoma, as initial manifestation of intraocular tumor and to estimate prognosis by combining various clinical and histological features.
Methods: The review of 55 years old female patient, who was referred for a deteriorated vision of the left eye, sudden severe eye pain, increased intraocular pressure, photophobia, epiphora and a headache. Due to expressed inflammation and cornea edema, the results of gonioscopy and fundoscopy were inaccurate. Homogenous mass occupying 2/3 of eye volume was detected by ultrasound. Systemic evaluation did not reveal any metastases. Patient underwent enucleation in 2018 at Vilnius University Hospital Santaros Klinikos. For diagnosis support histopathology was performed.
Results: Large tumor, 22 mm x10mm,with fascicular and nesting pattern of spindle A and B melanoma cells with heterogenic zones of pigment in the fundus region of uvea is present. PAS staining demonstrates the presence of linear intrinsic microvascular patterns. There are 9 mitoses in 40 high-power fields (focally until 4 mitosis/HPF), focal areas of scleral perivascular invasion that reach approximately 50% in depth. HMB45 is positive in >95% of tumor cells. Tumor mass underwent necrosis ~30% of area,and mild acute inflammation is seen in sclera, including the iridocorneal angle. Based on AJCC, malignant choroidal melanoma, stage IIIa, is revealed.
Conclusions: All patients with severe ocular pain, expressed inflammation and raised intraocular pressure should have detailed examination, to exclude neoplastic source. Late diagnosis, clinical appearance and histological features would not support good prognostic outcome, however is opened for a discussion.

EP-ONC-12

Bilateral choroidal metastasis from neuroendocrine lung cancer

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Purpose: The *choroid* is the main site of ocular metastasis, due to the abundant vascular supply. The most common *primary cancer* sites for eye metastasis are breast and lung tumors.
Methods: We describe the case of a 63-year-old man with bilateral choroidal metastasis whose primary neoplasm is a stage IV carcinoid lung tumor.
Results: He visited the emergency department with complains of a "black curtain" in the visual field of the left eye (LE) with 5 days of evolution. He presented a best corrected visual acuity of 10/10 in the right eye (RE) and 6/10 in the LE. In the biomicroscopy of LE, a temporal retinal bulge was visualized, posterior to the lens, towards the center of the eye, which reached the visual axis. (Fig.1)
Fundus observation showed inferotemporal retina elevation by a subretinal mass in the RE. In the LE, temporal retina was bulged to the midline by a subretinal mass, associated to inferior retinal detachment and another mass in the inferior middle periphery (Fig.2).
In Orbital Computorized Tomography, the masses presented contrast enhancementand went beyond the limits of the sclera. (Fig. 3)
In mode B ultrasonography, they presented medium-high reflectivity and choroidal digging, with 6.06x10.83mm in RE and 14.39x13.64mm in LE. (Fig.4)
In the OCT, Fluorescein Angiography and ICG, the masses showed elevation, internal vascularization, own vessels and sparse leakage. (Fig.5.6).
The case was discussed at a cancer group meeting and the patient initiated systemic chemotherapy. Currently, the patient is unresponsive to therapy.
Conclusions: The therapeutic approach may consist of surveillance or include chemotherapy, radiation therapy, immunotherapy, hormone therapy, photodynamic therapy or enucleation.

EP-ONC-13

Corneal myxoma, case report

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Purpose: Myxomas are rare benign tumors that can be found most frequently in the heart. We report the clinical and histological findings in a very rare case of corneal myxoma which is the thirteen one in literature.
Methods: A whitish elevated tumor of the anterior cornea developed in the right eye of a 42-year-old man of 2 months duration. The tumor covered the central part of the cornea sparing the limbus.
Results: Histologically, the hypocellular tumor was characterized by scattered spindle and stellate-shaped cells with wavy, randomly oriented collagen fibers in a myxomatous ground substance
Conclusions: Histological observations support the hypothesis of a cellular origin of the myxoma from keratocytes

EP-ONC-14

Surgical treatment of epibulbar malformations

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Purpose: Analysis of the results of surgical treatment in patients with epibulbar malformations
Methods: The study included 126 patients with a preliminary diagnosis of "epibulbar neoplasm", who received treatment from January 2013 to December 2017. Male patients were 57.9% (n = 73), female - 42.1% (n = 53). The age range was from 6 months to 82 years (13.0 ± 11.4). All patients underwent complex ophthalmological examination and surgical treatment with histological verification of the obtained material. In case of deficiency of own tissues, when the conjunctival defect was closed, plastic was made using an amniotic membrane.
Results: 67 (53.2%) patients had a diagnosis of dermoid of the conjunctiva and / or cornea. In 14.3% of cases, a diagnosis of lipodermoid with spreading into the eyelids fornix was established.
In 7 patients there was a combined lesion, of them in 4 cases with Goldenhar syndrome, 1 case with Jadassohn syndrome and in 2 cases without syndromic disorders.
In 10 patients, multicentric lesions were noted with the formation of several dermoids. Choristomas of different structures were identified in 41 patients (32.5%).
Complications of surgical treatment included limitation of eye mobility (n = 9), ptosis of the upper eyelid (n = 7), diplopia (n = 4), ocular deformity (n = 3), corneal perforation (n = 1), symblepharon (n = 1) and entropion (n = 1), which required additional surgical interventions with a favorable functional outcome.
Conclusions: Diagnosis of epibulbar malformations requires a comprehensive ophthalmological examination to determine the prevalence of the process, the extent of the lesion in order to plan the timing and tactics of surgical treatment. Congenital epibulbar malformations of the eye are subject to surgical treatment with the growth of lesion, chronic inflammation, cosmetic dissatisfaction and spread to the central parts of the cornea.

EP-ONC-15

Orbital melanoma in a patient with oculodermal melanocytosis: clinical, instrumental, morphological and molecular genetics examination (a case report)

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Purpose: To presentclinical symptoms, instrumental diagnostics features, histological and molecular genetic analysis in a patient with oculodermal melanocytosis with developed orbital melanoma.
Methods: A 57 years old man was suffering from visual acuity impairment and periorbital pain during last 2 years. He was undergone both clinical and instrumental examinations due to revealed orbital mass. Surgical procedure was performed. The diagnosis of melanoma afterwards was confirmed histologicaly. Tissue blocks were used for molecular genetic analyses.
Results: The clinical examination revealed periorbital soft tissues oedema, light ptosis, proptosis with globe displacement inferior, eye motility disturbance to all directions. Eyelids, conjunctiva, episclera were hyperpigmented. Fundus examination had shown optic nerve discus swollen and hyperemic with uncertain margins, tartous vessels, all over the fundus there were dystrophic foci and odema. CT- scan revealed an oval lesion above the optic nerve with smooth margins, enlargement of superior and lateral extraocular muscules. B-mode echography demonstrated hypoecoic structure with certain margins. CDI revealed low vascularization of the lesion with very low blood flow velocity inside it.
The histological examination confirmed a pigmented primary mixed cell orbital melanoma with large necrotic spaces and mitotic activity. Genetic analyses didn't revealed monosomy 3, but there was deletion in 8p12-p22.
Conclusions: Demonstrated features could help to diagnosis orbital melanoma. Despite of low risk of orbital melanoma development in patients with oculodermal melanocytosis, all these patients need to follow up to for early recognizing malignancy in the orbit.

EP-ONC-16

Chronic red eye caused by conjunctival non-hodgkin lymphoma: a case report

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Purpose: To report a case of unilateral chronic red eye caused by conjunctival non-Hodgkin lymphoma.
Methods: A 32-year-old male patient came to the clinic with complaint of persistent redness on his right eye for two years. There was mild intermittent tearing and swelling with no complaint of decreased visual acuity, discharge, and pain. No improvement from his complaint although he had been administered topical treatment such as antibiotics, antihistamine, and steroids from the ophthalmologist elsewhere.
The patient had 1.0 visual acuity and good ocular motility in both eyes. Ophthalmology examination revealed fleshy 'salmon-pink' lesion extended from lateral to medial of right inferior bulbar conjunctiva. There was no preauricular or submandibular lymphadenopathy.
There was no abnormality from his systemic condition. Orbital CT-Scan result was unremarkable. Impression cytology from the lesion showed a benign epithelial lesion.
Results: The patient underwent excisional biopsy surgery of the conjunctival lesion. Immunohistochemistry examination revealed B-Cell Type Non-Hodgkin Lymphoma Low Grade Cell Tumor with CD20 positive. Our patient was referred to an oncologist for an extensive workup. Six-month follow-up revealed no evidence of the tumor in either eye and the conjunctival tissue architecture was normal.
Conclusions: Conjunctival non-Hodgkin lymphoma may present with redness and swelling so they are easy to misdiagnose as inflammatory conditions. Chronic red eye with a suspicious lesion not responding to standard treatment should be consider to prompt biopsy and immunohistochemistry which is a gold standard of the diagnosis. Early assessment of conjunctival non-Hodgkin lymphoma may contribute to the successful management of the patient.

EP-ONC-17

Non-Hodgkin's B cell lymphoma with ocular involvement

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Purpose: Ocular involvement in lymphoma is a relatively rare condition that can result from a primary intraocular lymphoma or an intraocular manifestation of systemic lymphoma. Our case describes clinical features of ocular involvement associated with systemic Non-Hodgkin's B cell lymphoma.
Methods: A 52-year old female patient presented with a sudden decrease of vision in both eyes. For the 6 months prior to presentation, she had also experienced weight loss and fatigue. Non-Hodgkin B cell lymphoma was diagnosed shortly after lymph node biobsy confirmed the diagnosis.
Results: At presentation her VA was hand motion in the right eye and 20/200 in the left eye. Fundoscopic examination revealed extensive subretinal infiltration in the right eye and multifocal, subretinal creamy-yellow choroidal infiltrates in the left eye.
Ultrasound confirmed elevated subretinal lesions in the right eye and choroidal thickening in the left eye. OCT detected a huge macular oedema in the left eye. After systemic chemotherapy combined with biologic agents involving specific anti-B cell monoclonal antibodies the resolution of subretinal infiltration was achieved and improvement of visual acuity was attained.
Conclusions: Ocular manifestations as first signs of systemic B cell lymphoma are rare. Diagnosis of lymphoma has to be suspected when patients have systemic manifestations as well as specific ocular findings.

EP-ONC-18

Features of surgical treatment of keratitis with granuloma and intraepithelial epithelioma (Bowen's disease) using diode infrared laser

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Purpose: To discuss the treatment of patients with keratitis complicated by granuloma and the case of intraepithelial epithelioma (Bowen's disease) of the cornea and conjunctiva using a diode infrared laser (λ 810 nm).
Methods: Treatment was performed in 3 men.
Case 1. Patient 56 y.o. with lagophthalmos after operated brain neurinoma and with red spherical neoplasm (size of 3.5 X 4.0 mm) in the center of the cornea. Visual acuity (VA) is HM (hand moving). Tumor was removed after laser coagulation of blood vessels in perilimbal area. Morphology: hemangioma or pyogenic granuloma. After 4 months - the recession of the upper eyelid levator. After 2 years repeated recession of the levator. After 3 years due to the continued growth of schwannoma applied gamma knife at a dose of 24 Gy. As a result, the protective function of the eyelids was preserved. VA is 0.1.
Case 2. Patient, 80 y.o. with giant granuloma of corneal-limbal zone after acanthamoeba keratitis with cornea perforation and subsequent epikeratoplasty. VA is p.l. incerta. Instrumental- laser removal of granuloma with conjunctival covering was carried out. VA is HM. Morphology: steatocystoma of the corneal-limbal zone.
Case 3. 73 y.o. patient with neoplasm of the cornea and conjunctiva with VA 0,15. There is a translucent structure reaching the limb in the nasal conjunctiva and passing to the cornea. Instrumental-laser removal of the neoplasm. After 6 months the VA was 0.8. Morphology: dysplasia of 2-3 degrees of multilayered squamous epithelium (Bowen's disease).
Results: In all cases, after the treatment it was possible to improve the anatomical and functional state of the eye surface with a significant increase in visual acuity
Conclusions: The occurrence of granuloma in severe keratitis requires early intervention to eliminate the causes of keratitis adequate treatment of severe infectious keratitis. The use of a diode laser made it possible to optimize surgical procedure in all cases.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Oculoplastics

EP-OPL-01

Partial marginal tarsectomy for symptomatic distichiasis

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Purpose: The aim of this work is to present a surgical technique that was used in young female with bilateral severe recurrent distichiasis of an idiopathic origin.
Methods: The surgical procedure consists of fine partial resection of posterior lamella. The follicles of the distichiatic eyelashes were removed with the parts of the posterior lamella, and a special care was given to maintain as much healthy tarsus as possible. The procedure was performed on both lower eyelids and one upper eyelid in one session. The complete surgery was performed using the microscope and it will be presented as a short video.
Results: The evaluation was made after six months. There was no recurrence of any distichiatic eyelashes and the cosmetic results are excellent. The function of the eyelids was not altered.
Conclusions: Partial marginal tarsectomy is an effective and safe surgical method for symptomatic distichiasis.

EP-OPL-02

Is smoking a risk factor for basal cell carcinoma of the eyelid

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Purpose: Smoking is known to increase the risk of squamous cell carcinoma, but an association with basal cell carcinoma remains unclear. We tested the hypothesis that smoking may be a risk factor specifically in basal cell carcinoma of the eyelid.
Methods: A random panel of 200 patients diagnosed with basal cell carcinoma of the eyelid in an outpatient clinic of a single oculoplastic surgeon over the last 7 years was reviewed. Results were analyzed using chi-square and logistic regression.
Results: Male smokers were significantly more likely than both female smokers (p=.02) and male never-smokers (p=0.042) to require surgical intervention. Smoking (p=0.041) and age (p=0.035) were both significant risk factors

for men, but not women, to require reconstruction following excision. Age was a significant risk factor among all patients for extensive lesions requiring Mohs surgery and reapir. (p=0.013). Male patients required surgery more often than female patients, though this was not significant (p=0,051). Among female smokers, recent or current smoking use significantly increased the risk of requiring simple excision of eyelid lesions (p=0.009). This trend was not observed among male smokers.

Conclusions: Smoking was found to be a significant risk factor for the development of severe basal cell carcinomas of the eyelid requiring more extensive operation in specific subgroups. Men and women appear to have different baseline and smoking-modified risk factors for basal cell carcinoma. Further study is warranted to improve counseling patients on risk factor modification and prognostication of surgical outcomes.

EP-OPL-03

Transconjuctival lower lid blepharoplasty and skin "pinch" removal

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Purpose: Age-related changes of the lower lid can be slightly visible or very visible. Variation of techniques, sometime, can lead to a confusion. External lower lid blepharoplasty is mostly used to the patients, who have significant puffiness of the skin in the lower lid area, whereas patients with low aging changes of the skin, but prominent fornix fat herniation, are excellent candidates for transconjuctival blepharoplasty. We present successfully performed transconjuctival lower lid fat removal which has been done in a combination with skin "pinch" recession.

Methods: The patients were between 40-55y.o. with baggy lower eyelids and orbital fat pads. The treatment was carried out with transconjuctival blepharoplasty combined with skin pinch removal. Using 4-0 nylon suture lower eyelid was everted. The eyeball was gently pressed - to elevate and incise the conjuctiva and capsulopalpebral fascia for protruding herniation of the orbital fat. Fat, in the middle, nasal and lateral portions was excised with a Bovie needle. After hemostatic coagulation the conjunctiva set back and an antibiotic eye ointment was applied. The incision could be closed with 7-0 monocryl, but we preferred to leave it open to avoid irritations of the cornea. Thereafter, 1-2 mm inferiorly from the eyelashes line, skin was pinched with a blunt mosquito haemostatic forceps. Caution must be used when "pinching" - not to cause eyelid margin traction. After enough pinching and excising the eyelid were sutured with 6-0 nylon.

Results: After first week post-surgery no eyelid tracion was seen. During next planned follow-up visits no ectropion or scarring or any other complication was present.

Conclusions: "Pinch" skin excision in a combitation with transconjuctival lower lid blepharoplasty stands on a par with other most useful and effective techniques and methods and can be safely and successfully performed in a variaty of similar cases.

EP-OPL-06

Nontraumatic subperiosteal orbital hemorrhage in pregnancy: a case report

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Purpose: Nontraumatic orbital hemorrhage is a rare condition in ophthalmology, most commonly caused by vascular malformations, increased intracranial venous pressure, systemic diseases such as coagulopathy, inflammation, and neoplastic orbital lesions.

We present a case of unilateral nontraumatic subperiosteal orbital hemorrhage (NTSOH) in 24-year-old women in her second trimester of pregnancy appeared after vomiting.

As well we discuss about following of this condition and its management.

Methods: Patient came to our hospital with painless left globe proptosis, reduced eye movements and diplopia, without signs of optic nerve compromise. Since the patient was in her 25th week of pregnancy, the diagnosis was confirmed by magnetic resonance imaging (MRI) with further ultrasound monitoring. An ultrasound scan revealed a homogenous hypoechogenic, well demarcated, low reflective lesion in the medial orbital roof . Pregnancy was well controlled without any complications.

Considering the fact that patient is pregnant woman without signs of optic nerve compromise, we recommended a conservative treatment (wait and see) and to follow NTSOH with the ultrasound.

Results: During the following weeks on clinical examination the visual acuity had not decreased. She had full extraocular motility without double vision ten days after the onset of symptoms and during one month the proptosis decreased gradually. Two and half months after the onset of symptoms ultrasound showed a complete resolution of the lesion and complete ophthalmic examination was normal .

Conclusions: Primarily computed tomography (CT) or MRI should be performed to confirm the diagnosis of NTSOH. In cases without signs of optic nerve compromise we recommend a conservative treatment and to follow NTSOH with the ultrasound.

EP-OPL-08

Eyelid reconstructive surgery as a possible ocular complications treatment in the case of neurofibromatosis type 1

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Purpose: To report possible ocular manifestations and surgical intervention options in the case of neurofibromatosis type 1 (NF-1).

Methods: This case reports a rare case of neurofibromatosis type 1. 55-year old man presented with a progressive multiple skin neurofibromas, multiple bulging and soft masses involving the eyelids which caused conjunctiva inflammation and erosion of the cornea. Visual acuity before treatment was 20/70. Lisch nodules and bilateral optic nerve subatrophy. Surgical removal of neurofibromas was chosen.

Right upper eyelid neurofibroma rejection was performed. Eyelid defect was closed with direct tissue apposition. A lateral canthotomy with superior cantholysis was performed to rotate or advance adjacent tissue in order to prevent excessive tension on the wound.

Results: Surgery improved the mucous and corneal condition of the eye, which significantly improved the quality of life of the patient. After surgery visual acuity became 20/40. (Pre- and postoperative pictures will be added in the poster).
Conclusions: We recommend to remove local neurofibromas due to risk of ocular inflammations, ptosis prevention, improving the quality of life.

EP-OPL-09

Ptosis repair with simultaneous fat transplant in a previously operated cases

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Purpose: The purpose of this study was to evaluate simultaneous fat transplant with ptosis repair in a previously operated ptosis surgery with hollow upper eyelid sulcus
Methods: We reviewed 5 charts (5 eyes) of patients complaining of unsatisfactory result from previous ptosis repair surgery elsewhere and subsequently underwent simultaneous ptosis repair with fat transfer in our center. MRD1, levator function, epidemiological data and patient satisfaction where collected. Patients satisfaction was measured from one to three being one as unsatisfactory, 2 satisfactory and 3 very satisfactory. Mean follow-up was 16 months.
Results: All patients where female and had a hollow upper sulcus most probably due to previously de-bulked preaponeurotic fat pad during ptosis repair surgery. Patients underwent levator advancement surgery with pearl fat grafting. There was a difference in postoperative upper sulcus hollowness. Three patients where very satisfied, 2 satisfied and none expressed dissatisfaction from the procedure.
Conclusions: Patients with ptosis and iatrogenic upper sulcus hollowness can benefit from ptosis repair with fat transfer in a single procedure. Despite unpredictability of fat survival fat transfer simultaneously with ptosis repair might be a useful option for achieving good cosmetic results in select number of patients.

EP-OPL-10

Potts puffy tumor - not a real tumor but can kill

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Purpose: Pott's puffy tumor is a rare, life-threatening complication of infectious sinusitis. It is characterized by osteomyelitis of the frontal bone with associated subperiosteal abscess, causing swelling and oedema over the forehead and scalp.
Methods: We present the case of a 66-year-old female with a Potts Puffy Tumor.
Results: A 66 years old female presented to emergency eye care with complaints of a severe frontal headache and superior eyelid swelling for 2 days. She had sinusitis 1 month earlier and was treated with amoxicillin/clavulanic acid 875+125mg (twice a day). On ophthalmologic examination, she had a mass with elastic consistency that was palpable in the inner corner of the left upper orbital rim. Her best corrected visual acuity was 10/10 in both eyes. Her pupillary reactions were normal. Ocular examination revealed no proptosis, normal ocular motility and absence of diplopia. Anterior segment and fundus observation showed no relevant findings.Computerized tomography (CT) showed left frontal, ethmoidal and maxillary sinusitis. It also exhibited an erosion of the medial wall of the maxillary sinus and erosion of anterior table of the frontal sinus with a protruded mass to the upper limit of the orbit and to the intracranial compartment. At orbital level, the mass conditioned the deviation of the superior rectus muscle and densification of the intraconic fat. Left maxillary sinus lavage and a left ethmoidectomy were performed. It was observed erosion of outer table of the frontal sinus, partial erosion of the inner table, and an adherent mucocele to dura mater. The mucocele was aspirated and the outer table of the frontal sinus was closed with a titanium mesh. She was treated with intravenous antibiotic therapy throughout hospitalization.
Conclusions: This is a very serious complication which can be easily prevented by adequate and appropriate treatment of acute bacterial sinusitis.

EP-OPL-11

Exophthalmometry values in the Hong Kong Chinese adult population from a population-based study

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Purpose: To establish the range of exophthalmometry values (EV) in the adult Hong Kong Chinese population, its relationship with various anthropometric parameters and to compare it with the EV in different ethnic groups.
Methods: 1517 adult Hong Kong Chinese were drawn from random core sample and were successfully recruited by telephone invitation from the FAMILY Cohort surveys. Subjects were interviewed, and thorough ophthalmological assessments were performed. EV was measured using the Hertel's exophthalmometer.
Results: EVs of both eyes from 630 male (42.4%) and 855 female (57.6%) subjects, mean age 54±17.2 and 52±16 respectively were analysed. The mean EVs were found to be 15.3±2.79mm in the right eye, 15.2±2.85mm in the left eye and 14.4±2.71mm in the right eye, 14.3±2.72mm in the left eye, in male and female subjects respectively. There were no statistically significant differences between the right and left eye ($p>0.05$). Male subjects have significantly higher EV than female subjects ($p< 0.0005$) and age was found to be negatively correlated to EV ($p< 0.0005$). Body height ($r=0.195$), weight ($r=0.247$), interpupillary distance ($r=0.543$), waist ($r=0.113$) and hip ($r=0.154$) circumference were all found to have statistically significant positive correlations with EV ($p< 0.0005$).
Conclusions: Our study provides normative data on EV in the Hong Kong Chinese population. Height, weight, interpupillary distance, waist and hip circumference had positive correlations with EV. There was no significant difference between right and left eye. Age and gender had significant effect on EV.

EP-OPL-12

Development of orbital volume measurement according to the MSCT data

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Purpose: To acquire additional diagnostic information in patients with orbital trauma in order to identify the risk of postoperative enophthalmos. To evaluate the advantages of MSCT data postprocessing and volume orbital measurement.
Methods: A total of 71 patients (100%) with midface trauma were studied in Sechenov University using pre- and postoperative volume 640-slice CT. Post processing of MSCT data included workstation special software, where the bone borders of the orbits before and after surgical treatment were marked on every slice and presented in mathematical units (ml).
Results: Preoperative MSCT revealed increased orbital volume in 59 patients (83%) due to severe midface trauma, the difference between traumatized and normal orbit was from 2 ml to 14 ml, these patients required surgical treatment. The other 12 patients (17%) had mild midface trauma, the difference between orbital volumes was less than 2 ml, these patients didn't undergo surgical treatment. After the operation in 51 patients (86%) the orbital volume was reconstructed - the difference between orbital volumes was not more than 2 ml. In 8 cases (14%) orbital volume difference was more than 2 ml which means that these patients still had risk of postoperative enophthalmos and required additional diagnostic control and potential surgical correction.
Conclusions: Postprocessing of the MSCT data gave the possibility to calculate pre-and postoperative orbital volume changes and present it in mathematical units (ml) in 3D mode. As the result the additional information can be acquired in order to identify the risk of postoperative enophthalmos.

EP-OPL-13

Lower lid entropium correction with botulinum toxin A

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Purpose: to evaluate the clinical results and report the results of 12 cases of senile involutional entropion of the lower lid treated with botulinum toxin.
Methods: Twelve patients with senile entropion were treated with an injection of botulinum toxin. The mean age was 67,2±7,3. The toxin (Botox; Allergan Corporation, Irvine, CA) was supplied in a vial contained 100 units of freeze-dried botulinum toxin A. This was reconstituted and diluted with 2 ml of saline which resulted with a concentration of five units in 0.1. The reconstituted toxin was injected over the orbicularis oculi muscle subcutaneously 4 mm below the eyelash margin of lower eyelid at three sites with a 30-gauge needle. Five units of the toxin were injected in each site (15 units total).
The patients were examined 7 days after the aplication, 30 days and then monthly up to 1 year.
Results: In all treated patients improvement of the eyelid margin was visible within three to four days after the injection with the duration which varied from 8 to 16 weeks. No complications or side effects of the treatment was recorded.
Conclusions: Botulinum toxin A can be effective temporary treatment for senile lower lid entropion.

EP-OPL-15

The effects of autostable bicanaliculus intubation stent in the management of acquired punctal stenosis

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Purpose: To study the success rate of autostable bicanaliculus intubation stent in the management of acquired punctal stenosis and to evaluate the factors influencing success rate.
Methods: Twenty one eyes of 12 patients who underwent stent implantation using disposable sizers, from December 2012 till March 2013. In all patients, the superior and inferior puncti, 1mm calibrated dilator supplied with the stent was performed carefully to prevent damage to the ampulla prior to the insertion of the stent, it is necessary to verify the absence of canalicular obstruction by probing and patency of the nasolacrimal duct by irrigation. An initial clinical examination verifies that tearing is not ocular in nature.
For the management of acquired punctal stenosis and punctal obstruction were retrospectively evaluated regarding sex and age of the patients, the duration and severity of epiphora, associated blepharitis or trachoma, and the success of treatment. Stent were removed 2 months after insertion.
Results: There were 21 eyes of punctal stenosis, causing epiphora. The mean age of patients was 55 (±20) years. The mean interval between the onsets of epiphora and stent implantation was 18.4 (±12.7) months. Associated chronic blepharitis was detected in 4 eyes, trachoma complication in 3 eyes.
The patient's were examined at first day postoperative, 1 week, 1 month, and 2 months. Success was achieved in 19 eyes (90%).
We had 4 cases of minor conjunctival irritation which were resolved in one week, and 2 cases of diminished palpebral fissure, in one case we replaced the stent. Spontaneous sent loss was noted in 5 eyes between the 1 week and 2 month follow-up. One patient suffered from residual epiphora.
Conclusions: Autostable bicanaliculus intubation stent is very effective. However, careful punctum dilation should be performed and proper patient instructions to wear protective eyeglasses following procedure, to decrease spontaneous sent extrusion.

EP-OPL-16

A patient with congenital absence of the punctum and contralateral supernumerary upper puncta and stenotic lower punctum

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Background: Many lacrimal punctum anomalies have been described in the literature. While punctal atresia or agenesis, where a veil or a membrane occludes the orifice, is not uncommon, Congenital absence of the punctum is much less common. Accessory channels communicating the canalicular system with the skin may result into supernumerary puncta. Punctal stenosis is usually an acquired condition that may be caused by different conditions, most notably inflammatory ones.
Case description: A 51-year gentleman was referred to our clinic for left watery eye. Examination showed absent left lower punctum (congenital absence of the punctum). Syringing and irrigation done through the upper punctum revealed a patent nasolacrimal duct. The contralateral lacrimal system showed two upper punctal openings (supernumerary or Anlage ducts) and stenotic lower punctum.

A left lower punctoplasty was done with insertion of a Mini Monoka stent.
Discussion: To our knowledge, this is the first case presentation of combination of a lower congenital absence of the punctum and a contralateral supernumerary upper puncta and stenotic lower punctum. Congenital absence of the punctum is a rare cause of epiphora. Supernumerary puncta are rarely reported in the literature and is usually asymptomatic, which is the case in our patient. Occasionally, it may paradoxically cause epiphora with different potential mechanisms suggested in the literature.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Paediatric Ophthalmology and Strabismus

EP-PED-03

Long term outcome following unilateral recession and resection surgery with adjustable suture in adult sensory exotropia

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Purpose: This study aimed to evaluate the correlation between initial postoperative deviation and long term outcome of unilateral recession and resection surgery with adjustable suture in adult sensory exotropia, and factors associated with long term outcome and time to failure following surgery.
Methods: This was a retro-prospective study involving adult patients with sensory exotropia who underwent unilateral recession and resection surgery with adjustable suture with at least 2-year follow up. Initial postoperative deviation after suture adjustment was used to study the relationship with long term outcome. Success was defined as a final deviation within 10 prism diopters (PD) of orthotropia.
Results: A total of 38 patients were included. The mean age at surgery was 32 years (range, 18-65 years). The mean follow-up period was 5 years (range, 2-10 years). Successful outcome was found in 50% of patients at 2 years. There was a correlation between initial postoperative deviation and long term outcome. Initial postoperative deviation and amount of lateral rectus recession were factors significantly associated with long term outcome. Patients with moderate overcorrection achieved the highest chance of success compared to patients with minimal overcorrection or undercorrection initially (67%, 62%, 10%). Ninety-two percent developed more than 5 PD exotropic drift. Overall rate of exotropic drift was 8 PD per year. Time to failure in the non-success group was 18 months.
Conclusions: Unilateral recession and resection surgery with adjustable suture in adult sensory exotropia achieved 50% success at 2 years. Initial postoperative moderate overcorrection results provide the highest chance for long term success. The majority of patients developed exotropic drift with time and time to failure was 1.5 years.

EP-PED-04

Pediatric open globe injury in a university based tertiary hospital

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Purpose: To investigate epidemiology, etiology and outcomes after repair of pediatric open globe injury.
Methods: We retrospectively reviewed medical records of patients ≤18-year-old who underwent primary open globe repair at King Abdulaziz University Hospital from January 2003 to January 2015.
Results: 213 patients were identified. Male-female ratio was 1.44:1. Type of injury was penetration in 157 (74.4%) cases, rupture in 52 (24.4%) cases and perforation in 2 (0.9%) cases. Knife injuries were the most common cause, affecting 38/196 (19.4%), followed by metallic object in 37/196 (18.9%) patients, glass in 26/196 (13.3%) patients and pen or pencil in 24/196 (12.8%). Predictors of good visual outcome defined as (≥20/40) were good initial visual acuity (≥20/40) ($p<0.0001$), time from injury to arrival at the emergency room >24 hours ($P=0.038$), size of wound less than 10 mm ($p< 0.0001$), absence of iris prolapse ($p<0.0001$), deep anterior chamber at presentation ($p<0.0001$), absence of hyphema ($p=0.043$), intact lens ($p< 0.0001$) and no retinal detachment during follow- up ($p<0.0001$).
Twenty seven (12.7%) cases were documented to have retinal detachment at any time during follow- up period. Predictors of retinal detachment were perforation and rupture ($p<0.0001$), size of the wound ≥10mm ($p< 0.0001$), initial visual acuity ≤20/200 ($p<0.0001$), lens injury ($p<0.0001$) and development of endophthalmitis ($p< 0.027$). Eight (3.7%) eyes had the clinical diagnosis of posttraumatic endophthalmitis.
Conclusions: The most common type of injury was penetration, and the most common tool was knife. Visual outcome was affected by the initial presentation. Retinal detachment was a significant predictor of a worse final visual outcome

EP-PED-05

Retinopathy of prematurity (ROP) in a tertiary hospital

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Purpose: To determine the incidence and analyze the main risk factors associated with the development of retinopathy of prematurity at a tertiary hospital with a national reference centre in neonatal intensive care.
Methods: Retrospective and observational study that included all newborns with a gestational age of ≤ 31 weeks or/and a gestational weight of ≤ 1500g. They were admitted in a neonatal intensive care unit between January 2015 and December 2017. We assess the incidence and analyze the prenatal, neonatal and maternal factors associated with the development of ROP. When the disease was confirmed, the worse eye at a more advanced stage was studied. Statistical analysis was performed with Statistical Package for Social Sciences (SPSS, 24th version).
Results: 144 premature infants were studied, of which 42% developed ROP. The disease was symmetric in 95% of them. Stage 2 was the most frequently found (50%) and zone II and III were mainly involved (98%). Most cases didn't present pre-plus/plus disease (93.3%). One patient had aggressive posterior ROP. Laser photocoagulation and intravitreal injection of anti-VEGF were necessary in six newborns (10%). The Chi-squared test revealed the risk factors associated with ROP ($p\leq0.05$): low birth weight, low gestational age,

intracranial hemorrhage, patent ductus arteriosus, respiratory difficulty, use of surfactant/ NSAIDs/ erythrocytes, thrombocytopenia, blood transfusion, sepsis and maternal infection.
Conclusions: The incidence of ROP is higher than 1/3 in the newborns studied and there are several risk factors associated with the development of the disease. Even though over the last few years child healthcare has improved, ROP is still a major complication in newborns. Screening and early treatment are essential to avoid the late consequences of this disease.

EP-PED-06

A study of visual impairment among primary school children in Herat, Afghanistan

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Purpose: Refractive errors is an important cause of visual impairment in children, causing significant impact on public health. This study assessed the magnitude of this problem among school children aged between 5 to 10 years, in Herat province of Afghanistan.
Methods: The vision of school children were examined by ophthalmic technicians for visual acuity at schools. All visual acuity tested were recorded in specifically designed forms for this research. Statistical analyses were performed using STATA computer package. A p-value of less than 0.05 was considered statistically significant.
Results: Of the 2797 students, 1848 (66.07) were boys and 949 (33.93%) were girls. 45 (1.60%) were 5 years old, 336 (12.01%) were 6 years old, 842 (30.10%) were 7 years old, 775 (27.70%) were 8 years old, 661 (23.63%) were 9 years old and 138 (4.93%) were 10 years old.
Of all students examined, 619 (22.13%) had refractive errors. Of these, 421 (15.05%) had a 6/9 vision, 98 (3.50%) had 6/12 vision, 90 (3.22%) had 6/18 vision, 39 (1.39%) had 6/24 vision, 20 (0.72%) had 6/36 vision and 1 (0.04%) had 6/60 vision. None of the examined students were sufferring from a lower than 6/60 vision. An increase in the prevalence of refractive error was noted with increasing age.
Conclusions: A significant number of school students were suffering from visual impairment in Herat province. No significant differences was observed between the rate of refractive errors in boys and girls.

EP-PED-07

Surgical outcomes of patients with diagnostic preoperative monocular occlusion in intermittent exotropia

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Purpose: To evaluate surgical outcomes of bilateral rectus recession in patients with the diagnostic monocular occlusion in intermittent exotropia.
Methods: The records of the patients with intermittent exotropia who were preoperatively examined for 1 hour monocular occlusion and underwent bilateral lateral rectus recession were reviewed retrospecitvely. Patients were classified into two groups based on exodeviation angle: responders (change of ≥ 5 prism diopers [PD] after occlusion) or nonresponders (change of < 5 PD after occlusion).
Preoperative and postoperative ophthalmologic factors were compared between groups.
Results: The overall follow-up period was 38.81 ± 24.09 months for the nonreponders (n=106) and 38.52 ± 19.87 months for the reponders (n=142) (p=0.766). There were no difference of deviation before monocular occlusion between two groups. The mean angle of deviation at distance (24.23 ± 6.27 PD) and near fixation (25.46 ± 6.78 PD) increased to distance deviation (29.95 ± 6.43 PD) and near deviation (32.15 ± 6.17 PD) after occlusion in repsonder group. At postoperative 1 year, surgical success rate was higer in in the responders (71.1%) than the nonresponders (52.8%) (p=0.003). With the Kalpan-Meier survival analysis, surgical success were significantly higher in the responders (p=0.001, log-rank test).
Conclusions: Preoperative diagnostic monocular occlusion with intermittent exotropia could influence on the surgical outcomes by idendifying the latent exodeviation angle.

EP-PED-09

Postnatal weight gain models to predict severe retinopathy of prematurity

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Purpose: To determine the sensitivity of three different weight gain based ROP prediction algorithms for detecting sight-threatening ROP
Methods: A representative cohort of infants with severe ROP, which was defined as infants with type 1 or type 2 ROP as per the ETROP study were included. Three weight gain models were assessed; 1.) Weight Insulin-like growth factor Neonatal Retinopathy of Prematurity (WINROP), 2.) Children's Hospital of Philadelphia Retinopathy of Prematurity (CHOP-ROP) and 3.) Colorado Retinopathy of Prematurity (CO-ROP). Sensitivity was defined as the algorithms ability to correctly signal an alarm that an infant is at high risk of developing severe ROP
Results: Of 999 infants screened for ROP at a tertiary neonatal intensive care unit in Brisbane, Queensland, Australia over a 5 year study period, 89 infants were identified with severe ROP. The median gestational age for all infants was 25.7 weeks (IQR 2.1). The sensitivities of WINROP, CHOPROP and CO-ROP models to predict severe ROP were 89.6%, 92.3% and 97.4% respectively. In our study 100% sensitivity to detect type 1 ROP was attained by Co-ROP or by combining CHOPROP with WINROP
Conclusions: We present, for the first time, data validating the sensitivities of the WINROP, CHOPROP and CO-ROP algorithms to detect severe ROP in an Australian population. Does a screening program require 100% sensitivity? Using these predictor algorithms in combination to achieve 100% sensitivity will significantly reduce the specificity and therefore compromise their utility to day to day practice.

EP-PED-10

Ocular findings in deaf children in a resource poor country: clues to its aetiology?

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Purpose: To assess to what extent ocular findings may give a clue to the aetiological causes of childhood hearing impairment in Nigeria.
Methods: Cross sectional study. Children in schools for the deaf in 4 states in southeast Nigeria were assessed by an ophthalmologist and otorhinolaryngologist. Assessment included history from care givers and examination of school medical records where available, ocular and audiological examinations.
Results: Out 146 children who were assessed, 94.5% of them had presenting visual acuity of ≥6/12. However, ocular lesions were diagnosed in 13% of the participants. These lesions included rubella retinopathy, retinitis pigmentosa, features of Waardenburgs syndrome. Aetiology of deafness by audiological assessment was indeterminate in 91.8% of the participants. However, ophthalmological examination was able to make an aetiological diagnosis of Congenital rubella- 10 cases, toxoplasmosis 1 case and Ushers syndrome 1 case. The majority of the causes determined by ocular examination were preventable.
Conclusions: Ocular examination in deaf children can help in the aetiological diagnosis of deafness in children. The majority of the causes are preventable. Strategies to reduce the preventable causes of ocular morbidity and deafness should be developed and implemented.

EP-PED-11

Pediatrics eye injuries: a report of surgical cases

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Purpose: To report eye injuries necessitating hospitalization and surgical repair in children.
Study design: Retrospective charts review of patients with eye injury aged less than 18 years that required surgical repair over five years period. Demographic data, place of occurrence, activity at the time of injury and place of injury, cause of injury, presenting signs, initial findings, and primary and secondary surgical interventions were retrospectively studied. visual acuity (VA) before and after treatment were studies. Causes for vision limitation, time to hospital presentation and time to procedure performance were obtained.
Results: 39 eyes from pediatric age group were surgically treated during the study period, Mean age was age of 3 years (1-15), 53.9% were 5 years old or less, and 61.5% were males. 48.7% were Emirati nationality. Almost 80% of injuries occurred at home and while playing (71.8%). Trauma with sharp object (35.8%) was the commonest etiology for the injuries. Majority presented to the hospital in less than 6 hours (89 %) mainly with eye pain (95%). Corneal laceration (53.8%), traumatic cataract (15.3%), and foreign body (15.3%) were the most common clinical findings. Eighteen patients had Zone I injury (46.2%), three had zone II injury, while 18 (46%) had non zone injury (46%). 21 (53.8%) eyes sustained open-globe injuries 18 (46.2%) at Zone I, and 7 retained ocular foreign bodies. The visual acuity significantly improved at follow up ($P < 0.05$) and the major cause of vision limitation was corneal pathology (33%).
Conclusions: Eye injury requiring surgical intervention is an area of particular concern in the vulnerable pediatric age group. This work may give insight to the value and necessity of implementing educational programs through mass media, schools, and school health centers.

EP-PED-12

A child with crygd mutation: congenital cataract and latanoprost-induced skin depigmentation

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Purpose: Congenital cataract is the leading cause of reversible blindness in childhood, with a prevalence of 1-6 of every 10,000 live births. The hereditary form corresponds to 25% of these cases.
Methods: We report a case of congenital cataract and Latanoprost-induced Skin Depigmentation with a mutation in CRYGD gene.
Results: A female child with ocular history of bilateral congenital cataract, submitted to phacoemulsification surgery and anterior vitrectomy, developed secondary glaucoma in both eyes and a trabeculectomy was performed in the right eye. Satisfactory IOP control was achieved in both eyes with timolol maleate (eye drops, 0.5%, twice a day) until 8 years of age. Thereafter, the right eye showed a sustained IOP rise and Latanoprost (unit doses eye drops, 0.005%, once a day) was added to medical therapy. Two months later, she presented with periocular skin hypopigmentation in this eye. Additionally, 2 depigmented lesions were identified on the trunk, one of which with halo nevus characteristics. The Latanoprost treatment was discontinued a treatment with 2%/0.5% dorzolamide/ timolol was initiated, achieving satisfactory IOP control. Three months after discontinuation, hypopigmentation showed partial reversal, and stayed stable to the most recent follow-up. Genetic study was performed and it revealed a CRYGD gene mutation.
Conclusions: There were just 20 cases described in literature with this mutation, and this is the first in Portugal. Congenital cataract disease is a clinically and genetically heterogeneous lens disorder. Cataracts that are phenotypically identical can result from mutations at different genetic loci and can have different inheritance patterns. Conversely, cataracts with dissimilar phenotypes may result from mutations in a single gene or gene family.

EP-PED-13

Risk factors associated with poor outcome after medial rectus resection for recurrent intermittent exotropia

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Purpose: To describe characteristics and identify factors associated with poor outcome after medial rectus resection for recurrent intermittent exotropia.
Methods: We retrospectively reviewed 92 patients who have undergone medial rectus resection for recurrent intermittent exotropia after bilateral lateral rectus recession(BLR). Patients were followed for at least 3 months after

reoperation. Clinical characteristics were compared between patients who showed poor outcome against those with successful outcome. Risk factors associated with poor outcome after medial rectus resection were also evaluated. Successful outcome was defined as distant deviation within the range of 4 prism diopters(PD) esotropia and 10 PD exotropia at last visit after resection.

Results: Of 92 patients (8.6±2.2 years old at recurrence, 44.6% male) who received medial rectus resection for recurrent intermittent exotropia, 26 patients (28.3%) were classified to have poor outcome (10.7±5.4 PD exotropia 6 months after resection). Patients were followed for 73.6±27.3 months. No significant difference was noted in deviation at baseline (24.4±5.6 PD vs. 25.3±5.4 PD; P=0.477). The two groups began to significantly differ in deviation 3 months after resection (7.5±6.0 PD vs. 1.5±2.7 PD, P< 0.001). At 3 months' follow-up, 57.7% of the poor outcome group showed deviation greater than 8 PD exotropia (n=15) in comparison to 6.1% of the successful outcome group (n=4). Multivariate logistic regression analysis showed that distant deviation in the 3rd month during the post-operative follow-up predicted poor outcome from medial rectus resection for recurrent intermittent exotropia (OR 1.306; 95% CI 1.085-1.572; P=0.005).

Conclusions: Patients whose exotropia exceeded 8 PD at distance at 3 months follow-up tended to recur while those whose exotropia remained below 8 PD at distance showed a stable disease course. No baseline clinical characteristics distinguished poor outcome group from the successful outcome group.

EP-PED-14

Incidence and factors predisposing to consecutive esotropia and abduction limitation after combining inferior oblique muscle weakening procedure with exotropia surgery

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Purpose: To analyse the incidence and factors with the onset of consecutive esotropia and limitation of abduction after surgery for intermittent exotropia with inferior oblique overaction. Also investigated its clinical course.

Methods: We prospectively recruited of 156 patients who had shown intermittent exotropia associated with inferior oblique overaction. Inferior oblique myectomy combined with bilateral lateral rectus muscle recession was performed to all patients. We evaluated the risk factors for consecutive esotropia, defined as esodeviation ≥10 prism diopters (PD) and the limitation of abduction at postoperative 1 month or later. We also evaluated the clinical course of consecutive esotropia and limitation of abduction.

Results: Consecutive esotropia occurred in 4 (2.63%) of 152 patients. Only young age at surgery (p=0.039) showed significant association with consecutive esotropia. Among 4 patients, 3 became orthophoric without any additional treatment. One patient failed to show improvement of the esodeviation so underwent surgery for sustained esotropia. Limitation of abduction occurred in 7 (4.61%) of 152 patients. Grades of abduction deficit were less than -1. Myopic spherical equivalent (p=0.035) showed significant association with limitation of eye movement.

All patients showed complete improvement of the limitation of abduction without any treatment within 7.3 months. None of the patients showed esodeviation and limitation of abduction simultaneously.

Conclusions: Younger age at surgery was predisposing factors for consecutive esotropia and more myopic spherical equivalent was associated with the cause of the limitation of abduction. However, considering the incidence and its clinical course, combining inferior oblique muscle weakening procedure with exotropia surgery does not seem to increase the risk of consecutive esotropia. Abduction deficit may occur after combined surgery, but the grades were very mild and resolved spontaneously.

EP-PED-15

Usher syndrome - a case report

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Purpose: Usher syndrome is a rare genetic disorder caused by mutations in genes involved in the function of the inner ear and retina. These mutations are inherited in an autosomal recessive pattern. Deficits manifest as sensorineural hearing loss that typically develops at a young age and retinitis pigmentosa (RP) that can lead to peripheral vision loss and night blindness. In other cases, early degeneration of the cone cells in the macula occurs, leads to a loss of central acuity. As a result, this syndrome can have a significant impact on a patient's quality of life.

Methods: We report the case of a 7-year old girl with Usher syndrome.

Results: We present a case of 7 year old girl with congenital deafness with normal vestibular function and visual loss. The loss of vision started at the age of 5. Initial visual acuity was with hyperopic correction 0.4 on both eyes. Anterior segment of both eyes had normal findings, but on both funduses pigmented osteoclast type lesions were seen in the middle periphery, optic disc drusen in both optic nerves and cystoid macular edema in both maculas. Genetic investigation was done and Usher syndrome was confirmed. Neurological and neuroophthalmological investigations were within normal. Patient was treated with topical nonsteroidal eye drops and systemic carbonic anhydrase inhibitors which reduced CME and prevented further loss of vision. Visual acuity remained stable during a 2.5 year follow up.

Conclusions: CME as complication of RP in Usher syndrome is very rare finding in a child, and was successfully treated during a period of 2.5 years. However, long term visual prognosis remains poor.

EP-PED-16

Choroidal thickness in childhood

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Purpose: The involvement of the choroid in ocular growth regulation has been postulated by studies showing that refractive errors induce alterations in choroidal thickness (ChT). The advent of the optical coherence tomography (OCT) has enabled imaging and quantitative assessment of the choroid. ChT is being increasingly investigated in childhood ocular pathologies.

Methods: A systematic search of MEDLINE and EMBASE was conducted to September 2018 using search terms pertaining to choroidal thickness, OCT and childhood.

Results: Imposed refractive errors induce ChT fluctuation, so that the retina is moved forward and back to bring the photoreceptors near the focal plane. Myopic defocus has a greater impact on emmetropization compared to hyperopic defocus. As regards topographic variation, choroid appears thinner nasally and thickest at the temporal region. Myopic eyes have thinner choroids compared to emmetropic and hyperopic eyes. ChT demonstrates diurnal oscillations, with an increasing trend from morning to evening, which is in anti-

phase with axial length changes. In addition, orthokeratology used for treatment of myopic progression in children, imposes peripheral myopic defocus and leads to increased subfoveal ChT and thickening of the large choroidal vessels. 1% atropine also appears to cause choroidal thickening in healthy children to a variable extent at different regions. With respect to ROP, infants SGA at birth demonstrate peripapillary choroidal thinning compared to AGA. The more severe the ROP, the thinner the ChT is, particularly at the central and temporal sectors.
Conclusions: Blocking short periods of hyperopic defocus could contribute to the prevention of myopic development. ChT thinning occurs before axial elongation, indicating that ChT could serve as a marker of myopic progression. These findings imply that ChT variation correlates to refractive development. Choroidal abnormalities in premature and full-term infants are yet to be established.

EP-PED-18

The impact of childhood blindness in the lives of blind children, their family and society in a resource poor country

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Purpose: To explore the impact of childhood blindness in the lives of blind children and their community members in a resource poor country.
Methods: Qualitative Interviewing. A total of 21 IDIs and 3 FGDs, were conducted with 45 blind or severely visually impaired children, family and other community members. After recording and transcribing the interviews, a thematic approach to data analysis was used to explore the impact of blindness/severe visual impairment in children's day-to-day lives and in the lives of family/community members.
Results: The main themes that emerged were (i) Exclusion, (ii) Stigmatisation, (iii) Burdensomeness and (iv) Despair. Exclusion refers to being excluded from participating in household or social activities that their peers participate in; Stigmatisation refers to being taunted for their disability; Burdensomeness refers to being seen as a burden to family and community. Blind children were at risk of being bullied by their peers and community members and family members despaired of their condition and the lack of finances to cater for them.
Conclusions: It is crucial that interventions be developed to fully integrate blind children into society. Such interventions should include rehabilitation, counselling of the children and family members to reduce the impact of childhood blindness in blind children, their families and communities.

EP-PED-19

Measuring cataract surgical services in children: an example from a developing economy

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Purpose: To assess cataract surgical services in children in a developing economy by measuring the Childhood Cataract Surgical Rate CCSR.
Methods: The records of all children aged 15 and below who received cataract surgery at a tertiary eye facility between January 2008 and December 2017 were retrieved. The mean cataract surgical rate per year for non-traumatic cataracts for children living in the region was calculated.
Results: During the study period, 108 children underwent cataract surgery, out of which 62 of them were resident in the region. There were 43 cases of non-traumatic operated cataracts in the region. Male female ratio was 1:1. Age range was 1 month -13 years and mean duration (in months) before presentation was 7.8 ±16.04. The mean childhood cataract surgical rate was 1.47/million population/year.
Conclusions: The childhood cataract surgical rate is very low suggesting barriers to the utilisation of childhood cataract services. Appropriate policies should be developed and implemented to increase the uptake of cataract surgery in children requiring the service.

EP-PED-20

The state of the sensorimotor reactions of children of primary school age depending on the position of the eyeball in the orbit

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Purpose: to examine the state of the sensorimotor reactions of children of primary school age depending on the position of the eyeball in the orbit
Methods: we observed 25 children (50 eyes). The patients were divided into 2 group.The criteria for the formation of groups were: the type of refraction and the position of the eyeballs in orbit.Group 1 comprised 13 children (26 eyes) with an orpthophoria against the background of a hypermetropic refraction, 2 group - 12 children (24 eyes) with the diagnosis of the concomitant convergentstrabismus against the background of a hypermetropic refraction. Properties of the nervous system we studiedby means of hardware-software complex "NS-Psikhotest"(http://neurosoft.com/ru).
Results: the mobility of the nervous system was determined using a simple visual-motor reaction (PZMR).The survey also found that in children of the 2 group the value fortime of the PZMR exceeds in 1.3 times the value of the PZMR of children of the 1 group (373±2,7ms and 291.4±1,9ms, respectively) ($p< 0.000$).In children of the 1 group, the value of the reaction time corresponds to the age norm (227-353ms) and the average level of mobility of the nervous processes. This feature is defined in index of the standard deviation, the time of which in children of group 2 is 3.4 times longer than the reaction time in children of group 1($p< 0.00001$).
Conclusions: low speed PZMR and pronounced inertness of the nervous processes in children 2 group point to mismatch in the relationship between the centers of the visual and motor analyzers. The functional level of the system of children of group 1 demonstrates a greater tendency to show adaptive reactions of the body and the ability of the central nervous system to form in accordance with the task of the functional system and keep it for a long time.

EP-PED-21

The reaction to a moving object of children of primary school

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Purpose: to examine complex sensorimotor reactions of children of primary school age depending on the position of the eyeball in the orbit
Methods: 50 eyes of 25 children, aged 6-11 years were examined. The patients were divided into 2 group. The criteria for the formation of groups were: the type of refraction and the position of the eyeballs in orbit.
The 1st group consisted of 13 children (26 eyes) with an orpthophoria against the background of a hypermetropic refraction;
The 2nd group - 12 children (24 eyes) with the diagnosis of the concomitant convergent strabismus against the background of a hypermetropic refraction.
To all patients standard ophthalmologic examination was conducted.
Properties of the nervous system we studied by means of hardware-software complex "NS-Psikhotest"(http://neurosoft.com/ru).
Results: The balance of the process of excitation and inhibition ("Direction"): 10. Balanced excitation and inhibition process. The balance of the process of excitation and inhibition ("Direction"): 27. The predominance of the inhibitory process. The balance of the process of excitation and inhibition ("Direction") - 88.
The absolute predominance of the excitatory process. POSITIVE VALUE of the average group indicator of RMO time in children 2 groups 41.1±1.1 is a consequence of the predominance of inhibitory processes in the central nervous system.
NEGATIVE VALUE of the average group indicator of RMO time in children of 1 group -30±1.7 is evidence of the predominance of the excitatory process in the central nervous system.
Conclusions: 1. The accuracy of the reactions in the RMO test is an informative indicator characterizing the reactivity of the central nervous system. 2. The positive value of the average group indicator of RMO time in children 2 group 41.1 ± 1.1 is a consequence of the imbalance of the nervous processes with a predominance of the strength of the inhibitory processes in the central nervous system.

EP-PED-22

The frequency of retinal haemorrhage and small tufts of fibrovascular proliferation in prethreshold retinopathy of prematurity

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Purpose: To investigate the frequency of retinal haemorrhage (RH) and small tufts of fibrovascular proliferation (FVP) in prethreshold retinopathy of prematurity (ROP) defined in the Early Treatment of Retinopathy of Prematurity (ETROP) trial and compare them between type 1 and 2 ROP.
Methods: The records of preterm infants with prethreshold ROP were recruited. The gestational age (GA), birth weight (BW) were noted. The worst ocular findings during follow-up was studied out. The location, stage, presence of pre-plus, Plus disease, presence of RH, small tufts of FVP were noted. Eyes were classified into two groups: type 1 and 2. The frequency of RH, small tufts of FVP were compared between groups. The treatment modalities were reported.
Results: 73 eyes of 42 preterm infants with prethreshold ROP were recruited. Type 1 ROP was present in 35 eyes of 18 infants, type 2 ROP was present in 38 eyes of 24 infants. The mean GA and BW were 27,7±2,6, 28,1±1,8 weeks and 963,7±248,4, 1106,6±359,8gr in type 1 and 2 ROP, respectively. In type 1 ROP group, agressive posterior ROP was present in 4 eyes, zon 2, stage 3 ROP with plus disease was present in 27 eyes and in 4 eyes there was zon 1, stage 3 ROP with plus disease. Intravitreal injection of bevacizumab and ranibizumab was administered in 8 and 21 eyes, respectively. Panretinal laser photocoagulation was performed in 6 eyes. In infants with type 2 ROP, pre-plus was present in 17 eyes, zon 2 stage 3 ROP was present in 37 eyes and there was zon 1, stage 2 ROP in 1 eye. Retinal haemorraghe was present in 11 eyes in both groups (31,4%, 28,9% in type 1 and type 2 ROP, respectively). Small tufts of FVPs were present in 4 (11,4%) eyes and 24 (63,1%) eyes in type 1 and 2 ROP, respectively.
Conclusions: The presence of retinal haemorrhage was seem to be similar in type 1 and 2 prethreshold disease but small tufts of FVPs was markedly seen in type 2 ROP. This finding might be used as a prognostic factor in the screening of ROP.

EP-PED-23

Complication of strabismus surgery (clinical case)

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Purpose: Share own experience and get Experts' advice
Methods: Clinical Case - Patient: Female 13y Old
Race - Caucasian
Vis OD= 0.8 - 0.5ax125=0.9-1.0
Vis OS=0.5-0.6 -0.5 -0.5 ax 65=0.9-1.0
Fundus - without abnormality
Pupil Reaction - N
Lang II - Neg.
Convergence OU - 25PD in the distance. 30 PD - near.
Vertical - Hyper deviation OD-25PD.
Diagnosis: Esotropia, OD - IV nerve palsy, OS hypotropia.
Plan for Surgery: OD - inferior oblique tenotomy, OU - Medial rectus recession, OS - inferior rectus recession.
Results: Orthotropia, OD hemorrhage - during inferior oblique tenotomy. MRI - without orbital hemorrhage. OCT - Eye fundus without abnormality.
Conclusions: Post-operative care: OU - anti-inflammatory drops, Lubricant. OD - cold compresses, after 3 days Heparin gel 1000 IU/g - for topical use to the eyelid (skin) during 2-3 weeks.

EP-PED-24

Macular findings in children with sickle cell disease

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Purpose: Sickle cell disease (SCD) is the most prevalent hemoglobinopathy in the world. SCD is associated with multi-systemic vascular occlusive events that may affect retinal microvasculature. The aim of this study was to make a structural and vascular analyses of the macula of children with SCD and try to correlate the findings with clinical data.

Methods: Single-centre prospective study including 18 eyes of 10 children with average age of 11 ± 3,3 years. Macular Spectral Domain OCT (SD-OCT) and OCT Angiographgy (OCT-A) - Zeiss Cirrus HD-OCT 5000 Model with Angioplex - were performed centered in fovea and 6mm temporal to macula. Macular thickness and vascular density were analyzed.
Results: The best corrected visual acuity was 0,9 bilaterally. The mean cycloplegic spherical equivalent was 0,5 in the right eye and +0,70 in the left eye. Six eyes presented sclerotic jaundice (33%). Eight eyes presented with non-proliferative retinopathy (44%). Temporal retina tends to be thinner in eyes with retinopathy (p=0,005). Vessel density, both superficial and deep, was also reduced in eyes with retinopathy (p=0,01).
Conclusions: This studied showed that temporal retina is the most susceptible region to damage. Temporal thinning and reduced vascular density can predict the presence of retinopathy. As these findings are most of times undetectable in ophthalmological examination, the role of OCT-A in these patients screening is crucial.

EP-PED-25

Sickle cell associated retinopathy in pediatric age

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Purpose: Sickle cell anemia is an autossomal recessive disorder characterized by capillary occlusions that can affect the retina. The aim of the study was to characterize sickle cell associated retinopathy in children that were referred to our ophthalmology department in the last 6 years.
Methods: A group of 14 patients diagnosed with sickle cell anemia with ages ranging from 4 to 18 years were studied. Twelve patients were referred for retinopathy screening and one patient was admitted to the emergency room with vision loss. All patients had their haemoglobin phenotype evaluated (SS:sickle cell homozygotes; AS: sickle cell heterozygotes; S-Beta: sickle cell/beta thalassemia heterozygotes). Ophthalmological examinations included biomicroscopy and ophthalmoscopy in all patients. Optical coherence tomography and fluorescein angiography were also performed if significant lesions were detected. Laser treatment and surgery were done if needed.
Results: We identified 11 patients with hemoglobin SS, 1 patient with hemoglobin S-Beta and 2 with hemoglobin AS. The most common ocular lesions were vascular tortuosity and peripheral retinal occlusion which were found in 2 patients with Hb-SS, 1 patient with Hb-S beta and 2 patients with Hb-AS. These lesions were observed more frequently in the peripheral retina. Two patients underwent prophylactic laser treatment and one patient had proliferative retinopathy with hemovitreous and retinal detachment upon presentation (Hb S-beta phenotype).
Conclusions: In a group of 14 patients with sickle cell disease, we found retinopathy in 5 patients. As described in previous series, the majority of our patients with retinal lesions were asymptomatic. Nonetheless, proliferative retinopathy with permanent visual sequelae can occur. Therefore, this study supports early and continuous ophthalmological examinations of children with sickle cell disease to prevent irreversible consequences to visual function.

EP-PED-26

Comparative assessment of the prevalence of refractive anomalies among children and adolescents, depending on the type of settlement

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The purpose of the study: To conduct the comparative assessment of prevalence of refractive anomalies among children and adolescents depending on type of settlement.
Selective summation for ophthalmologic examination was formed with taking into account the size of the marginal error of not more than 5% for prevalence rate of anomalies of refraction in all age (5-9, 10-14, 15-19 years) and gender groups in all types of settlements (big cities, small towns and villages).
All children and adolescents included into focus groups were examined by ophthalmologists in mobile groups of "the National Ophthalmological Centre" named after Z.Aliyeva.
Achieved results: Refractive anomalies were identified at 18,3±2,2; 12,0±1,9 and 11,0±1,8% of children of age 5 - 9 years respectively in big cities, small towns and villages. Refractive anomalies among children living in big cities was more than among children in small towns and villages. These settlements were significantly different from each other because of prevalence rate of refractive anomalies among children of age 10 - 14 years (31,0±2,7; 18,1±2,2 & 13,7±2,0%) and adolescents of age 15 - 19 years (34,7±2,7; 15,7±2,1 & 13,0±1,9%).
Conclusions: Prevalence of refractive anomalies among children and adolescents depends on habitat, more in large cities, less in small towns and villages. Different prevalence rate of refractive anomalies between big cities and small settlements is more pronounced at older ages (18,3±2,2; 12,0±1,9 & 11,0±1,8% on age 5 - 9 years, 34,7±2,74 15,7±2,1 & 13,0±1,9% on age 15 - 19 years). In big cities and small towns myopia prevails among forms of refractive anomalies, hyperopia occurs with a similar frequency in all types of settlements.
Keywords: prevalence, refractive anomalies, children and adolescents, comparative assessment

EP-PED-27

Successful management bilateral persistent pupillary membrane

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Purpose: To report a rare case of bilateral persistent pupillary membrane.and to describe its successful management.
Methods: Diagnosis was made based on history taking and complete ophthalmology examinations
Results: An 8-year-old boy visited the pediatric ophthalmology outpatient clinic, of Dr. Saiful Anwar General Hospital with blurred vision on both eyes. Visual acuity examination on his right and left eye showed 20/60 and 20/50 best corrected visual acuity respectively. Physical examination showed strand of tissue crossing the pupil on his both eyes. On dilated funduscopy exam, posterior segment of both eyes were normal. We diagnosed the patients with bilateral persistent pupillary membrane and deprivation amblyopia. Patient underwent surgical membranectomy, start with the right eye and left eye four months later. The pupils of both eyes after the surgery were round and the

visual axes were opened. Visual acuity improvement were noted at 6 month later, with best corrected visual acuity of right eye was 20/25 and left eye was 20/30.

Conclusions: We have reported a rare case of bilateral persistent pupillary membrane, which is its incidence is 95% in newborn and 20% in adults, but only few of it remain persistent, and the highest type of PPM is a hyperplastic PPM with the incidence rate of 30-95%. This patient showed a successful management by performing bilateral membranectomy as surgical management, and succeed to open the visual axes of both eyes. The follow up until six month afterwards showed visual acuity improvement and no complication.

EP-PED-28

Diagnosing difficult cases of lacrimal obstruction in children - is computed tomography helpful?

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Purpose: To show difficulties in diagnosing the aethiology and discuss the possible treatment of lacrimal obstruction in patients who failed previous attempts of treatment, especially in cases of facial abnormalities, Down syndrome, arhinia, post-inflammatory obstructions or after injuries.

Methods: The medical records of 46 children (age 2-17, medium age 4) with epiphora were retrospectively reviewed. The chosen group of patients consisted of children who still presented the symptoms of epiphora after previous attempts of treatment which was two-time probing of lacrimal duct, intubation, post-traumatic supply, lacrimal reconstructions. All patients were assessed by clinical history, examination and computed tomography (CT) to evaluate periocular pathology and nasolacrimal drainage system (e.g. the abnormalities of orbit, sinus and other facial structures). CT was performed under general anesthesia.

Results: 12 (26,09%) patients presented simple lacrimal stenosis which required nasolacrimal surgery, 15 (32,61%) had lacrimal stenosis and laryngological problems which required nasolacrimal surgery and laryngological treatment, 10 (21,74%) had laryngological problems such as maxillary or ethmoidal sinusitis requiring only laryngological care. Allergy was manifested in 4 (8,69 %) cases. Other causes included structural bone abnormalities - 5 (10,86 %)

Conclusions: CT imaging of lacrimal pathway is useful in the assessment of patients with symptoms of lacrimal drainage obstruction for imaging both nasolacrimal drainage and nearby anatomical structures. This information is helpful in planning surgical interventions and non-surgical management. In especially difficult cases it is worth to consider performing dacryocystorhinostomy.

EP-PED-29

Long-term results of primary filtration viscosurgery in congenital glaucoma (CG)

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Purpose: To analyze the long-term results of viscosinusotrabeculotomy (VSTT) as a primary procedure in CG surgery in 3 years follow-up.

Methods: VSTT includes dispersive viscoelastic, containing hyaluronic acid, injected into the anterior chamber (AC) through limbal paracentesis, between scleral flaps, sclera and conjunctiva was performed at 54 children (91 eyes) with CG at age 1-36 mo/o (average 8,7±8,2): bilateral - 37 (68,5%), unilateral - 17 (31,5%) patients. CG were mostly far-advanced - 68,1%, advanced stage - 31,9%. Corneal diameter (CD) - from 12 to 16,5 mm on all eyes, corneal edema and diffuse opacities - on 73 eyes. Initial intraocular pressure (IOP) was 31,9±4,5 (range 23-49) mm Hg, axial length (AL) - 24,3±1,7 (range 20-30,2) mm, AC depth - 3,8±0,47 (range 2,2-4,8) mm. Goniodisgenesis II-III stages with anterior iris attachment and goniosynechias were detected.

Results: Viscoelastic, containing hyaluronic acid during the VSTT play a positive influence on the operation process: maintained the AC depth, avoid IOP fall-off, prevented iris prolapse and reduced the frequency and severity bleeding. In 3 mo postop IOP reduced to normal - mean 18,3 (± 2,9) mm Hg in 98,9% of cases. AL and AC depth decreased to 22,9 (±1,2) mm and 3,4 (±0,5) mm accordingly. Flat filtrative bleb was formed in operative zone in all cases. Ultrasound biomicroscopy allowed studying the acoustic morphology of the created ways of aqueous outflow in follow-up. After 12, 24, 36 mo IOP compensation achieved in 94,4%, 94% and 90% cases.

Conclusions: VSTT technique allowed to create and maintain new ways of aqueous outflow & preserve it's for a long period of time, making the filtrative primary surgery of CG successful. IOP compensation stabilized the eye size whats allowed to save and improve visual acuity, in infancy - to create the conditions for its formation.

EP-PED-30

Remote results of intravitreal (Melphalan) + intravenous (CEV-protocol) retinoblastoma primary chemotherapy

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Purpose: To analyze remote results of primary intravitreal (I/Vit) Melphalan + intravenous (I/V) CEV-protocol retinoblastoma (RB) management

Methods: Since 2009 65 children (93 eyes) at age 2mo/o - 6 y/o (average 24,11±6,9 mo) with unilateral (27 patients) and bilateral (38 patients 66 eyes) RB in stage T1- 12 eyes, T2 - 24 , T3 -14 ,T3a -28, T3b -14, T3c -1 were treated by elaborated primary I/Vit + I/V CEV-protocol chemotherapy [Bobrova, Sorochynska, 2009] with local tumor destruction (thermotherapy, lasercoagulation, cryotherapy, brachytherapy) - 33 eyes, EBRT - 8 cases.

Results: Summary 412 I/Vit injections were performed - 1 - 17 (ave 6) per eye, that allowed to decrease number of I/V CEV-protocol courses to ave 4,2 ±0,6. No complications were during I/Vit injection and in postop. 41 children (58 eyes) remains under dynamic supervision in RB stages: T1 - 10 eyes, T2 - 17, T3 - 6, T3a - 6, T3b - 18, T3c -1. 6 eyes in T3b-T3c stages were enucleated due to: poor tumor regress - 4 eyes, hemophthalmus & retinal detachment -1eye respectively. Hysthopathology revealed RB in 5 eyes without vital tumor cells in 3, retinocytoma - in 1. Tumor control was achieved in 47 eyes

(81,03 %).Follow up 6-109 (48,6±26,7) mo. Remote complications: partial cataract - 5 eyes (4 due to EBRT), local peripheric retinal degeneration "sole & pepper" without vision impairment - 32 eyes. RB new focuses appeared in 7 cases , progressive tumor growth - 17 . Relapse treatment was false in 6 eyes that were enucleated. Tumor regress was achieved in 46/58 (79,3%) eyes with total control in 41(70,6 %): in stage T1- 90% , T2 - 82,3%, T3 - 83,3%, T3a - 66,6%, T3b - 61,1%. Treatment proceeds in 5 eyes .
Conclusions: Primary I/Vit + I/V chemotherapy is effective and safe protocol due to double stress on the tumor, that allows to reduce number of chemoreduction courses with their negative general side effects.

EP-PED-31

Epidemiology of bacterial conjunctivitis in infants in a general hospital

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Purpose: Conjunctivitis is the most commonly encountered eye infection in children. This study aimed to determine the spectrum of microorganisms causing acute bacterial conjunctivitis in a Portuguese general hospital in two groups of pediatric patients: neonates and nonneonates.
Methods: A retrospective review was conducted of all children tested with conjunctival swabs in 2017. Patients were separated in 2 groups: neonates and nonneonates. The latter were further subdivided according to inpatient or outpatient setting.
Microorganisms were identified by culture and antimicrobial susceptibility test (AST) was performed.
Results: Ninety-four patients were included: 74 neonates and 20 nonneonates (age ranging from 1 month to 4 years). Bacterial pathogens were detected in 63% of conjunctival samples. The most prevalent organisms in neonates were *Escherichia coli* (21,6%) and *Staphylococcus aureus* (17,6%), while *Haemophilus influenzae* (25%) was the most cultured positive organism in nonneonates. In nonneonates hospitalized longer than two days, *methicillin-resistant Staphylococcus* was more prevalent.
Antimicrobial susceptibility results revealed that gram positive bacteria were more sensitive to aminoglycosides (Gentamicin) while most gram negative were susceptible to cephalosporins (cefotaxime and cefuroxime).
The most prescribed antibiotic was chloranphenicol, which was effective in most cases.
Conclusions: In nonneonates our results are similar to previous studies. However and contrarily to the previously published literature, the most prevalent organisms causing acute bacterial conjunctivitis in neonates were *Escherichia coli* and *Staphylococcus aureus.*
Conjunctival swabbing and AST can be relevant when empiric antibiotic therapy is ineffective. Nonetheless, there is a mismatch between antibiotics obtainable for AST and the ones commercially available in Portuguese practice. Further development of AST considering this issue would be useful.

EP-PED-32

Cerebral visual impairment in a developed nation - the current picture

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Purpose: Cerebral visual impairment (CVI) is the leading cause of visual impairment in developed nations. CVI can range from mild visual impairment to complete blindness. CVI is caused by retrochiasmic pathway pathology, comorbidities are often present. This study aimed to determine the current incidence and aetiological causes of CVI in New Zealand.
Methods: This cross-sectional review study was undertaken at the Blind and Low Vision Education Network New Zealand (BLENNZ), a national support service for all children in New Zealand with vision ≤6/18. All individuals included had a confirmed diagnosis of CVI. Data collected included demographic data, vision, underlying aetiology, and the presence of associated co-morbidities which included hearing loss, physical handicap, epilepsy, and developmental delay.
Results: A total of 225 children (60% male) with CVI were identified. Aetiological causes were 27.6% unknown, 24.4% hypoxia/asphyxia, 11.6% trauma from non-accidental injury, with infective, genetic, and prematurity factors comprising the remainder. Visual function ranged from 6/18-6/60 in 28.0% of children. Almost 30% of children had fixing and following vision, whilst 16.0% had no measurable vision. Comorbidities were present in 91.1% of children, and comprised of 6.7% hearing loss, 55.1% physical handicap, 51.6% epilepsy, and 88.9% developmental delay.
Conclusions: CVI is the leading cause of paediatric visual impairment in New Zealand. The majority of children with CVI have one or more comorbidities with the preponderance being developmental delay. Aetiological causes vary but a large number are considered avoidable, thus, further research to prevent or intervene in such cases is needed.

EP-PED-33

The effect of ahmed glaucoma valv (AGV) implantation on ocular motility

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Purpose: Evaluation of motility in patients undergoing AGV implantation by experienced surgeons in tertiary education hospital
Methods: The records of 17 patients who were followed in strabismus department due to diplopia or strabismus from 169 cases who underwent AGV implantation in the glaucoma department of our hospital, between 2010-2017 were analyzed retrospectively. Performed operations for strabismus, and other treatments were recorded. Postoperatively, 10 PD and below were considered successful in patients undergoing surgery.
Results: Of the 17 patients, 6 were female and 11 were male and the mean age was 15.94 ± 24.12 y.(range: 1-79). Fourteen of the patients were under 16 years of age and 7 of them had been operated for cataract previously. Strabismus was present before AGV implantation in all patients except three. Botulinum Toxin A (Btx A) injection was performed their lateral rectus as surgical treatment in 3 patients with exotropia, and the other patients underwent appropriate strabismus surgeries. The patients mean follow-up was 62 months (range 8-126 weeks). Surgical success was achieved in all patients except for

one patient with 25 prism residual horizontal strabismus. Fresnel Prism were given for effected eye for this patient.
Conclusions: Although the change in motility is not common in patients undergoing AGV implantation by experienced surgeons, careful monitoring of patients for their motility, both before and after the operation is important.

EP-PED-34

Correction of progressive myopia by distance-center bifocal soft contact lenses: changes in accommodation and axial length

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Purpose: To assess dynamics of changes in accommodation and axial length in myopic patients wearing bifocal soft contact lenses (BFSCLs).
Methods: Main and control groups of 50 children were created. Main group was corrected by distance-center BFSCLs with addition zone of 4.0D on the periphery (Fig. 1). Control group was corrected by spherical soft contact lenses (SSCLs).
Both groups are comparable: age, myopia degree, observation period, SCLs' material. In each group, two equivalent subgroups of patients with mild and moderate myopia were identified (M1 and M2 - main, C1 and C2 - control). Astigmatic and anisometropic refraction components of >1.0 D were the exclusion criteria.
Baseline measurements included amplitude of accommodation (AA), positive relative accommodation (PRA) and axial length (AL). Patients were examined before wearing SCLs and every 3 months during the year of observation.
Results: Change in accommodative function was obtained in both groups. Increase of AA and PRA was noted; the maximum effect among the users of BFSCLs was achieved earlier than in C1 and C2 groups (Fig. 2, 3).
The average increase in AL in M1 and M2 subgroups was significantly smaller than in C1 and C2 subgroups (0.11D and 0.67D respectively) (Table 1).
Within the first six months of observation, there was a tendency for an increase in AL in M1 and M2 subgroups, which was not statistically significant. In control group (C1, C2) a gradual increase of AL was observed regardless of myopia degree (Fig. 4).
Conclusions: The absence of a clinically significant increase in AL among users of BFSCLs may be due to simultaneous formation of a central focus and a peripheral myopic defocus.
BFSCLs with a distance-center zone and 4.0D addition on periphery resulted in the normalization of the initially reduced accommodative function within a shorter time compared to SSCLs.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Refractive Surgery

EP-REF-01

Cataract phacoemulsification complication rates: is there a difference between resident trainee vs staff ophthalmologist?

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Purpose: The aim of this study is to evaluate the induced astigmatism during cataract surgery, and to analyze whether it varies according to the surgical experience of the surgeon.
Methods: This study included 2937 eyes submitted to primary phacoemulsification cataract surgery performed by staff surgeons and resident trainees, from January to December 2017. There were no exclusion criteria. Data collected included the level of resident training (1-4 years of residency), case complexity (example: intraoperative floppy iris syndrome, pseudoexfoliation, bad collaboration, central leucoma, high myopia, narrow angle) and intraoperative complications.
Results: 74.4% of all surgeries were performed by staff surgeons while 25,6% were performed by resident trainees. 85.1% of the surgeries were simple. High myopia, pseudoexfoliation and narrow angle were the most common reason for complex cases. The overall complication rate was 3.6%. The most frequent complications were posterior capsule rupture (2.24%), and vitreous loss (1.26%). Complication rate was 5.5% in resident trainees and 3.0% in staff surgeons, with a statistically significant difference ($p = 0.003$, contingency coefficient: 0,057) The complication rate of resident trainees did not differ according to the level of residency. ($-1.96 \geq$ adjusted residuals ≥ 1.96).
Conclusions: The results presented an overall complication rates equal to that describe in literature. Complication rates were statistically higher in training residents than in staff surgeons, but the association was weak.

EP-REF-02

Prk with CXL beneficial for visual outcome in patients with keratoconus

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Purpose: to stop the keratoconus or the progression of the corneal thinning , to reduce the irregular astigmatism and improve BCVA.
Methods: 6 year study and follow up of the first patients - usually every 2-3 patients every month, almost 120 patients in 6 year. PRK using Wavelight eximer EX 500 and CXL UV 300 nm ,CCL 365. To these procedures we added a combined treatment reffering to Oculink or topography guided to ameliorate the cornea irregularities - also using Vibex Rapid- which is with a twice diffusion rate then the standard riboflavin .Not all the patients with keratoconus can succeed to topography guided PRK +CXL +- oculink /topography guided + Vibex rapid - the most probable are kc1 , kc1-kc2 , kc2 with k1-k2 not too high
Results: From 120 patients - 75 were with KC 1-2 , 25 with kc 1 and 20 with irregular astigmatism and thin cornea who were not good candidate for Lasik or Femto Lasik.

54 from 75 with Kc 1-2 had a better corrected distance visual acuity CDVA, most of them improved the vision with 2-3 lines; 8 of 21 improve the vision with 1 line, 9 had a corneal haze island , and only 3 cases continue the progression of the Kc after 3 years, the irregular astigmatism cases and KC 1 VA was 20/20 in their majority.
In 6 yr study from 100 cases with Kc only 3 of them continued with hibride contact lens, the others progression was stable. The cases with irregular astigmatism and thin corneas had a max BCVA and satisfied of the quality of their vision.
Conclusions: Topography guided PRK + Cxl is the most adequate method of stopping and improving the vision in patient with keratoconus, and in irregular astigmatism, or thin corneas topography guided is a safer method for not having complications in time. The goal of treatment is to flatten the steepest part of the cornea and to steepen the flattest area of the cornea.

EP-REF-03

Efficiency and predictability of femtosecond laser arcuate keratotomy for the correction of corneal astigmatism performed simultaneously with cataract surgery in elderly and middle-aged patients

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Purpose: To compare and evaluate the predictability, efficiency and safety of femtosecond laser arcuate keratotomy in cataract surgery in elderly and middle-aged persons.
Methods: A prospective, open-label study included 111 patients (139 eyes) who underwent surgical removal of the cataract or lensectomy with IOL implantation with femtosecond laser support and one-stage femtosecond laser arcuate keratotomy for concomitant preoperative corneal astigmatism correction. The patients were divided into 2 groups: Group 1 (main) - patients, observed up to 3 months, inclusive; Group 2 - patients, observed up to 6 months or more (up to 10 months). Additional clustering was held by age: younger than 60 years old and older than 60 years.
Results: The preoperative astigmatism values ranged from 0.75 to 2.0 diopters. The level of preoperative astigmatism decreased by more than 2 times, the maximum value at 1 month after surgery - 0.75 diopters and a minimum value of 3 months after the operation - 0.55 diopters. The difference between the astigmatism at 3 months after surgery and the subsequent follow-up period (more than 6 months) is less than 0.1 diopters, and the difference in residual astigmatism at 6 months and more than 6 months was not statistically significant ($p > 0.05$) . Stabilization of the astigmatism level occurs at 6 months of follow-up. The coefficient of astigmatism reduction is more significant in the group of patients older than 60 years and was 2.98 compared with the group younger than 60 years (2,3; $p < 0.05$). There was no difference between UCVA and BCVA is the group of patients younger than 60 years old and over 60 years in the patient group it was 0,06 ($p < 0.05$).
Conclusions: The present study confirmed that using femtosecond laser arcuate keratotomy it is possible to carry out the correction of astigmatism up to 1.75-2.0 diopters.

EP-REF-04

Determination of central corneal thickness in patients with refractive anomalies and emmetropy

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Purpose: The purpose of this study was to compare measurements of CCT in emmetropia and patient with refractive anomalies at the University Clinical Center of Kosovo.
Methods: We represent a retrospective research which was conducted at the University Clinical Center of Kosovo (UCCK), Department of Ophthalmology. Research respondents were patients with refractive anomalies. In this study were included 80 patients, divided into two groups: test and a control group. Mean age was (M=25.90, DS=7.16), men (N=41 or 51.3%) and women (N=39 or 48%). In both groups the CCT was measured by ultrasound pachymetry, the refractive anomalies determination by autorefractometer, and the measurement of the longitudinal axis by ultrasound. Keratometry was determined by keratorefractometer, IOP was measured by Goldman's method and the examination of the anterior and posterior segment by biomicroscopy and ophthalmoscopy.
Results: Results show that there is no differences in the CCT, Hyperopic (M=545,21 DS= 52.24), Myopic (M=547, 90 DS 47.93) and Emmetropic (M=550.75 DS 41.29). After measuring of the longitudinal axis and analyzing the data by means of Anova test, it appeared to be a significant difference between the analyzed groups, Hyperopic (M=21.99,21 DS=1.27), Myopics (M=23.21, DS=1.24), Emmetropic (M=22.36, DS=0.81). Results also revealed that there is correlation between the CCT and IOP, where increased of CCT decreases IOP and vice versa ($r=-0.26$, $p=0.01$).
Conclusions: The results have shown that CCT is thinner in myopic, but does not show correlation with hypermetrop and emmetrop.The CCT shows positive correlation with the IOP. Keratometry is not explained by CCT. There was no correlation between CCT and age.
Given the role of CCT ininterpreting IOP values,it is recommended to perform a systematic CCT measurementin routine clinical practice,whichwouldassistin thediagnosisofocularhypertension.

EP-REF-05

Normal values for corneal elevation and pachymetry of Saudi hyperopes using scheimpflug imaging

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Purpose: This study aims to establish a normative reference range with respect to corneal elevation tomography and thickness in Saudi hyperopes; thus, helping refractive specialists in screening this group for refractive surgery.
Methods: This is a retrospective study analyzing data gathered from the 4-maps refractive corneal topography display of Pentacam Scheimpflug. All Saudi hyperopic patients above 18 years of age visiting Al-Hokama tertiary eye center in Riyadh, Saudi Arabia, between 2009 and 2015 to seek refractive surgery and had no previous history of trauma, corneal pathology or refractive surgery were included in this study. Manifest refractive error was recorded for all patients and the topographic maps were reviewed to record the following values: anterior and posterior corneal elevation (at 5mm, 8 mm, apex and

thinnest), corneal pachymetry (at center, apex and thinnest), anterior chamber volume and depth. Data of the right eye only was analyzed by SPSS and the level of significance was 0.05.

Results: Our sample comprised of 55 patients (102 eyes); 29 (52.7 %) males and 26 (47.3%) females. The average anterior corneal elevation was 3.29±1.53 (SD) at 5 mm, 5.97±3.01 at 8 mm, 2.01±2.04 at apex and 1.75±2.31 at thinnest point. The mean posterior corneal elevation was 7.53 ±3.89 at 5 mm, 13.04±4.77 at 8 mm, 4.67±4.72 at apex and 5.92 ±5.11 at thinnest. Pachymetric values showed that the mean corneal thickness centrally was 554.75±36.65, 553.72±48.27 apically and 551.27±37.35 at the thinnest point. Furthermore, the mean anterior chamber volume was 150.95±40.77 while the mean anterior chamber depth was 2.73±0.40.

Conclusions: Corneal elevation indices and pachymetry of Saudi hyperopes was found to be generally variable compared to internationally reported values; therefore, elevation values greater than the mean by 2-3 standarad deviations should warrant further evaluation.

EP-REF-06

Iris reconstruction: 'In-the-bag' implantation of a customised iris implant

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Purpose: Recently, customised contralateral colour-matched silicone iris prostheses have been utilised for the treatment of post-traumatic iris defects, with favourable functional and cosmetic outcomes. We present a case of ‚in-the-bag' implantation of a custom made artificial iris implant with simultaneous cataract surgery.

A 26 year old female was referred for iris reconstruction following excision of a malignant iris melanoma resulting in a 4 clock hour iris defect. The uncorrected distance visual acuity (UDVA) in the affected eye was 20/30 due to glare and early cataract.

Methods: A custom iris prosthesis (Artificial Iris, Dr Schmidt Intraocularlinsen GmbH, Humanoptics AG) was ordered to match the colour of the patient's contralateral eye. A 3.2mm clear corneal incision and two paracenteses were made. A continuous curvilinear capsulorhexis was created, cataract removed, and IOL injected into the bag.

The artificial iris implant was trephined 10mm centrally, and two 3mm peripheral hemi-circle ‚iridectomies' created in the configuration of a mediaeval ‚battle-axe'. The artificial iris was then turned front surface down and folded in thirds along its length, with the trailing section folded over last. The leading edge of the folded iris prosthesis was introduced through the corneal incision into the peripheral capsular bag. The IOL- iris complex was centered with the two peripheral ‚iridectomies' positioned in an area where they were covered by the remaining iris.

Results: Postoperative UDVA was 20/25. The IOL-iris prosthesis complex was well positioned within the capsular bag.

Conclusions: Custom-made artificial iris implants in patients with iris defects can result in excellent functional and cosmetic outcomes. Importantly in this case, the iris prosthesis was placed in the capsular bag, allowing for the anterior chamber angle, residual peripheral iris and ciliary processes in the area of prior tumor excision to still fully be visualized on gonioscopy.

EP-REF-07

Atopic dermatitis and cataracts in adulthood: case report

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Purpose: Atopic dermatitis (AD) is a chronic, pruritic, eczematous skin disease mediated through an immediate (type I) hypersensitivity reaction. The incidence of cataract development has been reported from 5% to 38%. The mechanism of posterior and anterior subcapsular cataracts is not known, however, habitual rubbing of the face in pruritic conditions may play a role, and patients with AD have higher levels of protein flare in the aqueous humor. Cataracts may be due to atopic dermatitis but may also occur secondary to the use of corticosteroids.

Methods: We describe a boy with AD, whom was diagnosed with bilateral anterior sub-capsular cataracts.

Results: We describe a 21-year-old African-Portuguese boy with severe AD which was diagnosed at age 3 months, that required regular hydrocortisone 1% cream to control his symptoms on his arms and face. He presented to the Ophthalmology Urgency Service with 1-year history of progressive blurring of vision in the right and left eye. On ophthalmologic examination his best corrected visual acuity was 0.5 in both eyes. On slit-lamp, we observed anterior subcapsular cataracts in both eyes. Fundoscopic examination was normal. Additionally, face and arms skin showed a severe AD. He denied history of inhaler or oral medication (like steroids).

In blood tests, there were no endocrine disorders and biochemical abnormalities (serum levels of glucose, calcium, phosphorus, copper, and thyroid hormones). He was submitted to phacoemulsification surgery and a multifocal lens replaced his natural lens.

In first month of follow up, his visual acuity was 0.8 with no correction and 1.0 with best correction, in both eyes.

Conclusions: The incidence of cataract in AD corticosteroid-naive patients was no different when compared with the patients with a history of topical use. This strongly implies that the incidence of subcapsular cataracts formation in patients with AD cannot be explained by the use of corticosteroids alone.

EP-REF-08

Results of supplementary pseudophakic toric sulcus-based IOL implantation for residual refractive error correction after cataract phacoemulsification

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Purpose: To analyze the postoperative follow-up data after implantation of Rayner Sulcoflex supplementary sulcus IOL and an assessment of its rotational stability.

Methods: The study included 7 patients (7 eyes), of which 5 male and 2 female, the average age was 61 ± 7.2 (37-83) years. The follow-up period was 6.8 ± 1.1 (6-9) months. In all investigated cases, a complete preoperative examination was performed. All patients were implanted with an additional sulcus pseudophakic IOL Rayner Sulcoflex Toric 653T according to a standard procedure.

Results: In 3 cases out of 7, Sulcoflex Rayner implanted IOLs were rotated. In other cases, the lens was characterized by rotational stability throughout the follow-up period. The correlation between the rotation of the additional IOL and its type was not revealed. For the correct positioning of the lenses in these three cases, repeated surgical procedures were performed. On average, after 2 weeks IOL was re-rotated in patients, after which they were fixed to the iris. At the maximum time of follow-up, in all seven cases, a positive functional effect was noted, while the patients were satisfied with the result.
Conclusions: Implantation of additional pseudophakic toric IOL is a safe and effective method for correcting residual refractive error after cataract phacoemulsification.

EP-REF-09

Phakic intraocular lens implantation for myopia correction: a comparative analysis

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Purpose: Comparative analysis of various models of phakic intraocular lenses (PIOL) implantation possibility in patients with myopia
Methods: A prospective, open-label study included 61 patients (112 eyes) with myopia. The mean age of the patients was 29.4 ± 5.1 years (20-42), the mean follow-up period was 30.3 ± 10.6 (12-60) months. Three groups were determined: 1 - IPCL implantation (n = 40), 2 - Acrysof Cachet (n = 36) and 3-ICL (n = 36). In the postoperative period, we evaluated the UCVA, BCVA, IOP, pachymetry data, the number of endothelial cells and higher order aberrations. In the preoperative period, SE was -11.6±3.7, -9.59±1.97, and -12.3±4.8 in the IPCL, Acrysof Cachet and ICL groups, respectively.
Results: At the maximum follow-up period, SE was comparable between groups (p=0.234). The mean decrease in astigmatism was 0.31±0.72, 0.45±0.62 and 0±0.57 D (p=0.008). Emmetropia (±1.0 D) was achieved in 87.5%, 91.7% and 94.5% of the eyes in IPCL, Acrysof Cachet and ICL,taking into account the corrected residual myopia in the long-term follow-up period. The frequency of improvement of BCVA by more than 1 line was 25.2%, 19.2% and 38.4% in these groups, respectively (p=0.151). Higher order aberrations (p = 0.039), vertical trefoil (p = 0.032), spherical aberrations (p = 0.001) were higher in the IPCL group than in ICL.
Conclusions: Implantation of phakic intraocular lenses is an effective and safe method for high myopia correction. The performed analysis showed that there were no significant differences in the functional results of phakic intraocular lenses IPCL, Acrysof Cachet and ICL implantation. Implantation of posterior chamber PIOL IPCL and ICL seems to be the optimal way to correct high myopia.

EP-REF-10

Keratorefractive surgery for residual refractive error correction in pseudophakic patients

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Purpose: Evaluation of the visual and refractive results of additional correction using LASIK and PRK methods in patients with residual refractive error after previous cataract surgery.
Methods: The prospective open study included 57 patients (79 eyes) who previously underwent cataract phacoemulsification (n = 37) or refractive lensectomy (n = 42) with various IOL models implantation (2012-2017). The average age of patients was 50.8 ± 13.9 (19-79) years. Operations LASIK (91.1%) and PRK (8.9%) were carried out according to standard methods.The target refraction ranged from -0.25 to 0.25 D in most (97.5%) cases. The follow-up period ranged from 6 to 9 months.
Results: The patients were divided into groups according to the type of residual refractive error (Group 1-myopia, group II - emmetropia and group III - hyperopia).
In group II, the values of the cylindrical component of refraction were significantly higher compared with groups I and III ($p < 0.05$).
In group I, a significant ($p < 0.05$) decrease in the spherical component of refraction from -1.36 ± 0.92 to -0.2 ± 0.8 D was observed.
In patients of group II, there was a slight increase in the spherical component of refraction from 0 ± 0.20 to 0.25 ± 0.29 D ($p > 0.05$).
In group III, a significant ($p < 0.05$) decrease was observed in the spherical component of refraction from 1.27 ± 0.69 to 0.43 ± 0.49 D.).
In group II, the largest decrease in the cylindrical component was observed from -1.6 ± 1.0 to 0.03 ± 1.10 Dptr ($p < 0.01$).
In all the studied groups, a statistically significant ($p < 0.05$) increase in UCFVA was revealed in the postoperative period.
Conclusions: The high efficiency of the correction using the LASIK, PRK and femtoLASIK methods on pseudophakic eyes with the achievement of the target refraction in most of the studied cases was shown. This method can be used as an alternative to spectacle and contact correction.

EP-REF-11

Results of the additional correction using LASIK and PRK on pseudophakic eyes depending on the type of implanted IOL

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Purpose: Analysis of the results of the additional correction of residual ametropia using LASIK and PRK on pseudophakic eyes, depending on the type of previously implanted IOL.
Methods: The prospective open study included 57 patients (79 eyes), who underwent cataract phacoemulsification (n = 37) or refractive lensectomy (n = 42) with the implantation of various IOL models. Of the total number of patients, men accounted for 45.6%, women - 54.5%. The average age of patients was 50.8 ± 13.9 years. LASIK (n = 72; 91.1%) and PRK (n = 7; 8.9%) were carried out according to the standard procedure. In 6 (7.6%) cases, femtolaser maintenance of laser correction was performed. Target refraction ranged from -0.25 to 0.25 D in most (97.5%) cases. The follow-up period was 6 to 9 months.
Results: By type of previously implanted IOLs, group I (spherical and aspherical monofocal IOL, 38 eyes) and group II (multifocal IOL, 39 eyes) were determined. The studied groups were comparable in all analyzed parameters ($p > 0.05$) with the exception of the cylindrical equivalent (-1.45 ± 0.43 in group I and -0.4 ± 0.29 in group II, $p = 0.046$). In group I, there was a statistically significant ($p < 0.05$) increase in UCFVA from 0.31 ± 0.14 to 0.72 ± 0.22. The target refraction was achieved in 94.8% of cases (n = 36). A significant ($p < 0.05$) decrease in the cylindrical equivalent was noted after 6 months of follow-up (-1.45 ± 0.43 D and -0.18 ± 0.80 D, respectively). In patients of group II, a similar dynamics of UCFVAwas observed (0.43 ± 0.17 and 0.80 ± 0.18 in the pre- and postoperative period, respectively, $p < 0.05$). Target refraction was achieved in 90.8% of cases (n = 36).

Conclusions: The possibility of using LASIK and PRK for the additional correction of residual ametropia in pseudophakic eyes is shown. The effectiveness of the method for achieving the target UCFVAdid not depend on the type of implanted IOL. Differences are shown only for the cylindrical equivalent.

EP-REF-12

Clinical results of photorefractive keratectomy in patients with myopia greater than -8 D

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Purpose: A prospective study of the safety and efficacy of photorefractive keratectomy (PRK) in patients with a spherical equivalent (SEQ) greater than -8 D using the WaveLight ALLEGRETTO WAVE Eye-Q laser.
Methods: Twenty-one eyes of 13 patients with the spherical equivalent (SEQ) greater than -8 D were monitored over a year. The PRK was performed with the WaveLight ALLEGRETTO WAVE Eye-Q laser in the optical zone of 6.0 mm, while phototherapeutic keratectomy (PTK) for 50 micrometers and 6.5 mm optical zone was used for the removal of the epithelium. Before and after the ablation, a near-freezing point cold Ringer‘s solution was used for 30 seconds, and immediately after the use of the eximer laser, 0.02% mitomycin was applied for 60 seconds.
Results: Three months after the successful PRK, without any recorded intra and postoperative complications, all patients showed a statistically significant improvement in uncorrected visual acuity, while no eye has lost any line of the best corrected visual acuity (BCVA). SEQ was reduced from -10.35 +/- 2.12 D to -0.68 +/- 0.78 D, and BCVA was increased from 0.73 +/- 1.27 to 0.81 +/- 1.16, without achieving statistical significance. Similar results were maintained 6 months after the intervention, while after a year SEQ increased to 1.61 +/- 1.18 D, while BCVA was further increased to 0.88 +/- 1.34.
Conclusions: The results of PRK using the WaveLight ALLEGRETTO WAVE Eye-Q lasers in patients with myopia greater than -8 D demonstrate a high level of safety and a very good accuracy. The correct selection of patients and the application of the appropriate refractive method is crucial for achieving good results.

EP-REF-13

Visual performance in a flight simulator: multifocal intraocular lenses in pilots

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Purpose: To compare the performance of adults with multifocal intraocular lenses (MIOLs) in a realistic flight simulator with age-matched adults with monofocal intraocular lenses (IOLs).
Methods: Twenty-five adults ≥60 years with either bilateral MIOL or bilateral IOL implantation were enrolled. Visual function tests included visual acuity and contrast sensitivity under photopic and mesopic conditions, defocus curves and low luminance contrast sensitivity tests in the presence and absence of glare (Mesotest II), as well as halo size measurement using an app-based halometer (Aston halometer). Flight simulator performance was assessed in a fixed-based flight simulator (PS4.5). Subjects completed three simulated landing runs in both daytime and night-time conditions in a randomised order, including a series of visual tasks critical for safety.
Results: Of the 25 age-matched enrolled subjects, 13 had bilateral MIOLs and 12 had bilateral IOLs. Photopic and mesopic visual acuity or contrast sensitivity were not significantly different between the groups. Larger halo areas were seen in the MIOL group and Mesotest values were significantly worse in the MIOL group, both with and without glare. The defocus curves showed better uncorrected visual acuity at intermediate and near distances for the MIOL group. There were no significant differences regarding performance of the vision-related flight simulator tasks between both groups.
Conclusions: The performance of visually related flight simulator tasks was not significantly impaired in older adults with MIOLs compared with age-matched adults with monofocal IOLs. These findings suggest that MIOLs do not impair visual performance in a flight simulator.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Retina

EP-RET-01

Surgical treatment of refractory macular hole with autologous neurosensory retinal flap transplantation: a case report

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Purpose: To present a case of refractory macular hole after micro-incision vitrectomy and internal limited membrane (ILM) peeling that was successfully closed after full-layer autologous neurosensory retinal flap transplantation.
Methods: Observation case report
Results: A 69-year-old female patient initially presented to our hospital with central scotoma in right eyes for 6 months. Her best-corrected visual acuity (BCVA) was 20/800 in the right eye. Optical coherence tomography (OCT) revealed a stage IV macular hole. 25-gauge pars plana vitrectomy with internal limited membrane (ILM) peeling and 18% SF6 tamponade were performed. One month postoperatively, the macular hole still existed and became even larger. We then did fluid-gas exchange with 18% SF6 tamponade after 2 months of observation without improvement, but the macular hole still existed. We finally performed vitrectomy with autologous neurosensory retinal flap transplantation and silicone oil tamponade 1 month later, and complete macular hole closure was achieved. The condition was stable after silicone oil removal with BCVA of 20/200 on the last visit 4 months later.
Conclusions: For those macular holes which cannot be closed after vitrectomy with ILM peeling could have good anatomic closure and functional improvement after full-layer autologous neurosensory retinal flap transplantation.

EP-RET-02

Long-term intraocular pressure variations following multiple injections of Bevacizumab in patients with diabetic retinopathy

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Introduction: Elevated intraocular pressure has been reported as potential, although rare side effect following multiple intravitreal injections of anti-VEGF drug Bevacizumab.
Purpose: To estimate the long-term variations of intraocular pressure (IOP) and potential risk of secondary glaucoma in patients with diabetic retinopathy treated with multiple injections of Bevacizumab.
Methods: 125 patients with diabetic retinopathy and/or diabetic macular edema treated with ≥ 3 injections of Bevacizumab were included in the study, that was performed at Medical Retina Unit in University Eye Clinic in Skopje. The patients have undergone standard investigations,including determination of best corrected visual acuity, clinical examination, tonometry and Spectral-Domain Optical Coherence Tomography Topcon 3D-2000.
Results: The participants were divided in 4 subgroups based on the number of applied injections:group I - 3 injections (74 eyes), group II - VI injections (38 eyes), group III - IX injections (11 eyes) and group IV - ≥ X injections (2 eyes).Intraocular pressure was measured prior and after each injection.
Target elevation of IOP was set on ≥ 21mmHg.
Average post-intervention IOP in the first group was 14,06 mmHg, in the second group 13,99 mmHg, in the III group 14,9 mmHg and in the IV group 15,95 mmHg.
The analysis of the results has shown corresponding of slight elevation of IOP with the number of applied injections,but without statistically significance.
Conclusions: The present study did not show long-term increased risk of elevated intraocular pressure following multiple injections of Bevacizumab in patients with diabetic retinopathy. However, the potential risk should be taken into account and therefore conducting obligatory tonometry following each injection of Bevacizumab in patients submitted to anti-VEGF treatment

EP-RET-03

Changes of choroidal structures and its correlations with inheritance mode in patients with retinitis pigmentosa

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Purpose: To investigate changes of the choroidal structures in the enhanced depth imaging optical coherence tomographic (EDI-OCT) images in patients with retinitis pigmentosa (RP) and to examine relationships of the choroidal structures with the inheritance mode.
Methods: The EDI-OCT images of 90 eyes with typical RP and 80 age-, sex-, and axial length-matched normal eyes were binarized by ImageJ. The cross sectional luminal and stromal areas of the inner and outer subfoveal choroid of 1,500-µm width were measured. The inner choroid included the choriocapillaris and medium vessel layer, and the outer choroid included the larger vessel layer.
Results: In the inner choroid, the luminal area and the ratio of luminal/total choroidal area (L/C ratio) were significantly smaller in RP than in controls (P=0.010, P< 0.001, respectively), whereas the stromal area was not significantly different (P=0.114). The L/C ratio of the inner and whole choroid was significantly different among the autosomal dominant, autosomal recessive, and simplex RP after adjustments made for the axial length, age, and sex (P = 0.010, P = 0.016, respectively). The L/C ratio of the inner and whole choroid was lowest in patients with autosomal recessive RP.
Conclusions: The binarization of the EDI-OCT images is a useful and non-invasive method to quantify the choroidal structures in patients with RP. Our results provide *in situ* evidence for a decrease of the inner choroidal luminal areas and significant correlations between the choroidal structure and the inheritance mode in patients with RP.

EP-RET-04

Autologous lens capsular flap transplantation for persistent macular holes

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Purpose: To analyze the anatomical and functional results after autologous lens capsular transplantation technique for persistent macular holes.
Methods: A retrospective observational study of 5 eyes of 5 patients treated with vitrectomy with autologous lens capsular flap transplantation. Complete ophthalmic examination was performed preoperatively and at 7 days, 1, 3, 6 months after surgery.
Results: Successful macular hole closure was achieved in all patients. The mean minimum diameter before the surgery was 678.7 µm, and mean basal diameter 1064.2 µm. Mean preoperative visual acuity before the transplantation of the lens capsule flaps was 20/250, while after surgery it was 20/100.
Conclusions: Autologous lens capsular flap transplantation is a potential alternative treatment for patients with large persistent macular hole where the operative techniques used earlier have failed.

EP-RET-05

Role of oral Rifampicin in chronic central serous chorioretinopathy

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Purpose: To determine the improvement in visual acuity and central macular thickness in patients with chronic central serous chorioretinopathy (CSCR) with oral Rifampicin.
Methods: Ten eyes of 10 patients having chronic CSCR of more than 6 months duration were prospectively treated with oral Rifampicin 450 mg in single oral dose for 3 months duration. All patients were followed up for 12 months.
Results: Ten eyes of 10 patients were included in the study. The gender distribution showed 8 male (80%) and 2 female (20%) patients. There were five right and five left eyes. Mean age of our patients was 40.10 ± 5.1 years (Range 34 - 46 years). Mean duration of patient's ocular symptoms was 9.4 ± 2.9 months with range of 6 - 14 Months. Patient's visual acuity improved at 3 months follow-up.
Mean preoperative central macular thickness was 350 ± 82.3 µm improving to 232 ± 54.3 µm at 3 months treatment.
Conclusions: All patients with chronic CSCR of more than 6 months duration showed improvement in their vision and central macular thickness with oral Rifampicin taken for 3 months.

EP-RET-07

Atypical posterior scleritis mimicking choroidal melanoma: a case report

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We report a case of atypical posterior scleritis mimicking amelanotic choroidal melnoma. A 30-year-old healthy Filipino man, with a history of painless subacute loss of vision in his left eye over 5 months, was referred to our institute for further workup and management.
On examination, visual acuity of the left eye was 20/200. Anterior segment examination yielded unremarkable results, with quiet conjunctival and episcleral blood vessels, while fundus examination revealed nonpigmented nasal choroidal mass, with significant subretinal fluid resembling amelanotic choroidal melnoma. Right eye examination yielded unremarkable results.
The patient was diagnosed with atypical posterior scleritis and treated with oral steroids for 2 weeks, with no improvement. A periocular steroid injection was then administered to the left eye, causing dramatic reduction in choroidal mass size, and complete resolution of subretinal fluid.
The vision improved to 20/28.5 one month after the injection.
Timely treatment was crucial for minimizing vision-threatening complications.
Keywords: choroid, tumors, melanoma, scleritis.

EP-RET-08

Flow dynamics of fluorescein labelled erythrocytes in retinal microcirculation of spontaneous choroidal neovascularization and diabetic mouse models

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Purpose: Studying the erythrocyte flow dynamics in the retinochoroidal circulation helps to understand the pathophysiology of ocular diseases. The objective of this study was to assess the flow dynamics of fluorescein labelled erythrocytes (FLE) in retinal microcirculation of spontaneous choroidal neovascularization (CNV) (Jackson's research lab model - JR) and diabetes (Akita) mouse models.
Methods: Fluorescein isothiocyanate C (FITC) 5% labelled erythrocytes were injected into the peripheral circulation of wild-type C57 BL/6 mice (control, n=10), JR mice (n=20) and Akita mice (n=10). Using Heidelberg Retinal Tomography (HRA-II) scanning laser ophthalmoscopy (SLO), *in vivo* imaging of retinal circulation was performed to obtain sequential videos. Using Image J (public domain software), blood flow velocity was computed and qualitative analysis was performed.
Results: There was stagnation of erythrocytes (erythrostasis) on median intensity images in both Akita and JR mice. The mean (±SD, range) velocity for C57BL/6 mice, Akita mice and JR mice was 2.57 (±0.56, 1.76-3.63) mm/sec, 1.56 (±0.45, 0.80-2.91) mm/sec and 1.95 (±0.53, 1.24-3.57) mm/sec, respectively, with statistically significant reduction in both Akita and JR mice ($p<$ 0.0001, unpaired t-test).
Conclusions: Using FLE, we were able to demonstrate the composite qualitative and quantitative changes in both diabetes and CNV mouse models. Future pre-clinical trials can be conducted on this model to assess the impact of retinal pharmacotherapy on retinal blood flow dynamics.

EP-RET-09

MiR-126 enhances VEGF expression in induced pluripotent stem cell-derived retinal neural stem cells by targeting spred-1

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Purpose: Pathological retinal neovascularization (RNV) is a leading cause of vision loss in several ocular diseases; however, the underlying molecular mechanisms involved in the development of RNV remain unclear. We did this research to investigate the mechanism of RNV.
Methods: In the present study, we investigated the function of miR-126 expression in retinal neural stem cells derived from induced pluripotent stem cell (IPSs) obtained from patients with RNV and the levels of both miR126, vascular endothelial growth factor C and spred-1 was detected.
Results: During the induction process, the levels of both miR126 and vascular endothelial growth factor C (VEGF-C) gradually decreased, while the levels of spred-1 signifcantly increased. The existence of conserved miR-126-binding sites in spred-1 mRNA was predicted by computational algorithms, and verifed by the luciferase reporter assay. The use of miR-126 mimics revealed dramatically reduced levels of spred-1, and increased levels of VEGF. When using shRNA to target spred-1, the resultant decreased levels of spred-1 were associated with signifcantly enhanced levels of VEGF expression.
Conclusions: Our results demonstrate that miR-126 promotes VEGF expression in IPS cells by suppressing spred-1 expression, which contributes to angiogenesis during the progression of RNV. These fndings suggest that miR-126 and spred-1 might serve as novel molecular targets for treating RNV-related ocular diseases.

EP-RET-11

Clinical experience with large idiopathic macular holes surgery

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Purpose: To evaluate the effectiveness of large idiopathic macular holes (IMH) surgery with 20% perfluoropropane (C_3F_8) gas tamponade.
Methods: The retrospective study, which includes 56 patients (56 eyes) diagnosed with IMH stage 3 or stage 4 (Gass classification) between January 2015 and January 2018. Among them, there were 12 men (21.4%) and 44 women (78.6%). The mean age of patients was 66.9±4.5. Morphologic parameters of the macular hole (base diameter, minimum diameter) were measured and then hole form factor (HFF) was calculated. All eyes underwent 25 gauge pars plana vitrectomy, internal limiting membrane peeling, 20% C_3F_8 gas tamponade and postoperative face-down positioning for two weeks. The minimum follow-up period was 3 months and the mean follow-up period was 19.2±11.8 months.

The main outcome measures were IMH closure confirmed by spectral domain optical coherence tomography at 1 month postoperatively and visual acuity at 3 months postoperatively.
Results: No intra- and postoperative complications were observed. The IMH were closed in 50 out of 56 eyes at one month after surgery. The anatomic closure rate was 89.3%. The mean base diameter of IMH was 1156.81±267.16µm (range: 708-2019µm). The mean minimum diameter was 522.13±102.84 µm (range: 327-766µm). The mean HFF value was 0.77±0.09. There was a statistically significant moderate positive correlation between HFF and postoperative best corrected distance visual acuity (BCDVA) (r=0.56, p=0.03, Spearman's Rho). The mean preoperative BCDVA was 0.75±0.32 logMAR and mean postoperative BCDVA at 3 months after surgery was 0.53±0.34 logMAR (p=0.063, t-test).
Conclusions: Macular holes surgery with 20% C_3F_8 tamponade is an effective technique and is associated with high rates of IMH closure and postoperative BCDVA improvement. HFF was significantly correlated with postoperative visual outcomes in cases of large IMH.

EP-RET-12

Interest of SD-OCT in antimalarial drug-induced maculopathy

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Purpose: This single case report aims to report the importance of Spectral Domain Optical Coherence Tomography (SD-OCT) in challenging cases of antimalarial drug-induced maculopathy.
Methods: A 36 year-old woman on Hydroxychloroquine for treatment of systemic erythematous lupus since 2000, developed a progressive blurring of vision evolving for several months. She underwent a complete clinical ophthalmologic examination as well as fundus autofluorescence (FAF), mf-ERG, spectral domain optical coherence tomography (SD-OCT) and 10-2 visual field (10-2 VF).
Results: Clinical examination revealed a best corrected visual acuity of 20/32 in both eyes and normal anterior segments. Fundus examination revealed retinal pigment epithelium (RPE) disturbances. 10-2 VF demonstrated superior paracentral field defects. FAF showed pericentral mottled loss of autofluorescence without adjacent ring of increased signals and Mf-ERG confirmed the reduction of N1 and P1 amplitudes in accordance with a bilateral maculopathy. SD-OCT showed small disruption of the pigment epithelium layer in foveal region.
Conclusions: Antimalarial drug-induced maculopathy is a rare iatrogenic dose and duration dependent complication of long-term use of synthetic antimalarial drugs.
Thanks to multimodal retinal imaging, many stages of retinal intoxication are nowadays established, allowing an early screening of the disease inorder to stop treatment before irreversible stages.

EP-RET-13

Role of platelet reactivity disorders in development of diabetic macular edema in non-proliferative diabetic retinopathy

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Purpose: to determine platelet reactivity in progression of non-proliferative diabetic retinopathy (NPDR) from moderate to severe stage, and to specify the peculiarities of their reaction to agonist aggregation in development of diabetic macular edema (DME).
Methods: The study included 29 patients (29 eyes) with type 2 diabetes mellitus (DM2T), in which moderate (18 patients, 18 eyes) and severe (11 patients, 11 eyes) stages of NPDR were identified according to ETDRS classification. To investigate Pl in vitro, adenosine diphosphate (ADP), adrenaline, angiotensin-2 (Ang-2), platelet activation factor (PAF) and collagen were used. Estimation of Pl aggregation was carried out by turbidimetric method on ChronoLog analyzer (USA). For statistical processing the Statistica 10 program (StatSoft, Inc., USA) was used.
Results: In patients with NPDR, Pl hyperreactivity was observed to all of the agonists studied. Higher Pl reactivity to ADP was detected ($p<0.001$) at moderate stage as compared to mild stage of NPDR, reflecting increased stimulation of purine Pl receptors (P_2Y_{12}- and P_2Y_1-) due to progression of inflammation. Consequently, functional activity of ADP-receptors of Pl may be an indicator of NPDR risk prediction. Activation of the renin-angiotensin system and inflammation were manifested by Pl hyperreactivity to Ang-2 and PAF, which could be the cause of DME.
Conclusions: Growth of Pl functional activity plays a significant role in progression of NPDR and development of DME. Thrombosis and inflammation in retina occur as a result of this growth. Analysis of the Pl functional activity *in vitro* allows us to estimate an impact of DM2T pathogenetic factors on progression of NPDR and development of DME.

EP-RET-14

Functional state of platelets in diabetic maculopathy in patients with type 2 diabetes mellitus and diabetic retinopathy

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Purpose: to determine the influence of systemic and local factors of pathogenesis of type 2 diabetes mellitus (DM2T) on functional status of platelets (Pl) in diabetic maculopathy in severe non-proliferative and proliferative diabetic retinopathy (DR).
Methods: 42 patients (42 eyes) with DM2T and diabetic maculopathy in severe non-proliferative (11 eyes) and proliferative (31 eyes) stages of DR. Aggregation of Pl in response to adenosine diphosphate (ADP), adrenaline, angiotensin-2 (Ang-2), platelet activating factor (PAF) and collagen was estimated in vitro using the ChronoLog analyzer (USA).
Results: Platelet hyperreactivity to Ang-2, adrenaline, PAF and collagen was identified in patients with diabetic maculopathy, which reflected such factors of DM2T pathogenesis as activation of renin-angiotensin (RAS) and sympa-

thoadrenal (SAS) systems, inflammation and remodeling of the extracellular matrix. Proliferative DR in comparison with non-proliferative DR showed more pronounced reactivity of Pl to ADP (p=0.008). The cause of development of macular edema in patients with diabetic maculopathy was a pronounced dysregulation of the purinergic system of an eye, activation of RAS and inflammatory reaction (hyperreactivity of the Pl to ADP, Ang-2 and PAF). In the absence of macular edema, the platelet hyperreactivity to collagen was identified.
Conclusions: *In vitro* study of Pl revealed key mechanisms of hyperreactivity, which are involved in progression of diabetic maculopathy and development of macular edema in DR.

EP-RET-15

Challenging cases of intra-ocular foreign body (IOFB) removal

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Purpose: Describing 3 cases of challenging intra-ocular foreign body (IOFB), where dissection of IOFB from surrounding capsule, was imperative for removal.
Methods: First case was a IOFB stuck to the optic disc. The challenge was to remove the IOFB - without damaging optic nerve, or central retinal vessels. The second case had retinal detachment with a 14 mm long IOFB stuck in inferior ocular coats. In the third case we show the use of 25G vitrectomy cutter to dissect the IOFB from fibrous capsule, choroid and sclera.
Results: The first case, the IOFB was significantly adherant to the posterior pole. Dissection needed use of MVR blade. Once grasped and removed, there was bleed in one vessel, which was controlled using perflorocarbon liquid (PFCL). Second case, had retinal detachment, with IOFB stuck inferiorly. This needed careful retinectomy, and dissection of IOFB. The second challenge was removing the IOFB from inside the eye, wherein, the long axis of this long IOFB needed to be aligned to the long axis of the forceps.The last case, IOFB was adherent to the optic disc. Careful, slow dissection of the capsule over the IOFB was essential to free it. And remove the IOFB without causing collateral damage to optic nerve.
Conclusions: This series describes 3 extreme scenarios of IOFB - where removal was challenging. Slow, steady dissection, so as to separate the IOFB from the surrounding fibrous capsule, was the key to successful removal.

EP-RET-16

Retinal pigment epithelial detachment in acute myeloid leukemia

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Purpose: To report a case of acute myeloid leukemia that developed a retinal pigment epithelial detachment.
Methods: The authors describe a case report of a 25 year-old female with history of acute myeloid leukemia under chemotherapy and fungal septicemia secondary to immunosuppression. She was referred to the Ophthalmology Department for blurred vision and metamorphopsia in the left eye. Ophthalmologic examination and imaging evaluation were performed.
Results: Under observation, she disclosed: best corrected visual acuity 10/10 in the right eye (RE) and 1/10 in the left eye (LE), normal intraocular pressure, no abnormalities in anterior segment namely intraocular inflammation. Fundus examination revealed flame-shape and dot blot hemorrhages in the RE and an oval, high, paracentral lesion superior to the macula with a little hemorrhage in the LE. Amsler grid showed a distortion in paracentral inferior quadrant. Spectral domain optic coherence tomography of the macula revealed macular edema with pigment epithelial detachment in the LE. Fluorescein angiography showed a hyperfluorescent multifocal diffusion and indocyanine green hypofluorescent spots coincident with choroidal ischemia. The patient continued systemic therapy with progressive clinical improvement and recovery of LE visual acuity.
Conclusions: The retinal pigment epithelial detachment may be the first manifestation of choroidal involvement. Systemic therapy led to resolution of the symptoms and recovery of the visual acuity.

EP-RET-17

Our experience in the diagnosis of patients with macular telangiectasia type 2

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Purpose: to determine the optical coherence tomography-angiography (OCT-A) findings in patients with macular telangiectasia type 2 (MacTel).
Methods: We observed 16 eyes (8 patients) with MacTel 2. The age of patients ranged from 38 to 79 years, visual acuity from 20/200 to 20/20. OCT-angiography (Optovue RTVue 100 XR Avanti) using 3x3, 6x6 mm angiogram centered at the fovea, en-face visualization were performed.
Results: Hyporeflective cystic cavities, asymmetric macular thinning, decrease of the ganglion cell level, disruption of ellipsoid zone and external limiting membrane (ELM), focal loss only foveal density and normal density in the perifoveal zone of the superficial plexus, light vessels changes in the deep vascular plexus were revealed in the early stages.Third stage was characterized by the formation of hyporeflective cavities in the inner and outer retina levels, neurosensory atrophy, reduction of foveal thickness, pigment migration, vascular changes in the both vascular plexuses. Deformation and enlargement of foveal avascular zone (FAZ) was revealed in both plexuses.
Formation and development of the subretinal neovascularization diffuse macular anomalies with telangiectatic, rarified, and distorted vessels of superficial and deep plexus were observed in late stages.
Conclusions: MacTel 2 is a rare disease and OCT - angiography allows to identify specific changes at all stages of the disease. OCT-angiography makes possible to study not only the superficial but also deep retinal vasculature without introducing contrast agents, and also to detect the presence of newly formed vascular anomalies at all levels of retina

EP-RET-19

Combined therapy with intravitreal aflibercept and sub-tenon triamcinolone acetonide for diabetic papillopathy

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Purpose: To report 2 patients (3 eyes) affected by diabetic papillopathy (DP) which were treated with intravitreal aflibercept injection (IAI) combined with sub-tenon triamcinolone acetonide (TA) and to demonstrate resolution of optic disc swelling.
Methods: Two adult patients receiving insulin for type II diabetes mellitus manifested fundoscopic evidence of sequential bilateral disk edema and unilateral disk edema respectively associated with moderate to severe visual dysfunction.
Results: Both patients performed optical coherence tomography (OCT) and fundus fluorescein angiography (FFA) which revealed diabetic maculopathy, hyperfluorescence and leakage of the swollen optic discs, and mild-to-moderate nonproliferative diabetic retinopathy. Magnetic resonance imaging of the brain and orbit was normal. The patients received three monthly intravitreal aflibercept (0.5 mg) injections and an initial sub-tenon triamcinolone acetonide injection. Three weeks following injection, there was marked regression of the disk swelling and significant improvement of visual acuity. Three months following injection, there was complete resolution of the optic disk swelling. No further treatment was required.
Conclusions: Combination therapy with intravitreal aflibercept and sub-tenon triamcinolone acetonide may play a positive role in stabilizing and improving diabetic papillopathy and may also lead to rapid improvement in visual acuity.

EP-RET-20

Is depression associated with retinitis pigmentosa? A literature review

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Background: Retinitis pigmentosa (RP) is the leading cause of inherited blindness in patients younger than 60 years: affecting 2 million worldwide. It is characterized by progressive degeneration of retinal photoreceptors, resulting in poor night vision and visual field loss potentially leading to blindness. The aim of this review was to synthesize evidence to determine the relationship between depression among patients with RP.
Methods: An electronic search of CENTRAL, MEDLINE, EMBASE, Global Health and LILACS databases was performed on 30 December 2018. There was an English language restriction but no date restriction. Data was then extracted using a standardised form developed from the Cochrane Eyes and Vision Group. Findings from the studies was narratively synthesized.
Results: 6 studies were included in this review. The results show that the prevalence of depression is higher in patients in RP compared to normally sighted individuals, with RP patients presenting with mild to moderate symptoms. In addition, patients with RP with lower visual acuity (< 0.3) and visual fields (< 20°) have higher rates of depression ($p < 0.01$.)
Conclusions: Interventions are needed to diagnose and treat depression early to enhance the overall quality of life in RP patients. Further longitudinal studies are required to determine the causality regarding the relationship between depression in patients with RP.

EP-RET-21

Macular edema after successful pars plana vitrectomy for rhegmatogenous retinal detachment: factors affecting edema development and considerations for treatment

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Purpose: To investigate the incidence of macular edema after pars plana vitrectomy (PPV) for rhegmatogenous retinal detachment (RRD) repair, the factors affecting its development and the efficacy of intravitreal dexamethasone implant for its treatment.
Methods: Participants in this retrospective study 86 patients with RRD. All patients were examined postoperatively and incidence of macular edema was recorded, along with the factors affecting its development. Patients with macular edema were treated with intravitreal dexamethasone implant. They were followed-up with spectral domain-optical coherence tomography (SD-OCT) and best corrected visual acuity (BCVA) measurement until month 12 post treatment.
Results: 14 out of 86 patients (16.3%) presented macular edema post PPV for RRD repair. Patients with pre-operative macula off RRD ($p=0.027$), duration of RRD >1 week ($p=0.012$), proliferative vitreoretinopathy (PVR) ($p=0.042$), and those with pseudophakic lens status ($p=0.039$) were more prone to develop macular edema. There was a statistically significant improvement in BCVA and central retinal thickness at month 12 post intravitreal dexamethasone implant compared to baseline. Total resolution of macular edema was observed in 10 out of 14 patients (71.4%) at month 12 with only one injection.
Conclusions: The incidence of macular edema post PPV for RRD repair was found to be 16.3%. Factors mainly influencing the appearance of macular edema after successful RRD repair were also discussed. Intravitreal dexamethasone implant seemed to be safe and effective in cases with post PPV macular edema after RRD repair, even with limited number of injections.

EP-RET-22

Treatment of macular edema after pars plana vitrectomy for idiopathic epiretinal membrane using intravitreal dexamethasone implant: long-term outcomes

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Purpose: To investigate the efficacy and safety of intravitreal dexamethasone implant for the treatment of macular edema after pars plana vitrectomy (PPV) for epiretinal membrane (ERM) removal**.**
Methods: This prospective study included 27 patients, who were diagnosed with macular edema after PPV for ERM removal, and who were treated with either intravitreal dexamethasone implant (n=15) or were observed without intervention (n=12). Changes in best corrected visual acuity (BCVA) and central retinal thickness (CRT) were assessed 1, 6 and 12 months after treatment.
Results: Patients treated with intravitreal dexamethasone implant showed significant improvement in BCVA and reduction in CRT at months 1, 6 and 12 after treatment, while patients in the control group presented improvement, which did not reach statistical significance.

The two groups differed significantly in terms of BCVA and CRT at all time-points of the follow-up period in favor of dexamethasone implant group. 80% of patients treated with intravitreal dexamethasone needed only one implant till month 12, while no serious adverse events were noticed in any group.
Conclusions: Intravitreal dexamethasone implant was found to be effective and safe for the treatment of macular edema after PPV for ERM removal.

EP-RET-24

Autologous retinal transplant for myopic macular hole retinal redetachment

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Purpose: Traditionally, in myopic macular hole retinal redetachment cases, not much can be offered to the patient except for silicone oil injection because the internal limiting membrane has already been aggressively peeled during the first operation. We report a case of macular hole retinal redetachment repair using autologous retinal transplant (ART).
Methods: A piece of autologous retinal tissue was harvested from the superonasal quadrant and transplanted to the macular hole. Silicone oil was used as tamponade. Pre-operative visual acuity, post-operative visual acuity, optical coherence tomography (OCT) and fundus photo were performed.
Results: A patient with myopic macular hole retinal redetachment and proliferative vitreoretinopathy underwent a reoperation. The macular hole closed on post-operative day one as confirmed by OCT. The donor tissue was incorporated into the recipient area and OCT demonstrated partial restoration of the anatomical layers of the retina.
Conclusions: ART is a useful technique in achieving anatomical success in complicated macular holes such as cases of myopic macular hole redetachment.

EP-RET-25

Laser pointer induced macular injury- case report -one year follow-up

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Purpose: This case report shows the harmfulness of improper use of a laser pointers in children. Laser pointers are practical and safe tools when used properly. If used incorrectly they can cause ocular and skin damage, potentially resulting in devastating vision loss.
Methods: Laser pointer injuries primarily involve photothermal damage. This is more noticeable in short-wavelength light (green laser pointer; wavelength 490-575 nm) compared with long-wavelength light (red laser pointer; wavelength 635-750 nm).The patient (young boy 8 years old) was self exposed to one eye (approximately 30 cm from the eye) with a green laser class 3R laser for < 1 s. We analyzed patients visual acuity (VA), Amsler's grid, optical coherence tomography (OCT), and computerized visual field (VF).
Results: OCT on exposed eye showed irregulary shaped disruption of the outer retinal layer at the fovea (VA was 0.6 with eccentric fixation). Amsler grid central metamorphopsia in two meridinas,and VF small central foveal scotoma. The patient was re-examined 1 month after the initial injury and reported a persistent scotoma in his left eye; his visual acuity remained stable and all examination findings remained unchanged including OCT. At the 6-month follow-up VA was 1.0 eccentric, VF with smaller scotoma, Amsler grid the same. After 1 year, the patient was no longer complaining of a blind spot despite OCT still showing the the same foveal defect, but was complaining of smaller metamorphopsia (amsler grid was better). All other findings were good.
Conclusions: 12 months after a laser pointer foveal injury, VA has been gradually improved without central scotoma, but with some small metamorphopsia and the same morphological finding of foveal OCT. This report indicates the danger of laser pointers to cause serious structural damage.

EP-RET-26

Activity of the platelets' A2A-adenosine receptors in the development of age-related macular degeneration

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Purpose: To investigate the activity of plateles' A2A-adenosine receptors in the developmeny of age-related macular degeneration.
Methods: This study were included 34 patients, among them the intermediate or 3rd category of the age-related macular degeneration (AMD) according to the AREDS classification were found in 19 patients (26 eyes), and advanced or 4th category in 15 patients (30 eyes) accordingly. Platelets were extracted by centrifugation from peripheral blood. Adenosine diphosphate (ADP) agonists and adenosine were used for platelets stimulation. Estimation of the aggregation was carried with ChronoLog analyzer.
Results: In patients with AMD with presence of choroidal neovascularization (CNV), the activity of the A2A adenosine receptors of platelets was 2.53 times ($p < 0.001$) higher than in patients without CNV, respectively $75.5 \pm 1.4\%$ and $30.0 \pm 1.5\%$.
Thus, at late stages of AMD there was hyperactivity of A2A receptors of platelets. The negative linear correlation relationship revealed ($r = -0.670$; $p = 0.004$) between platelets aggregation induced by ADP and adenosine confirms the competitive effect of P2Y12-purine and A2A-adenosine receptors on the activity of adenylate cyclase. Consequently, the effects of receptor data on signaling pathways can determine the functional state of platelets that affect the microcirculation of the eye.
In patients with stage of DMD, a negative linear correlation ($r = -0.713$; $p = 0.004$) between platelet aggregation induced by adenosine and visual acuity was established. With visual acuity 0.075 ± 0.002, the activity of A2A receptors was 10.4% ($p < 0.001$) less compare to patients with visual acuity 0.040 ± 0.003.
Conclusions: Determination of the reactivity of the platelets` A2A adenosine receptors opens up the possibility of: argumentation of personified treatment using appropriate receptor blockers or phosphodiesterase and predicting the risk of CNV in the case of AMD.

EP-RET-27

Retinal detachment after myopic Lasik surgery - case report

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Purpose: To report two cases of unilateral retinal detachment (RD) after myopic LASIK.
Methods (Case presentation):
First case: A 17 year old male with Axial Length (AL) 27 mm in right eye (OD) and 27.62 mm in left eye (OS) underwent Lasik. 43 days later he complained of sudden loss of vision in his left eye secondary to macula off RRD with superior temporal large horseshoe and inferior holes
Second case: A 27 year old female with Axial Length (AL) 25.50 mm in (OD) and 25.06 mm in (OS) complained after 8 months of LASIK surgery from sudden loss of vision in her right eye secondary to superotemponasally RD with macula off due to giant tears and many circular micro holes superiorly.
Both patients were managed by pars plana vitrectomy (PPV) with silicon oil tamponade which extracted after 3 months in both patients.
Results: The retina was attached post operatively and the BCVA was recovered to the same BCVA after Lasik surgery. The other eye of both patients was treated with laser photocoagulation around lesions were detected with fundoscopy, and remain stable anatomically and functionally
Conclusions: RD after myopic Lasik can be a serious complication; patients should be informed about possibility of this complication. Each patient should undergo a very thorough dilated fundoscopy and treatment of any retinal lesion predisposing for the development of RD before LASIK surgery is performed.

EP-RET-28

Treatment of the diabetic macular edema, non-responsive to the intravitreal Bevacizumab injection, using intravitreal corticosteroids

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Purpose: Diabetic macular edema a complication of diabetic retinopathy that significantly reduces visual acuity of patients.Although the effectiveness of anti VEFG agents is well known to resolve the edema, sometimes the treatment resistant macular edema is encountered in clinical settings.In this study, the treatment resistant macular edema is classified according to the OCT morphologic types. The effectiveness of intravitreal triamcinolone was assessed through the reduction of central macular thickness and BCVA in the bevacizumab treatment resistant macular edema.
Methods: Retrospective chart review of Diabetic macular edema patients who were treated at Kim's eye hospital between Sept. 2010 and April 2015. Patients with treatment resistant macular edema was included. Resistant diabetic macular edema was definted when there was Less than 10% decrease of macular thickness despite 2 consecutive monthly treatment of intravitreal bevacizumab. Classification of diabetic macular edema by OCT were diffuse retinal thickening, cystoid macular edema, serous retinal detachment, mixed type.
Results: Total of 48 eye were included that were defined as treatment resistant.There were 7 paitents in diffuse retinal thickening type, 21 in cystoid macular edema, 17 serous retinal detachment, and 3 in mixed type. Reduction of macular edema after IVTA injection was 25% indiffuse retinal thickening, 48.7% in cystoid macular edema, 23.4% in serous retinal detachment, and 11.2% in mixed type.
Conclusions: In the bevacizumab treatment resistant macular edema, IVTA is another treatment option.Its effectiveness is greatest in CME group and poorest in the mixed group.The types of macular edema can help a clinician to make decision to continue or to switch the therapeutic option.The optimal timing of therapeutic switch may need further studies.

EP-RET-29

Juxtapapillary hemangioma: a case report and review of clinical features of von Hippel-Lindau disease

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Purpose: To report a case of juxtapapillary retinal hemangioma in a patient with von Hippel-Lindau disease.
Methods: Case report.
Results: A 52-year-old man with von Hippel-Lindau disease and diabetes, presented for a routine examination. He was operated for cerebellar hemangioblastoma one year ago. The ophthalmologic examination revealed a best-corrected visual acuity in the right eye at 8/10 and in the left eye at 10/10.
The anterior segment was without abnormalities in both eyes. Fundoscopic examination of the right eye showed juxtapapillary pale inferonasal lesion and was normal in the left eye. Fluorescein angiography showed early leakage of the tumor and marked late hyperfluorescence. The spectral domain optical coherence tomography (OCT) showed the hyperreflective elevated lesion at the optic disc and an epiretinal membrane. The diagnosis of juxtapapillary hemangioma was retained.
Conclusions: Retinal capillary hemangioma is a benign retinal hamartoma that may be associated with von Hippel-Lindau disease. There are 2 distinct forms of capillary hemangiomas;the peripheral capillary hemangioma or the juxtapapillary tumor(5%). According to its morphology, it may be endophytic (inner retina), exophytic (outer retina) or sessile. Fluorescein angiography is an extremely helpful test in making the initial diagnosis. OCT is also useful to demonstrate the retinal layers affected by the lesion and to help in classifying the lesion as endophytic versus exophytic

EP-RET-30

Postvitrectomy acute endophthalmitis with Kyrieleis type deposits

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Purpose: We present the case of a 46-year-old man who, after a pars plana vitrectomy (PPV), presented an acute endophthalmitis of presumed bacterial etiology associated with extravascular inflammatory deposits such as Kyrieleis'vasculitis.
Methods: With the diagnosis of epiretinal membrane, a PPV is performed with peeling of this. 48 hours later, he reported decreased visual acuity, with corneal edema, tyndall 4+, epicristalinal membrane of fibrin and vitritis. With the suspicion of acute endophthalmitis, treatment with empirical intravitreal antibiotic therapy is started and 24 hours later a diagnostic vitrectomy is performed, following oral and topical treatment, according to the therapeutic guidelines.

Results: After 15 days, the presence of small yellowish, rounded, well-defined exudates, predominantly perivascular, which mainly occupy the posterior pole, was observed. Spectral domain optical coherence tomography (SD-OCT) shows hyperreflective deposits with posterior shadow that are located on the internal limiting membrane.
Angio-OCT shows interruption of vascular flow 2nd to a masking artifact. As the inflammation was controlled, hyperreflective deposits were disappearing, resolving completely at 3 months. The microbiological study was negative, except for the polymerase chain reaction for the detection of other bacteria (16S RNA).
Conclusions: Although vitritis is the fundamental characteristic of endophthalmitis, other signs may appear, such as affectation of the posterior pole with zones of retinitis and / or periflebitis. Kyrieleis described vasculitis characterized by the presence of yellowish exudates of unknown nature that were deposited inside the arterioles, in the context of intraocular inflammation of infectious etiology. In our case, the exudates were deposited predominantly on the vessels, and on the arterioles as well as on the veins, as well as the papilla and parenchyma. However, we believe that the nature of the deposits could respond to the same etiology.

EP-RET-31

Normal values by age groups of vascular density and foveal avascular zone measured with angio-oct in the superficial plexus

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Purpose: To analyze vascular density (VD) and foveal avascular zone (ZAF) in the superficial plexus, on healthy eyes using OCT angiography.
Methods: Cross-sectional study, using the OCT-A Cirrus HD 5000 (Zeiss, Dublin, CA- USA). A 6x6 mm centered in fovea OCT-A was performed, then values of VD, area and circularity of ZAF was obtained automatically using the Zeiss software Angio Plex Metrix (Zeiss, Dublin, CA - USA) and divided by age groups, we used to statistical work SPSS 22 software.
Results: We analyzed 167 healthy eyes, 68.9% women, the average age obtained was 49.83 +/- 14.54 years. The values of the mean obtained in microns for each ETDRS zone for vascular density were as follows: Central density: 9.67 (95% CI: +/- 0.41), Internal density: 18.01 (95% CI: +/- 0.19), external density: 18.33 (95% CI: +/- 0.17), and total density: 18. 02 (95% CI: +/- 0.31). The mean of the area and the circularity of the FAZ for the whole sample was 2.09 mm2 (CI: +/- 0.7) and 0.72 (CI: +/- 0.015) respectively. We found significant differences when comparing the VD of the different groups among themselves (p=0.001 / p=0.008). FAZ area and circularity only found significant differences when comparing the circularity of those over 60 years with the group under 40 years.
Conclusions: Vascular density in microns obtained for the ETDRS circle in a field of 6 x 6 mm full is 18.02 (95% CI +/- 0.31); the ZAF has an average of 2.09 mm2 (+/-0.7) and 0.72 (+/- 0.015) of area and circularity respectively. We have found a statistically significant decrease in vascular density in relation to age, but not in the evaluation of the ZAF.

EP-RET-33

Low molecular weight heparin in treatment of macular oedema due to recent-onset central retinal vein occlusion

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Purpose: To share two cases of complete resolution of macular oedema due to recent-onset central retinal vein occlusion on low molecular weight heparin (LMWH) treatment only.
Methods: Case report.
Results: First patient was a 63year old female complaining of visual drop in right eye lasting for one week. Presenting best corrected visual acuity (BCVA) in affected eye was 0,3, fundus examination revealed full-blown central retinal vein occlusion with macular oedema. Central retinal thickness (CRT) measured by spectral domain optical coherence tomography was 522 µm. Because of short duration of symptoms, enoxaparin natrium 4000 IU per day subcutaneously was started for one month. Thereafter BCVA improved to 0,63 and CTR decreased to 382 µm. Further on BCVA kept improving to 0,8 (month 2), 1,0 (month 4) and remained stable even 10 months after diagnosis. Accordingly, CRT decreased to 304 µm (month 2), 287 µm (month 4) and 277 µm ten months after beginning of treatment. Second patient was a 42years old male presenting with visual drop for 2 weeks, BCVA in affected eye 0,25 and CRT 702 µm. Nadroparin calcium 15200 IU per day was started for one month. BCVA improved to 0,5 (month 1), 0,8 (month 2) and 1,0 (month 4). Correspondingly CRT dropped to 272 µm (month 1), 315 µm (month 2) and 299 µm (month 4).
Conclusions: In both cases a complete resolution of macular oedema was achieved on LMWH treatment only; neither anti-VEGF nor laser were needed. The limited number of patients involved is due to usually longer interval between onset of symptoms and diagnosis. Our results are in accordance with previously published data. Based on these findings LMWH treatment seems to be a promising option for patients with short interval between onset of symptoms and beginning of treatment. Large clinical trials are however still needed.

EP-RET-34

Atypical clinical case of thrombosis of vena centralis retinae in young age

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Thrombosis of v.centralis retinae is one of the most common retinal diseases after diabetes. It is typical for people over 55 years and the risk for it increases with age. It is extremely rare in young people where it is called, Papilophlebitis or Optic disc vasculitis.
Aim: The aim of this survey is to present a peculiar clinical case of thrombosis of v.centralis retinae in young adult and describe the specific clinical picture and different therapeutic approach.
Material and methods: We present the clinical case of 34 year old male, whom we examined with fluorescein angiography (FA), digital photography, blood tests, serology, immunology- HLA, and hemostasis. An intravitreal injection of Eylea in the first 3 days has been performed.

Results: We described a recurrent case of thrombosis of vena centralis retinae, with a typical edema of the optic nerve and a massive hemorrhagic syndrome in the posterior pole. A strong dissociation between the severity of the clinical picture and the relatively good visual acuity was present. The recurrence of the occlusion occurred one month after the first and was presented with enormous haemorrhagic activity.
Conclusions: Although it is believed that thrombosis of the retinal vein in young people is rare and with good prognosis, atypical cases with recurrent prolonged course of the occlusion and severe impairment of the visual acuity are also possible. In time diagnostics of this forms and their adequate hospital treatment with anti-VEGF therapy are important prerequisite for the good outcome for the vision.

EP-RET-35

Modified vitreous surgery for macular hole after macular hemorrhage associated with a ruptured retinal arterial macroaneurysm: an internal limiting membrane peeling-repositioning technique

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Purpose: Macular hole (MH) is sometimes found intraoperatively after macular hemorrhage associated with a ruptured retinal arterial macroaneurysm, and the surgical outcomes are relatively poor. We herein report our modified surgical technique and the outcomes for refractory MH after macular hemorrhage associated with a ruptured retinal arterial macroaneurysm,
Methods: Standard 25-gauge microincision vitrectomy was performed. An internal limiting membrane (ILM) flap was inverted carefully in cases of subILM hemorrhage, and if MH was present, we removed the residual subILM hemorrhage carefully without removing the ILM flap completely and then repositioned the whole ILM flap—the "ILM peeling-repositioning technique"—. At the end of surgery, air-fluid exchange was performed.
Results: This was a retrospective, interventional case series, including three patients who underwent the ILM peeling-repositioning technique. The time from the onset of symptoms to surgery ranged from 4 to 11 days. Anatomic closure of the MH was achieved in all eyes and the final best-corrected visual acuity ranged from 20/63 to 20/20.
Conclusions: ILM peeling-repositioning technique might be useful for treating MH after macular hemorrhage associated with a ruptured retinal arterial macroaneurysm.

EP-RET-36

Role of OCT angiography in our clinical practice in Bosnia and Herzegovina

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Purpose: Optical coherence tomography (OCT) has changed our understanding and management of retinal diseases, ever since the time-domain OCT was introduced 20 years ago. OCT Angiography (OCTA) is a new, non-invasive, motion contrast micro-vascular imaging modality. Since 2010 we had opportunity to use TD OCT and since 2018 we are using daily OCTA.
Methods: OCT and OCT-A imaging was performed in each eye and graded separately by independent readers. OCT-a images were acquired with OPTOPOL REVO NX OCT.
Results: 48 patients (96 eyes) were enrolled. Mean follow up was 6 month. 20 patients with AMD were followed and 20 with diabetic retinopathy and 8 with other retinal pathology.
Conclusions: The systematic use of OCT and OCT-A imaging can facilitate the diagnostic accuracy for detection and follow-up of different retinal disease.Our daily practice is currently much better in several aspects including changing our understanding of the diseases, optimizing clinical service process and getting the diagnosis faster.

EP-RET-37

Assessment of the quality of life of patients with macular degeneration under treatment with antiangiogenic therapy

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Purpose: To analyse the quality of life of patients with age-related macular disease (AMD) who undergo the antiangiogenic therapy (VEGF) treatment and their perception of its results added to the need for repeated injections.
Methods: Quantitative, transverse and observational studies were performed in patients under treatment with anti-VEGF for exudative AMD, performed at a referral service in the period from June / 16 to February / 17.
Results: We interviewed 107 patients with exudative AMD, who answered 37 questions about their quality of life before and after antiangiogenic treatment. Prior to treatment, 52.3% reported difficulty for long distance vision and 68.2 for small distance vision. After treatment began, 39.2% reported significant improvement to long distance vison and 46.7% close distance vision. In social interaction, 8.4% stated that the low visual acuity interfered in their interpersonal relation. After the treatment, 54.2% of the patients indicated a greater willingness to relate with others. Regarding frustration with visual performance, 36.5% felt frustrated due to AVB, but 73.8% felt happier and more motivated with the treatment.
Despite chronicity and multiple serial applications, 90.7% stated they were satisfied with the treatment and did not wish to stop it, even though there was discomfort in the application in 79.4%.
Conclusions: In analysing the results, we observed that the main complaint is the low visual acuity. Although 46.7% of the patients presented improvement with the treatment, this number is less than ideal. However, patient satisfaction, in spite of multiple injections and some degree of discomfort, suggests that the therapeutic process is valid, since the concept of quality of life according to WHO, has been defined as the individuals' perception that their needs are being met. Thus, based on this work, we conclude that treatment with antiangiogenic drugs provides a substantial improvement in quality of life.

EP-RET-39

Evaluation of longterm macular microangiopathy using optical coherence tomography angiography in anti-VEGF treated venous occlusion eyes

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Purpose: To quantify retinal microvascular alterations in eyes with a history of retinal vein occlusion (RVO), treated with anti-VEGF injections.
Methods: In our cross-sectional case-series study; both eyes of 23 patients with a history of RVO in one eye, and of 47 healthy individuals were examined. Retinal vessel density (VD) in the superficial (sVD) and the deep retinal layer (dVD) and foveolar avascular zone (FAZ) were measured by optical coherence tomography angiography (RTVue-XR Avanti, Optovue, Fremont, CA, USA). Baseline and final visual acuity, number of anti-VEGF injections, macular morphology at the end of the follow up, and systemic risk factors as hypertension, diabetes and dyslipidemia were also analysed. Axial bulbus length was measured with optical biometry (Lenstar LS 900, Haag Streit, USA).
Results: FAZ, central retinal thickness were significantly higher ($p< 0,05$), sVD and dVD were significantly lower ($p< 0.01$, $p< 0.0001$) in RVO eyes compared to the fellow eyes and controls. Superficial VD showed significant correlation with the number of anti-VEGF injections ($p< 0.001$) and baseline visual acuity ($p< 0.01$) at the same time dVD prooved to be correlated only with the number of anti-VEGF injections ($p=0.03$) in RVO eyes. After controlling for the effect of baseline visual acuity: number of anti-VEGF injections was significantly negatively associated with both superficial and deep vessel density ($p< 0.001$). Final visual acuity was not dependent on neither deep nor superficial VD after adjusting for the effect of number of injections and systemic risk factors ($p>0.05$).
Conclusions: Quantitative OCTA measurements confirmed decreased macular vascular density in both superficial and deep retinal layers in anti-VEGF treated RVO eyes, which found to be correlated with number of injections, independently of baseline visual acuity.

EP-RET-40

OCT and OCTA findings in a patient with regression of diabetic macular oedema accompanied with posterior vitreous detachment

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Purpose: Analysis of optical coherence tomography (OCT) and OCT angiography (OCTA) changes after regression of diabetic macular oedema (DME) accompanied with posterior vitreous detachment (PVD).
Methods: A 60 year old male patient with diabetes mellitus was treated at our hospital for proliferative diabetic retinopathy and clinically significant diabetic macular oedema. Pan-retinal photocoagulation and one parabulbar triamcinolone (40mg) injection was applied in both eyes. The patient underwent best corrected visual acuity (BCVA), intraocular pressure, biomicroscopy, OCT and OCTA at one year interval.
Results: The BCVA after one year of follow up changed from right eye (RE) BCVA=0.6, left eye (LE) BCVA=0.7 to RE BCVA=0.6, LE BCVA=0.9. Pretreatment average macular thickness in the LE was 330.3 μm and changed to 294.8 μm. LE OCT/A morphological changes after regression of DME included PVD, decrease in intraretinal cysts and in hyperreflective plaques. OCTA changes after regression of DME consisted of decrease in number of microaneurisms, dilated capillaries and areas of non-perfusion that was more evident in the deep retinal vascular layer. The OCT/A parameters in the RE were unremarkably changed.
Conclusions: The changes in the OCTA parameters in our patient with resolution of DME after treatment accompanied with PVD differ from those reported in patients with resolution of DME after treatment with intravitreal anti-VEGF and corticosteroids.

EP-RET-41

Sertraline-related maculopathy

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Purpose: To report two cases of bilateral accelerated maculopathy after sertraline therapy
Methods: The ocular findings were investigated with multimodal imaging to include colour fundus photography, fundal fluorescein angiography (FFA), autofluoresence and optical coherence tomography
Results: Two patients with a history of age-related macular degeneration and vascular risk factors were initiated on sertraline therapy. Weeks into therapy they noticed progressive, painless and extensive bilateral reduction in visual acuity prompting referral. Fundal photos showed extensive macular changes. OCT showed retinal pigment epitheliopathy in tand evident intra-retinal fluid formation, with an underlying choroidal neovascular membrane on FFA in one patient and extensive central serous retinopathy in the other patient.
Conclusions: Bilateral acceleration of underlying age-related macular degeneration and chronic central serous retinopathy have both been associated with reduced blood serotonin levels.

EP-RET-42

Influence of vitrectomy and maculapeeling on abnormalities of the central foveal bouquet in eyes with epiretinal membranes

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Purpose: Previous studies have classified epiretinal membranes (ERM) as well as abnormalities of the central foveal bouquet (CBA) in different stages based on their morphological appearance. Correlation of visual acuity with the different stages of this classification was shown. The presented study evaluates the change in classification following surgical removal of ERM.
Methods: A retrospective study was conducted on 151 eyes being operated by 23g or 27g pars plana vitrectomy (PPV) and epiretinal membrane and internal limiting membrane (ILM) peeling from 2014 till 2018. Surgery was performed by two different surgeons (SM, n=93 and MBe, n=58). Eyes were evaluated

by OCT (SD-OCT) were classified prior to surgery and at a mean of 3 months after surgery according to their morphological appearance. Changes in morphology were correlated with visual acuity at different time points.
Results: Before surgery 27.2 % (n=41) of the patients showed subfoveal changes with "CBA 1" being the most common (11.9%, n=18). All patients (n=151) showed ERM before surgery. The mean BCVA was 0.42 (LogMAR) before and 0.19 (LogMAR) after the procedure indicating mean gain in vision of almost 2.5 lines (95% CI: 0.20-0.28; p<0.001). Patients who showed subfoveal changes prior to surgery had less BCVA increase than patients classified as CBA 0 (0.28 vs. 0.14 LogMAR; p=(p<0.001). Of all the patients with subfoveal changes, 68% had lower grading of CBA after the surgery than before (n=28; 95% CI; p<0.001). 100% of patients showed an improvement of their ERF grading, with 98.7% reaching grade "ERF 0" (n=151 vs n=149; 95% CI; p<0.001).
Conclusions: Subfoveal changes secondary to ERM are a negative predictor for functional outcomes following PPV and ERM+ILM peeling for ERM. Classification of the CBA appears a valuable tool in pre-surgical evaluation.

EP-RET-43

Health promotion on the importance of knowledge about age-related macular degeneration

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Purpose: To report the experience from the Academic League of Ophthalmology of the medical course of the University of Ribeirão Preto (UNAERP), in the campaign on November XV square, date 01/04/2017, in Ribeirão Preto, an experience that aimed to increase the local population knowledge about age related macular disease (ARMD) diagnosis.
Methods: Panflect with illustrative figures and explanations about the diseas andself-examination method: the Amsler screen (which was taught by the students). In addition, questionnaires were applied to assess the incidence of those who know and make routine visits to the ophthalmologist and to evaluate their knowledge about factors that impair vision.
Results: A total of 726 people were interviewed. The results showed that 20 of the pedestrians approached knew what an ophthalmologist is but when asked more about it, didn't have the right knowledge, 607 really knew the meaning and 99 did not know it. 588 have already been consulted with a specialist and 138 hadn't. When asked about what could be harmful for our vision, 597 indicated the use of computers, 487 the use of cell phone, 524 solar exposition, 364 obesity, 573 Diabetes Mellitus, 416 arterial systemic hypertension, 541 the fact of not wearing glasses when prescribed, 385 smoking, 563 age, 185 having clear skin and 323 having clear eyes.
Conclusions: It was concluded that 16.4% of the interviewees did not know what an ophthalmologist is. For population impacts, sun exposure, diabetes, old age and smoking are the main factors that affect vision, and diabetes is the most relevant of these ones. Thus, the majority demonstrates knowledge about diabetes being the most relevant risk factor, since 79% confirmed this in the questionnaire.It was noticed lot of interest and engagement in the realization of the proposed activity, showing an increase in the bond from the medicine students with the population. The awareness is fundamental to prevent ARMD.

EP-RET-44

Treatment results of intravitreal injection of anti-vascular endothelial growth factor in myopic choroidal neovascularization

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Purpose: To evaluate the results of intravitreal injection of anti-vascular endothelial growth factor (anti-VEGF) in patients with myopic choroidal neovascularization (mCNV).
Material and methods: Files of the patiens with mCNV who received intravitreal anti-VEGF injections between January 2010 and 2017 were reviewed retrospectively. Records of 11 eyes of 10 patients were evaluated.
Results: Seven patients were female (70%) and three male (30%). Mean age of the subjects was 63.9±15.0 years (27-79 years). Mean follow-up time was 20.1±15.7 months (6-53 month) and mean axial lenght of the eyes was 28.1±1.4 mm (26.57-31 mm). Localization of mCNV was subfoveal in 8 eyes (72.7%), extrafoveal in two eyes (18.1%) and juxtafoveal in one eye (9%). Mean best-corrected visual acuity (BCVA) was 0.5±0.32 and mean central macular thickness (CMT) was 375.1±105.0 µ (Range: 250-500 µ) at the baseline. Mean number of anti-VEGF injection was 4.6±5.8 (Range:1-19 injection). Four eyes received only ranibizumab injections, four eyes only afl ibercept injection and 3 eyes ranibizumab and subsequent afl ibercept injections. Mean BCVA was 0.40±0.25 and mean CMT was 347.3±110.4 µ (Range: 218-530 µ) at the last visit. There was no statistical difference between baseline and fi nal BCVA and CMT (p >0.05). The BCVA improved more than one line in 3 eyes, worsened more than one line in four eyes, and was unchanged in four eyes.
Conclusions: Intravitreal anti-VEGF treatment is the fi rst choice in mCNV. Remission can be achieved with fewer injections compared to wet type age-related CNV. Hovewer, more intravitreal injections may be necessary in elder patients diagnosed mCNV.

EP-RET-45

Choroidal osteoma: 2 clinical cases

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Purpose: To report two patients - one with unilateral, the other with bilateral choroidal osteoma - and to show the important diagnostic procedures.
Methods: Two patients underwent full ophthalmological examination (best corrected visual acuity (BCVA), visual field testing, fundus autofluorescence (FAF) and optical coherence tomography (OCT), ultrasound).
Results: Both patients (28 and 30 years old) were women. First patient had decreased BCVA (right eye (RE) - 0,5, left eye (LE) - 0,7 (by Snellen)) and changes in the retina and choroid of both eyes, second patient - only in one eye (counting fingers from 20 centimetre). In both cases areas of decalcification were observed. The first patient's OCT analysis showed choroidal thickening in the central part of both eyes (RE - 658 µm, LE - 798 µm) and some subretinal fluid in the foveal area of the RE. The second patient's OCT analysis showed unevenness of retinal pigment epithelium, area of choroidal neovascularization, a deformed foveal contour and the choroidal thickening was 1015 µm. In the FAF, decalcified areas were hypoautofluorescense, calcified regiones were detected nasally to fovea with a granular pattern of hyperautofluorescense. In both cases B-scan ultrasonography demonstrated a relatively

echolucent vitreous. In the posterior pole, there was a flat choroidal lesion, with very high reflectivity and shadowing of the posterior orbital contents. The first patient was treated with anti-inflammatory drops, after which BCVA improved, OCT analysis showed subretinal fluid redistribution to other tissue layers. Advanced inactive CNV disease stage was observed for the second patient (anti-vascular endothelial growth factor therapy injections were given a few years ago).
Conclusions: Choroidal osteoma is a rare condition that needs to be diagnosed and monitored in time for possible complications. The most common complication is choroidal neovascularization, which is treated with intravitreal anti-VEGF injections.

EP-RET-46

Peripapillary choroidal neovascularisation a clinical case

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Purpose: This is a clinical case study evaluating the diagnostic features and misdirection involving patient with the left eye peripapillary choroidal neovascularization, which first was mistaken like a choroidal breast cancer metastasis.
Methods: This is a retrospective case report study held in Pauls Stradins Clinical university hospital, where the patient with the diagnosis of choroidal breast cancer metastasis was estimated with imaging diagnostics, such: as fundus oculi photos, fluorescent angiography and Optical Coherence Tomography, for the first time and further on during the treatment. Pictures where collected and analyzed from each check-up visit from year 2016 to 2018. Patient underwent treatment with intravitreal Sol. Bevacuzumab injections during this time.
Results: The patient first came up with the choroidal metastasis in the left eye to the tertiary center hospital and a breast cancer in the patient history. But after consequent examination in the first visit and analysis of clinical signs the diagnose of peripapillary choroidal neovascularization was established in the left eye instead. The peripapillary neovascularization was treated with 3 intravitreal Bevacizumab injections and local retinal laser photocoagulation to separate the lesion from macula. Considering the very close location to macula the best corrected visual acuity of the patient did not improve during the study and maintained 60/200, besides clinically nonsignificant peripapillary choroidal neovascularisation developed in the time period of 1 year in the right eye.
Conclusions: The peripapillary choroidal neovascularization is considered in the same spectrum of disease as wet age related macular degeneration, located within one disc diameter around the optic nerve and does not drastically affect visual acuity until near the fovea, therefore most peripapillary lesions should be managed conservatively.

EP-RET-48

Relationship between choroid and macroangiopathy in type 2 diabetic patients

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Purpose: To compare choroidal thickness (CT) and the presence of systemic macroangiopathy in patients with type 2 diabetes (T2D)
Methods: Cross-sectional study enrolling 200 eyes of 100 T2D naive patients after applying inclusion and exclusion criteria. Automatic measurements of CT were obtained using swept-source optical coherence tomography Triton DRI (Topcon). A fovea-centered macular cube of 7x7 mm was analyzed. Data from ischemic cardiopathy (IC), cerebrovascular accident (CVA) and peripheral artery disease (PAD) were recorded. An experienced ophthalmologist classified patients according to the degree of diabetic retinopathy (DR). Correlations were calculated using SPSS software.
Results: 60 eyes (30 patients) had no DR, 46 eyes (23 patients) had mild DR, 64 eyes (32 patients) had moderate DR, 20 eyes (10 patients) had severe DR, and 10 eyes (5 patients) had proliferative DR. Mean age was 67.38±8.15 years old, and mean axial length was 23.26±0.09 mm. IC was correlated with horizontal choroidal sectors (γ between -0.38 and -0.29). PAD was correlated with the degree of DR (p=0.03) despite a non significant γ.
Conclusions: Although DR is hardly correlated with systemic macroangiopathy, CT is moderately correlated with IC. In addition, not all the choroid is affected in a similar way, as some regions are more sensitive than others. Therefore, those specific regions should be examined.

EP-RET-49

Unilateral retinitis pigmentosa in a young adult female: a case report

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Purpose: To present a rare case of a Filipino female with unilateral retinitis pigmentosa.
Methods: This is a case report of a 27-year-old Filipino female who presented with progressive blurring of vision of the left eye since age 15.
Results: History revealed unilateral, painless, progressive blurring of vision of the left eye for 12 years. No other associated signs and symptoms were elicited. There was no history of trauma, nor previous infections. Best corrected vision was 20/20 on the right eye and 5/400 on the left. Anterior segment examination of both eyes was essentially normal except for the presence of an early posterior subcapsular cataract on the left eye. Characteristic fundus findings for retinitis pigmentosa like mottling of the retinal pigment epithelium, attenuation of the retinal vessels, bone-spicule formation, and waxy pallor of the optic disc were seen in the left eye, while the right fundus was normal. Blood analysis, chest x-ray, urinalysis, were negative. Electoretinogram (ERG) waves were extinguished in the left eye, but were normal in the right. Visual field testing showed severe generalized depression on the left eye but with normal results on the right eye. Optical coherence tomography showed normal foveal contour of the right eye while the left showed macular thickening.

Conclusions: URP is a rare and unusual presentation of retinitis pigmentosa. It is a diagnosis of exclusion and long-term follow up with a minimum of five years is still needed to ensure that the other eye remains normal and is not a case of asymmetric RP. Once proven to be unilateral, it is found to remain unilateral. Somatic mutation has been proposed as a possible means of inciting disease in an individual with no genetic predisposition.

EP-RET-50

Clinical assessment of retinal ganglion cell complex changes in diabetic polyneuropathy depending on severity of the disease

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To our knowledge, no clinical study has previously been performed to investigate changes in the retinal ganglion cell complex (GCC) changes in diabetic patients differing in severity of diabetic polyneuropathy (DPN).
Purpose: of the study was to identify the features of retinal GCC changes in the patients with DPN depending on the severity of the disease.
Methods: A total of 575 patients (1150 eyes) with type II diabetes mellitus and 50 healthy persons (100 eyes) were examined. DPN was diagnosed in 210 of patients (36,5%). In addition to routine ocular examination, retinal optical coherent tomography with evaluation of the macular GCC was assessed.
Results: As a result of the studies it was found that the state of retinal GCC depends on the severity of DPN: the average thickness of retinal GCC in asymptomatic DPN A was 8.4% higher, in asymptomatic DPN B - 8.6% higher, in the stage of severe complications of DPN - 11.0 % lower, respectively, than in controls (95,8±8,2 μm) ($p< 0,001$).
Focal loss volume (FLV) of retinal GCC in asymptomatic DPN A was 8.4 times higher, in asymptomatic DPN B - 8.7 times higher, in symptomatic DPN A - 14.1% higher, in symptomatic DPN B - 14.3 times higher, in the stage of severe complications of DPN - 15.3 times higher than in controls.
The average global loss volume (GLV) of retinal GCC was 119.1% higher in asymptomatic DPN A, 124.8% higher in asymptomatic DPN B, 231.3% higher in symptomatic DPN A, 239.6% higher in symptomatic DPN B, 358.1% higher in the stage of severe complications of DPN, respectively, than in controls (3,51±2,73 %) ($p< 0,001$).
Conclusions: Retinal ganglion cell complex changes in the patients with DPN depend on the severity of the disease.

EP-RET-51

Registered blindness in Kuwait - 15 years of dynamic changes

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Purpose: Longitudinal changes in the incidence rate of registered blindness and low vision (IR) among the Kuwaitis from 2000 to 2014.
Methods: Data of newly certified Kuwaitis with best-corrected visual acuity 0.1 or less or visual field constriction to 20 ° or less in their better eye , aggregated in three intervals : 2000-2004,2005-2009 and 2010 - 2014 and presented as IR per 100 000 person years of observation by age, gender, severity and leading cause.
Results: Delayed certification resulted in rise of IR from 2005 . IR of males declined since 2010, whereas among the females it continued rising at a slower rate. IR of patients from 41 to 60 years expanded by 50% after 2010,the group over 61 years it reduced by 40%. Retinitis pigmentosa was the leading cause driven by high prevalence of consanguineous marriages ; the significant difference between the males and females is due mainly to cultural factors. Diabetic complications escalated from 2005 affecting patients over 40 years. Glaucoma became the leading cause in the age over 61 years after 2005; while IR of the male patients decreased after 2010 by 18% , disabled females grew by further 35%.
Conclusions: Demographic, social and behavioral factors had impact on the structure and time trends of registered blindness among the Kuwaitis . High prevalence of diabetes and aging of the population resulted in rise of IR from diabetic complications and glaucoma in the last ten years.

EP-RET-52

Corneal approach for removal of posterior segment metallic foreign body

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Purpose: Removal of posterior segment metalic intraocular foreign bodies via corneal approach is an easy and safe method compared to scleral approach.
Methods: By making a small hole in the center of posterior capsule after Phacoemulsification and passing Intraocular magnet through the same corneal incision, any size of metallic foreign body can easily be removed under direct visualization without causing traction or pull effect on surrounding vitreous minimizing the chance of retinal detachment.
Results: 7 patients underwent removal of posterior segment foreign body with this technique, obtaining good visual and structural outcomes.
Conclusions: This technique is easy, safe and ensures a complete removal of foreign bodies from the posterior segment. It could also be useful in the removal of non metallic posterior segment intraocular foreign bodies as well.

EP-RET-53

Swept-source OCT choroidal thickness assessment in diabetic patient

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Purpose: choroidal thickness (CT) assessment in diabetic patients using swept-source optical coherence tomography.
Methods: prospective, cross-sectional study on 48 eyes (48 patients): 24 without diabetes (group 1) and 24 with diabets (9 without diabetic retinopathy, group 2 and 15 with diabetic retinopathy without macular edema, group 3). Best corrected visual acuity (BCVA), intraocular pressure (IOP), fundus examination, ocular biometry, fasting blood sugar and hemoglobin HbA1c levels were evaluated. A macular cube OCT scan and a line scan centered on the fovea were performed for both eyes with swept-source OCT. CT was measured subfoveally, 750 µm temporal, and 750 µm nasal to the fovea between Bruch's membrane and choroidoscleral junction (CSJ). Automated segmentation measurements were compared with the manual segmentation measurements. In the final analysis we included the eye with the best quality index.
Results: Mean age was 69.15±1.32 years. There were no significant differences between the three groups with respect to BCVA, IOP and axial length. Mean subfoveal CT with automated segmentation was 205.46±110.33 µm in group 1, 210.33±86.91 µm in group 2 and 205±85.61 µm in group 3 (p>0.05). Mean subfoveal CT with manual segmentation was thicker in diabetic patients (241.38±114.48 µm in group 1, 242.89±96.83 µm in group 2, 279.27±87.32 µm in group 3, p>0.05).
Manual segmentation CT measurements were significantly thicker for all the three regions compared with the automated segmentation CT measurements (p=0.00). There was a good segmentation of Bruch's membrane and the differences between the two methods of segmentation were due to CSJ. There was no correlation between CT and fasting blood sugar and hemoglobin HbA1c levels.
Conclusions: CT was comparable among all groups. Though it offered statistically significant differences compared with the automated measurements, using the manual segmentation method did not changed the significance between the three groups.

EP-RET-56

Could a biomedical impedance analysis explain choroidal thickness?

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Purpose: To analyse possible relationships between body composition and choroidal thickness (CT).
Methods: Healthy aged individuals with an axial length lower than 26 mm were examined with the swept-source optical coherence tomography (OCT) DRI Triton (Topcon) at the same day time by the same experienced technician. CT values were automatically given by this device in the ETDRS macular grid. All subjects underwent a biomedical impedance analysis (BIA) with the TANITA analyser (Biológica Tecnología Médica SL), obtaining data about total total body water (TBW), basal metabolic rate (BMR), impedance, fat mass (FM) and lean body mass (LBM).
Results: There were significant correlations between TBW and the following ETDRS choroidal sectors: central (p=0.01, r=0.17), inner nasal (p=0.03, r=0.14), inner temporal (p=0.00, r=0.19), outer temporal (p=0.00, r=0.19) and outer superior (p=0.00, r=0.19). Additionally, further correlations were found between impedance and the following sectors: inner superior (p=0.01, r=0.17), inner inferior (p=0.01, r=0.17) and outer inferior (p=0.04, r=0.13).
Conclusions: As blood volume represents the majority of the TBW, it should be considered as a influencing factor of CT measurements, what should be taken into account in case of dehydration. However, it does not affect all choroid in a similar way, as some choroidal regions are more sensitive than others. FM and LBM may have an influence on systemic parameters such as creatinine or cardiac output, but they do not on CT.

EP-RET-57

Choroidal thinning and degree of diabetic retinopathy

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Purpose: To examine the macular choroidal anatomy in healthy aged patients and to compare it with aged patients with type 2 diabetes (T2D), according to the degree of diabetic retinopathy (DR).
Methods: Cross-sectional study including patients with at least 55 years and an axial length (AL) lower than 25 mm. Those with any ocular pathology, previous treatment, or with other systemic diseases or conditions with potential affection of choroid were excluded. They were examined with the swept-source optical coherence tomography (OCT) Triton DRI (Topcon).
Results: 64 eyes of 32 healthy aged individuals and 210 eyes of 105 T2D patients were enrolled. 33 of them had no DR, 24 had mild DR, 33 had moderate DR, 10 had severe DR, and 5 had proliferative DR. Mean age in the healthy group was 66.83±7.31 years, and in the T2D group it was 67.37±7.90 years. There were no differnces in AL or intraocular pressure. There were differences (p< 0.05) all over the choroid between healthy and mild DR patients, and between healthy and moderate DR. There was a direct correlation between the degree of DR and choroidal thickness in all choroidal sectors.
Conclusions: DR implies a choroidal thinning all over the macula which is greater with more severe stages. This thinning is already significant when DR is still mild.

EP-RET-58

Faf patterns in patients with comorbid retinal diseases

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Purpose: to determine all possible FAF patterns in the macular and peripapillary zones in patients with moderate and high myopia accompanying AMD**.**
Methods: we studied and described OCT scans of the posterior pole of 47 patients (93 eyes) using Spectralis HRA+OCT in IR and Blue Light Autofluorescence modes. All patients had moderate and high myopia and age - related changes of the retina. The mean age of patients ranged from 44 to 81 (59 ± 10 years).
Results: we found following patterns: minimal changes in the form of focal hypo- and hyperautofluorescence, patchy, linear, lacelike, reticular and speckled patterns. In moderate myopia speckled, lacelike and linear patterns were not observed. Among the FAF-patterns of the peripapillary region, hypoautofluorescent stripes, hypoautofluorescent focuses with marginal hyperautoautofluorescence and without it were found. We also found areas of hypoautofluorescence without marginal hyperautofluorescence located predominantly in paravascular zones and near large vessels in 4 eyes. All of these eyes were high myopic with the length more than 26 mm.
Conclusions: we found some pathological FAF patterns (speckled, linear and lacelike) only in patients with high myopia and with axial length more than 26mm that appeared to be focuses of hidden lesions of outer retinal layers, which weren't detected during standard IR - OCT mode or ophthalmoscopy. We also found patterns near paravascular zones of hypoautofluorescence without marginal hyperautofluorescence. This information may be useful during revealing early retinal remodeling, making prognosis concerning visual acuity improvement and probable effectiveness of treatment of patients with myopia accompanying age - related macular degeneration.

EP-RET-59

Mitochondrial DNA amount and telomere length in exudative age-related macular degeneration patients

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Purpose: The aim of the study was to measure relative telomere length (TL) and the relative amount of mitochondrial DNA (mtDNA) in peripheral blood of exudative age-related macular degeneration (AMD) patients in comparison to healthy individuals and to determine, if there is a correlation between TL and mtDNA.
Methods: The study included 59 randomly selected patients (age, 77.23 ±8.52; female percentage, 64.40%) with exudative AMD admitted to Riga East University Hospital, Department of Ophthalmology for intravitreal injections and 56 age and sex matched (age, 77.66, female percentage, 65.57%) healthy individuals as a control group from the Genome Database of the Latvian Population. DNA was extracted from peripheral blood leukocytes. Quantitative real-time polymerase chain reaction (qPCR) with SYBR green was used to measure the relative TL and qPCR with TaqMan probes were used for measuring relative amount of mtDNA. Statistical analysis was performed by GraphPad Prism 5.
Results: Relative TL was significantly longer in exudative AMD group compared to the control group ($p< 0.001$), but the relative mtDNA amount was significantly higher in control versus AMD group ($p< 0.0265$). A negative correlation between TL and mtDNA amount in AMD patient group was observed ($r=-0.330$, $p=0.0108$). In the control group, there was a positive correlation between TL and mtDNA amount ($r=0.358$, $p=0.0067$).
Conclusions: Exudative AMD patients had longer telomeres but a lower amount of mtDNA and, as a result, had a negative correlation between these parameters. Our finding of a positive correlation between TL and mtDNA in the control group was similar to the previous reports of results for healthy adults. In literature, shorter TL is associated with AMD geographic atrophy type but not with choroidal neovascularisation. As far as we know, this is the first time when the relative amount of mtDNA was investigated in AMD patients, but the elevation of mtDNA is often observed in eye diseases.

EP-RET-60

Macular diabetic edema treated with Ranibizumab: changes in choroid

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Purpose: To study choroidal changes in patients with clinically significative diabetic macular edema after a year of treatment with intravitreal ranibizumab.
Methods: Pilot prospective study of one-year duration with 11 patients with clinically significative diabetic macular edema treated with at least three intravitreal ranibizumab injections but who had not previously received any kind of treatment. One eye of every patient was included in this study. Choroidal thickness (CT) was measured using a 12 mm horizontal line with optical coherence tomography (OCT) DRI Triton (Topcon). Different CT were measured at different distances: foveal, 5 nasal and 5 temporal, with a distance of 500µm between them.
Results: No differences were found as for visual acuity. There were somo choroidal zones whose thinning was higher than the average: nasal at 1500, 2000 and 2500µm, and temporal at 1000µm ($p< 0.05$). Foveal, nasal 500 and temporal 500µm measurements showed no statistical differences.
Conclusions: Not all choroidal zones get thinner in a similar way after treatment with ranibizumab in case of clinically significative macular edema. The most central tend to keep their previous thickness, what may be involved with the maintenance of visual acuity.

EP-RET-61

"From unlucky to lucky one". Needle Penetration as complication of local anesthesia injection posted for cataract surgery (case report)

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Purpose: Management of retinal detachment and vitreous hemorrhage secondary to intraocular penetration of needle while giving local anesthesia for cataract surgery in only seeing eye.
Methods: High myopic (-9.0D) only seeing eyed patient planned for cataract surgery under local anesthesia at another center but unfortunately needle penetrated the globe and injured retina at 2 different sites away from macula which leads to vitreous hemorrhage and retinal detachment. Referred to us for further management after 2 days of incidence and we proceed with Phacoemulsification with intraocular lens along with pars plana vitrectomy± endolaser±, silicone oil under General Anesthesia.
Results: Our Patient got visual recovery of 0.8 with 2.75D refraction after 6th week post operatively.
Conclusions: Posterior segment intraocular complications can be efficiently managed if intervened early and full visual recovery can be expected depending on area of retinal involvement.
A very careful approach is required while contemplating any procedure in highly myopic eyes.
General Anesthesia is more preferable for any intraocular surgery in only eyed patients to avoid this kind of complications.

EP-RET-62

OCT angiography evaluation of foveal avascular zone in diabetic patient

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Purpose: foveal avascular zone (FAZ) assessment with OCT angiography in diabetic patients.
Methods: prospective, cross-sectional study on 41 eyes from 33 patients: 26 eyes in group 1 (without diabetes mellitus), 7 in group 2 (with diabetes mellitus) and 8 in group 3 (with diabetes mellitus and diabetic retinopathy). We evaluated best corrected visual acuity, intraocular pressure, fundus, ocular biometry, macular cube OCT and macular OCT angiography on 3x3 mm and 6x6 mm scans. Horizontal FAZ (FAZ_H) and vertical FAZ (FAZ_V) diameters in the superficial capillary plexus (SCP) and deep capillary plexus (DCP), asymmetry index (AI), FAZ area, FAZ corrected area and FAZ enlargement coefficient (C) were measured.
Results: The mean age was 64.12±9.72 years. There were no significant differences between OCT angiography on 3x3 mm and 6x6 mm measurements for FAZ_H and FAZ_V. FAZ_H in DCP was significantly higher in group 3 (1.16±0.19 mm) versus group 1 (0.91±0.18 mm) ($p=0.002$). AI was higher in group 3 in DCP (1.17) versus group 1 (1.06) and group 2 (1.13) ($p>0.05$). FAZ area in DCP was significantly higher than FAZ area in SCP for all groups ($p< 0.005$). All average FAZ area values were lower after the axial length correction. FAZ enlargement coefficient (C) was higher in diabetic patients, but without statistical significance (1.11 in group 1, 1.42 in group 2 and 1.65 in group 3).
Conclusions: OCT angiography can evaluate and detect abnormalities in SCP and DCP. In patients with diabetic retinopathy, DCP alterations are more important than those in SCP. OCT angiography may be useful as a noninvasive imaging modality of the retina to detect changes before clinically apparent diabetic retinopathy.

EP-RET-63

Treatment of wet age-related macular degeneration - case report

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Purpose: for the paper is to present a case of a female patient with exudative form of age-related macular degeneration in both eyes, treated with bevacizumab, ranibizumab and aflibercept.
Methods: Patient, 75, came in October 2013 due to vision problems in the left eye - 0.3. Examination of left eye fundus revealed prominent grey-green lesion in macula, with surrounding intraretinal haemorrhage. Left eye optical coherence tomography (OCT) showed CMT = 337 μm with subretinal neovascular membrane and subretinal effusion. Wet age-related macular degeneration was diagnosed.
Results: Within a year she received 5 intravitreal doses of bevacizumab and 1 dose of ranibizumab, resulting in anatomic improvement with functional worsening VOS=2/60. For 18 months the patient did not come for check-ups. After that, the right eye vision dropped from 1.0 to 0.3. Right eye OCT showed CMT = 326 μm, subretinal neovascular membrane and subretinal effusion. Two doses of ranibizumab resulted in functional VOD = 3/60 and anatomic worsening in the right eye OCT CMT = 577μm. Left eye visual acuity was 0.50/60. A month after the first aflibercept dose, both eyes had functional and anatomic improvement VOU = 0,2; OCT CMT OD/OS = 272 μm/ 247 μm. During 9 months she received 5 more aflibercept doses resulting in VOU = 0,2-0,3, with OCT CMT OD/OS =246 μm /216 μm. In 18-month follow-up period, visual acuity was stable, with 0.2 on both eyes, with OCT unchanged, showing subretinal fibrosis, without process activation.
Conclusions: Aflibercept shows higher binding affinity for several members of VEGF family than ranibizumab and bevacizumab, so it is more efficient in treating wAMD. Following intravitreal injection, aflibercept is distributed quickly into retina, slowly absorbed by the circulation system through which it reaches the contralateral eye retina and has an effect on subretinal neovascular membrane, improving the visual function.

EP-RET-64

Choroid influenced by short and long time levels of glycated hemoglobin

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Purpose: To evaluate changes in choroidal thickness (CT) with short and long time levels of glycated hemoglobin (HbA1c) in type 2 diabetic (T2D) patients.
Methods: Aged patients with T2D and an axial length (AL) lower than 26 mm were included. Those with systemic diseases or conditions potentially affecting CT were excluded. Choroid was measured with optical coherence tomog-

raphy (OCT) Triton DRI (Topcon). CT in the ETDRS grid were automatically given by this device. Levels of HbA1c for the last 1, 5 and 10 years were recorded. Left eyes data were converted into right eye format. The degree of diabetic retinopathy (DR) was graded by an experienced ophthalmologist.
Results: 60 eyes (30 patients) were enrolled. Mean age was 58.09±6.50 years old and mean axial length (AL) was 21.90±1.04 mm.
The following correlations were found: central CT with HbA1c for the first 10 years (p< 0.001, R2=0.96), internal temporal CT with HbA1c for the first 10 years and AL (p< 0.001, R2=1.00), internal superior CT with HbA1c for the first year (p< 0.001, R2=0.97), internal nasal CT with HbA1c for the first 10 years (p=0.01, R2=0.92), outer temporal CT with HbA1c for the first 5 years (p< 0.001, R2=0.98), outer superior CT with HbA1c for the first year (p< 0.001, R2=0.99), and outer nasal CT with diabetes progression time (p=0.03, R2=0.95). DR severity and CT were significantly correlated in the outer superior sector (p=0.02). Regression analysis between DR severity and the level of short time HbA1c showed a higher correlation in the first year of the disease (p< 0.001, R2=0.32).
Conclusions: Medium term levels of HbA1c influences CT in most of the sectors, whereas DR severity increased with levels of HbA1c at the beginning of the disease. Temporal and nasal zones are the ones which get thinner as a result of long term HbA1c levels, and the outer nasal zone varies with progression time of T2D.

EP-RET-65

Is there any relationship between choroidal thickness and body fat?

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Purpose: To determine the relationship between body fat and choroidal thickness (CT) in healthy adults.
Methods: 64 eyes of 32 healthy individuals were included in the study. All patients underwent a complete ophthalmic exam. Choroid was imaged using swept-source optical coherence tomography (OCT) Triton (Topcon) and the axial length (AL) was performed with the optical biometer IOLmaster 500 (Carl Zeiss). An Early Treatment Diabetic Retinopathy Study macular CT grid was automatically obtained by the segmentation software. Patients were weighed and had their neck, waist, hip, arm, and calf circumference measured, as well as their triceps and subscapular skinfold. The body mass index (BMI) and waist/hip ratio were also calculated.
Results: Mean age was 66.69±7.28 years old, mean AL was 22.27±1.39 mm and mean BMI was 28.03±4.80 kg/m2. Regression analysis showed significant relationships between: arm circumference, hip circumference and BMI with inner temporal CT (p< 0.001; R2=0.31), inner superior CT (p< 0.001; R2=0.31) and outer temporal CT (p=0.01, R2=0.30); respectively. Central CT and neck circumference were also correlated (p=0.048, R2=0.07).
Conclusions: Body fat measurements showed mild influence in different choroidal regions. Arm circumference, hip circumference and BMI were more associated with choroidal thinning.

EP-RET-66

Neuro-protection in non-arteritic anterior ischaemic optic neuropathy

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Purpose: Despite research to preserve vision in non-arteritic anterior ischaemic optic neuropathy, little is considered possible to prevent permanent loss and with a 'disc at risk', there is a significant chance of contra-lateral involvement.
Discussion centres around the acute presentation in the fellow eye of a 48 year old man who was diagnosed and treated with NAION only 8 months prior.
Neuro-protection and the most current evidence based knowledge on NAION to save sight in patients will be reviewed.
Methods: Retrospective case study and evidence based medicine (EBM) literature review.
A systematic literature review was conducted, using PubMed as search engine to review EBM publications on NAION and neuro-protection, as well as review of this patient's records.
Results: The patient had cardiac surgery and was on anti-coagulants and statins prior to the second eye involvement 8 months later.
Early presentation of contra-lateral NAION with vision loss in his better seeing eye had occurred.
An immediate course of pulsed intra-venous followed by oral steroids, as well as a sequence of hyperbaric oxygen therapy was given and neuro-protective treatments available were initiated.
The remarkable visual outcome of this patient's second eye, in comparison to the first, over the recovery period is documented.
This will be discussed in view of the concurrent combination treatments given, which was guided by the then current published EBM data relating to neuro-protection and NAION, also mentioning most recent publications.
Conclusions: NAION remains a devastating condition with significant visual morbidity, especially when the contra-lateral eye also becomes affected.
Emergency and subsequent treatments with focus the most complete neuro-protection for the best visual outcome seems to be dependant on the immediacy of diagnosis and treatments available, while ensuring optimal systemic health.
This case and current EBM guidelines highlight further research on NAION are necessary.

EP-RET-68

Associations between risk of developing age-related macular degeneration (AMD), atherosclerosis, and retinal vessel calibre

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Purpose: To investigate the relationship between age-related macular degeneration (AMD) precursor lesion and atherosclerosis in Japanese-American population in Los Angeles, California.
Methods: Total of 584 Japanese-Americans in Los Angeles who participated in Hawaii-Los Angeles-Hiroshima study were included in this cross-sectional study. Fundus photography centred on the optic disc was graded according to the Wisconsin Age-related Maculopathy Grading System (WARMGS). Early and late AMD were defined based on drusen size and type, the presence of retinal pigment abnormalities of RPE, geographic atrophy, and neovascular lesion. Carotid atherosclerosis was determined by measurement of carotid artery IMT and plaque score using ultrasound and by measurement of marker related to atherosclerosis, CAVI. Central retinal arteriolar/ venular equivalents (CRAEs/ CRVEs) were measured from retinal photographs using Parr-Hubbard-Knudson formulae. Multiple logistic regression analysis with adjustment of confounding factors was performed to assess associations between AMD, atherosclerosis, and retinal vessel calibre.
Results: Of 584 participants, there were 459 participants without AMD, 113 participants with early AMD and 1 participant with late AMD. The mean age of the participants was 61.8 ± 11.7 years (between 18 to 96 years). This study reported significant associations between early AMD with following: age ($p < 0.001$), carotid artery IMT (< 0.001), CAVI (< 0.001), CRAE (0.04), and CRVE (0.006). After adjustment of related factors, early AMD was determined to be associated with age (OR, 1.05; 95% CI, 1.02-1.07; $P < 0.001$) and CRVE (OR,1.02; 95% CI, 1.01-1.04; $P = 0.002$). Otherwise, CRAE, CAVI, and plaque score were not related to the early AMD.
Conclusions: This finding may suggest that the precursor lesion in AMD may be share the similar mechanism with atherosclerosis by induce local inflammation characterized by wider venular caliber.

EP-RET-69

Choroideremia in a 14yo boy - a novel mutation variant - case report

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Purpose: Choroideremia is a rare genetical dissorder of the retina. It is coused by recessive mutation in CHM gene located on chromosome X. It is present in approximately 1:50 000 male newborns. Males are always affected by the disease while females are usually carriers of the disease. The disease causes a gradual loss of vision, starting with childhood night blindness, followed by peripheral vision loss, and progressing to loss of central vision later in life.
Methods: 14 years old boy was reffered do Pediatric Ophthalmology Outpatient Department with the anamnesis of nyctalopia for several years, In performed static visual field concentric visual field losts were observed, in full field ERG no rods activity was observed, while cons activity was at the level of 20-30%. After performing fluorescein angiography, which shown characteristic pattern of chorioretinal deteriorations the diagnosis of choroideremia was suspected. To completely confirm the diagnosis the genetic test was performed.
Results: The score of molecular genetic examination performed by PCR-sequencing of the CHM gene confirmed the diagnosis of choroideremia. The pathogenic mutation c.49+2 T>C was found in intron 1 of the CHM gene, while there was no typical for choroideremia pathogenic mutations in coding sequence in CHM gene.
Conclusions: A novel mutation in CHM gene, which was found, was never described in literature. Up to now only mutations in coding sequence of CHM gene were though to cause the disease. This finding shows that in pathogenesis of the choroideremia also non-coding DNA might play an important role.

EP-RET-70

Macular area morphometric features in children with regressive retinopathy of prematurity

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Purpose: To evaluate the morphometric features of macular area in children with regressive retinopathy of prematurity (ROP) after retina laser coagulation in threshold stages of ROP.
Materials and methods: 18 children: 10 years ago retina laser coagulation was performed in threshold stages of ROP. Selection criterion was the absence of retinal detachment after laser coagulation, the second degree of regressive ROP. Spectral optical coherence tomography of macular zone („Cirrus HD 5000" Carl Zeiss meditec, protocol „Macular cube 512×128") was carried out. The thickness of retina was measured in the sectors of ETDRS macular map using the „Macular Thickness Analysis" protocol. 17 children (34 eyes) of comparable age and sex without pathology of the organ of vision were the control.
Results and discussion: Significant difference was revealed in reduction of retinal thickness in all sectors of macular map in the group with regressive retinopathy in comparison with healthy children: in the internal temporal (282.2±36.1 vs. 312.1±11.5 μm) and the upper sectors (301.1±18.9 vs. 321.5±11.6 μm, ($p \leq 0.01$), in other sectors the thickness reduction is not reliable. In fovea sector, significant increase in the retina thickness relative to comparison group (279.5±17.9 vs. 239.2±9.2 μm, respectively, ($p \leq 0.01$)), foveal fossa smoothing, without epiretinal membranes and compression in internal border membrane in macular interface. Photoreceptor layer thickness was comparable to that of the control group.
Conclusions: Retina morphometric features in children with regressive ROP grade 2, after retinal laser coagulation are: increased retina thickness in fovea, as well as a uniform decrease in its thickness in other sectors of macular map.

EP-RET-71

Assessment of diabetic retinopathy awareness among diabetic patients living in the delta region of Egypt

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Purpose: To assess the awareness of diabetic retinopathy (DR) in diabetic patients during their first visit to an ophthalmologist in Mansoura Ophthalmic Hospital, Ministry of Health and Mansoura Ophthalmic Center, Mansoura Specialized Medical Hospital, Mansoura University. Furthermore, a considerable portion of the patients enrolled in the study, from rural areas around Mansoura, were evaluated during medical campaigns organized by Mansoura Faculty of Medicine.
Methodology: A questionnaire regarding the awareness and knowledge about diabetic retinopathy was distributed and filled by 600 patients with type 2 diabetes undergoing first-time eye examination or type 1 diabetes after five years of diagnosis. This was followed by a detailed ocular examination with complete fundus examination by an ophthalmologist to screen for the presence of diabetic retinopathy.
Results: A total of 600 patients have filled a survey about knowledge and awareness about Diabetic Retinopathy in the Delta region of Egypt. Awareness about DR was high, approximately 84%. Their source of knowledge was mainly from clinical professionals (65.6%) followed by family members (23.1%), and the television, newspapers, and radio (11.3%). Approximately 35% did not have an idea how often they should have their eyes checked. Patients' knowledge about treatment options was very low, approximates 82.3% did not know the treatment options available for DR.
Conclusions: The current study recommends that there is an immediate necessity for continuing health education programs in order to preserve the high rate of awareness and knowledge about diabetic retinopathy. High level of awareness in the community about diabetic retinopathy will lead to early detection and alleviate the burden of sight-threatening complications of diabetic retinopathy.

EP-RET-72

Paracentral middle acute maculopathy in patients with retinal arterial occlusions - a case series

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Purpose: We present two cases of paracentral middle acute maculopathy (PAMM) related to retinal arterial occlusions (RAO) from our institution and provide a review of this clinical entity.
Methods: Patient 1 was a previously healthy 50 year-old female admitted in our institution for rtPA thrombolytic therapy due to right hemispheric stroke caused by internal carotid artery dissection. At 48-hour post-thrombolysis, the patient developed sudden visual loss in her left eye (OS). Visual acuity (VA) was counting fingers (CF) at 0.3m.
On fundus examination retinal edema with cherry-red spot macula was seen in OS, compatible with central retinal artery occlusion (CRAO). She was discharged at 4 weeks and spectral-domain optical coherence tomography (SD-OCT) was performed at 7 weeks from onset.
Patient 2 was a 76 year-old male who presented in the ED with sudden decrease in vision and superior visual field defect in OS. He had known cardiovascular risk factors and history of branch retinal vein occlusion (RVO) in the fellow eye. VA was CF at 2m in OS.
On fundus examination inferior retinal edema was observed, and an embolus was seen at the emergence of the inferior retinal artery. Static automated perimetry (SAP), SD-OCT and angiography were performed at baseline and OCT was repeated at 4 week follow-up.
Results: On patient 1, SD-OCT showed optic nerve atrophy, and an hyperreflective band on INL plus inner retinal atrophy, compatible with PAMM. Patient 2 had a superior hemifield defect on SAP. An hyperreflective band at the INL in the inferior macula was observed in OS at baseline SD-OCT, which persisted at 4-week follow-up; at 4 weeks, thinning of the inferior macula was also seen.
Conclusions: PAMM is an increasingly recognized entity characterized by an hyperreflective band spanning the INL on SD-OCT followed later by inner retinal atrophy. Our report highlights the importance of multimodal imaging to detect PAMM in patients presenting with RAO.

EP-RET-73

Roth spots as a manifestation of subacute bacterial endocarditis

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Purpose: To present a case of a patient with Roth spots and impaired vision as the first sign of subacute bacterial endocarditis.
Methods: A review of the patient's file.
Results: A 68-year old patient presented to the Eye Hospital due to impaired visual acuity in his right eye, while the vision in the left eye was poor since childhood. He was treated for depression and underwent a dental procedure one month prior. As a new born, he was diagnosed with neonatal sepsis and later on overcame several surgeries, to remove abscesses. His best corrected visual acuities (BCVA) were 0.3 in the right eye (RE) and 0.2 in the left eye (LE). Except mild lens opacity in both eyes, anterior segment exam was normal, while fundus exam revealed brown-yellow foveal opacity in RE and several white centred haemorrhages (Roth's spots) on the periphery of both eyes. RE OCT showed shallow pigment epithelial detachment, ellipsoid zone disruption and hyper reflective deposits in the outer nuclear layer of the fovea, while LE OCT was normal. The patient was afebrile and had no signs or symptoms of systemic disease. The blood work showed slightly increased CRP and ESR level, leukocyte count and procalcitonin were normal. Due to the suggestive clinical presentation, the history of the dental procedure and blood work results, haemocultures were taken and were positive for Streptococcus oralis, while transthoracic echocardiography demonstrated subacute bacterial endocarditis. The patient received appropriate intravenous antibiotic therapy during which the RE BCVA improved to 0.5, accompanied by restoration of the foveal structure. Roth spots decreased in number.
Conclusions: Visual loss due to a foveal haemorrhage was the only symptom of bacterial endocarditis in this patient, illustrating the need for a careful dilated fundus exam and in the presence of Roth spots, a search for underlying systemic pathology, even in the absence of evident systemic infection.

EP-RET-74

SS OCT and SS OCTA findings in circumscribed choroidal haemangioma (CCH)

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Purpose: To describe SS OCT and SS OCTA findings in circumscribed choroidal haemangioma (CCH).
Methods: The SS OCT and SS OCT A images of two patients with CCH were analyzed. The diagnosis of CCH was made based on fundus examination, SS OCT, autofluorescence images, fluorescein angiography, and B-scan ultrasonography. Indocyanine green angiography was performed in one case.
Results: The first patient presented with a juxtapapillary lesion and the second one with a macular lesion. SS OCT B scan at the fovea showed macular edema and subretinal fluid in the first case and subretinal fluid in the second one. In both cases, SS OCT through the tumor showed low to medium homogenous reflective signals from the lesion and elevation of retinal pigment epithelium with intra and subretinal fluid. SS OCT A showed at choriocapillaris layer irregularly arranged vessels, and deeper choroidal layer showed irregular choroidal vessels. At the margin of the tumor, there was a sudden transition from irregularly arranged choroidal vessel to regularly arranged normal vessels.
Conclusions: SS OCT and SS OCTA are noninvasive tools that are useful in the diagnosis and management of CCH.

EP-RET-75

Laponite clay as vehicle to sustained release dexamethasone formulation for intravitreal administration

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Purpose: To study safety and pharmacokinetics parameters in Laponite clay loaded with dexamethasone for sustained release administration by intravitreal injection.
Methods: One hundred µl volume of a Dexamethasone-Laponite suspension (10 mg/ml; 1/10 w/w) was injected in right eyes of sixteen New Zealand rabbits; left eyes served as controls. Safety study included a complete ophthalmological examination consisted in biomicroscopy, intraocular pressure (IOP) measurements and funduscopy. Histological exams by Hematosiline-Eosine and Sirius-Red staining were also performed. Pharmacokinetics studies by High-performance liquid chromatography method determined Dexamethasone sustained release. Time points studied were 1, 7, 28, 84 and 168 days post injection.
Results: Neither inflammation/infection nor retinal damage was detected and IOP ranged within normal limits (6-14 mmHg). However outer retinal layer was unexpectedly better preserved in administrated eyes than controls. Laponite clay was detected in vitreous gel for up to 14 weeks (98 days) post administration (33% of initial dose administered), and dexamethasone levels remained detectable and sustained along studied time periods with a clearance of 0.49 g/day and lengthen the half-live of dexamethasone to 134.75 days (approximately 4.5 months).
Conclusions: Dexamethasone-Laponite is an intraocular well tolerate formulation, and its sustained release was demonstrated in this animal study.

EP-RET-76

Retinal layers thickness changes with age in healthy eyes

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Purpose: To study the physiological changes of the all retina layers thickness in macular and peripapillary areas in healthy eyes using standard protocols and grid points of Swept-Source optical coherence tomography (SS-OCT).
Methods: A total of 480 healthy eyes were analyzed from four different groups of persons classified on age. From 20 to 34 (group 1), 35 to 49 (group 2), 50 to 64 (group 3) and 65 to 79 years old (group 4). All of them underwent Wide protocol (including both macula and optic disc regions, with a field of view of 12x9 cm), using Triton SS-OCT device (Topcon Corporation, Japan).
Results: It is in the transition from group 2 to group 3 where more significant thinning of all layers of the retina occurs explored at optic disc region, mainly at Temporal-Superior quadrant at Retina Nerve Fiber Layer (RNFL), Ganglion Cell Layer (GCL) ++ and retina ($p=0.001$, $p< 0.001$ and $p< 0.001$), and Temporal Superior, Temporal Inferior and Temporal Half at choroid layer ($p< 0.001$). A significant thickening of RNFL at group 2 when comparing with group 1 at Temporal Superior quadrant ($p=0.001$), inferior ($p< 0.001$) and temporal ($p=0.001$) halves and at nasal half at choroid layer ($p=0001$) was also observed.
Conclusions: A direct proportional relationship between the thinning of the retina and age, for all layers was found. Our results suggested that in the third decade of life there is a thickening of the retina and a subsequent thinning that progressed over time.

EP-RET-77

Retinal vascular tumors: a serie of 17 patients

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Purpose: To describe clinical features, etiologies and outcomes among patients with retinal vascular tumors
Methods: The chart of 17 patients (21 eyes) diagnosed with a retinal vascular tumor were retrospectively reviewed. Detailed ophthalmic examination, fundus photography, fluorescein angiography, B-scan ultrasonography, and OCT were performed in all patients. Mean follow-up period was 10.2 months (range, 3 months-8 years).
Results: Eleven patients (65%) were female and 6 (35%) were male with a mean age of 38.8 years . Retinal tumors included retinal vasoproliferative tumor (9 patients; 12 eyes), retinal capillary haemangioma (5 patients; 6 eyes), cavernous haemangioma (2 patients; 2eyes), and racemose haemangioma type 2 (1 patient; 1 eye). Intraretinal and/or subretinal exsudation occured in 14 eyes (66.7%) with macular involvement in 8 eyes (38%). Other associated clinical features were serous macular detachment (5 eyes; 29.4%), cystoid macular edema (3 eyes; 14.3%), exsudative retinal detachment (3 eyes; 50%), and epiretinal membrane (4 eyes; 19%). Retinal vasoproliferative tumors were primary in type in 2/9 patients (22.2%), and secondary in type in 10 eyes of 7 patients including intermediate uveitis (9 eyes) and retinitis pigmentosa (1

eye). Retinal capillary haemangioma was associated with Von Hippel-Lindau syndrome in 1 patient (2 eyes), and sporadic in 4 patients. Cavernous haemangioma and racemose haemangioma were isoladed in all 3 patients. Thirteen patients were treated, and treatment modalities included intravitreal bevacizumab (n= 8), cryotherapy (n=4), transpupillary thermotherapy (n=4), and laser photocoagulation (n=3). Improvement or preservation of visual acuity was noted in 12 eyes (57%) at the end of follow up.
Conclusions: Retinal vascular tumors are uncommon, and comprise a diverse group of congenital and acquired lesions. They include retinal vasoproliferative tumor, retinal capillary haemangioma, cavernous haemangioma, and racemose haemangioma.

EP-RET-78

Choriocapillaris vascular flow in central serous chorioretinopathy: an optical coherence tomography angiography study

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Purpose: To investigate the choriocapillary vascular flow changes in eyes with central serous chorioretinopathy (CSC) by optical coherence tomography (OCT) angiography
Methods: A retrospective cohort study was performed in consecutive patients diagnosed as acute CSC. Comprehensive medical chart review was done. The data was collected and analyzed including best corrected visual acuity (BCVA), funduscopic evaluation, image results of OCT, OCT angiography (OCTA), fluorescent angiography, and indocyanine green angiography(ICG). The microvascular architecture of choroidal layer was evaluated by converting en face images from OCTA to 8-bit binary images by using ImageJ software. Binarization of an en face images were then imported into FIJI software. Automatic local thresholding was done with the Phansalkar method.
Results: Thirty four eyes of 34 patients with CSC and 34 eyes of 34 healthy subjectives were included. The mean subfoveal choroidal thickness (SFCT) of eyes with CSC (352.88 ± 45.74 μm) was significantly thicker than control eyes (249.03 ± 43.55 μm). The choriocapillary vascular area was significantly smaller in eyes with CSC than in control eyes (58.46 ± 10.46 % vs. 69.03 ± 1.95 %, P< 0 .001).
In eyes with one year follow-up, the mean choriocapillary vascular area increased significantly over the follow-up period. (58.26±11.45 % vs. 68.26±1.5 %, P< 0.01).
Conclusions: The choriocapillaris vascular area decreased in macula area in eyes with acute CSC and the vascular area regained with time. This finding suggests that the underlying physiopathology of CSC might be an acute event in circulatory disturbance in the choroid and after the acute episode, the choriocapillary became self-healing with regain of the vascular density.

EP-RET-79

Central retinal venous occlusion complicating a type 2 congenital retinal arteriovenous communication

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Purpose: To describe a case of central retinal venous occlusion complicating a type 2 congenital retinal arteriovenous communication (racemous haemangioma).
Methods: a case report.
Results: A 47-year-old woman, with unremarkable past medical *history*, presented with a sudden onset of vision loss in her right eye. On examination, the best corrected visual acuity (BCVA) was 20/100 in the right eye and 20/20 in the left eye. Results of slit-lamp examination were unremarkable in both eyes, and there was no relative afferent *pupillary* defect. Fundus examination of the right eye showed central retinal vein occlusion associated with a type 2 retinal arteiovenous communication located in the supero-temporal and infero-nasal quadrants. Fluorescein angiography confirmed the diagnosis of central retinal vein occlusion complicating arteiovenous communication. *Optical coherence tomography* examination showed cystoid macular edema with serous retinal detachment. *General assessment and magnetic resonance imaging* of the brain showed no systemic associated abnormalities. After 6 months of follow-up, BCVA remained at 20/100, and spontaneous regression of there was resolution of acute findings with involution of the arteriovenous communication was observed
Conclusions: Retinal racemose hemangioma is a rare congenital vascular disorder. Ocular complications, including central retinal vein occlusion, may lead to visual impairment. Neuroimaging should always be considered to look for associated cerebral vascular malformation.

EP-RET-80

Peripapillary subretinal neovascularisation secondary to idiopatic intracranial hypertension: a case report

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Purpose: Idiopathic intracranial hypertension (IIH) is a disease characterized by elevated intracranial pressure without a detectable cause. It mostly affects young obese females with a presence of headache, pulse tinnitus, transient visual disturbances and papilledema.
Severe visual loss can occur due to optic atrophy or peripapillary choroidal neovascularization (PPCNV) with subretinal bleeding in the macula.
PPCNV is a rare complication of IIH, with the incidence of 0,5% of the cases. These patients have lately been treated with intravitreal administration of anti-vascular endothelial growth factors (anti-VEGF), with complete resolution reported in almost all of the cases.
Methods: Case report
Results: A 32-year-old female with body mass index of 34,6 kg/m^2 presented with sudden inferotemporal visual field defect on her right eye. Patients best-corrected visual acuity was 1.0 parcial on both eyes. Fundus examination revealed bilateral optic disc edema, with inferonasal and superotemporal peripapillary subretinal haemorrhages on the right eye, which were extending towards the fovea. Fundus fluorescein angiography was suggestive of PPCNV. After MRI that excluded intracranial mass, lumbar puncture was performed, confirming elevated intracranial pressure (400 mm H_2O), while MRA exclud-

ed intracranial aneurysms as a cause of Terson syndrome. The patient was treated with oral dose of 250 mg acetazolamide twice a day. Due to right eye PPCNV, intravitreal injection of anti-VEGF Ranibizumab (0.5 mg/0.05 ml) was administered. On one month follow up patient reported improvement of symptoms. Subretinal bleeding and papilledema were reduced. Fundus FA of the RE showed almost complete regression of the PPCNV.
Conclusions: PPCNV is a possible complication of papilloedema due to IIH and should be considered in patients with bilateral optic disc swelling and peripapillary haemorrhages. Intravitreal antiVEGF injection appears to be an effective treatment.

EP-RET-81

Inverted ilm peeling flap technique at rhegmatogenous retinal detachments caused by macular hole

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Purpose: The main purpose is to use ILM flap technique to close large size macular holes caused by rhegmatogenous retinal detachments, high myopias and uveitis.
Methods: inverted ilm peeling thechnique amd pars palana vitrectoma.
Results: We have treated patients with idiopathic large Macular holes (400 micron<) , macular holes after posterior uveitis and with large high myopic Macular holes (400 micron<) using pars pana vitrectomy and the inverted ILM flap technique.
Conclusions: In our own experience, the inverted ILM flap technique appears to be a safe and successful procedure for the management of large idiopathic holes which complicated with rhegmatogenous retina detachment, macular holes which appears secondary after posterior uveitis and macular holes causing by high myopia.

EP-RET-82

Kikuchi-Fujimoto Disease: don't be rash about this great mimicker

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Purpose: Kikuchi-Fujimoto disease (KFD) is a rare, benign and self-limiting disorder characterised by painful lymphadenopathy combined with rashes, fever, malaise and fatigue. This case highlights its potential role as a mimic and overlap syndrome.
Methods: Case report of a 35 year old woman who presented with a three day history of sequential reduced vision in her left, then right eyes. She had, on examination, signs of bilateral active retinal ischaemia, corroborated by fluorescein angiography, compounded by cystoid macular oedema. Nine months earlier, she had noticed hair loss, and three months prior to presenting, she had subsequently developed diffuse skin rashes, weight loss, morning stiffness and shoulder arthralgia. She had marked palpable lymphadenopathy, confirmed by CT imaging, together with extreme low complement and hypergammaglobulinaemia.
Results: A right axillary excision and lymph node biopsy confirmed KFD. Her constellation of symptoms, particularly retinal findings, would have been consistent for Lupus. As she had initially developed these symptoms whilst living in Greece, she was initially treated there with three pulses of intravenous steroids, followed by a course of oral steroids, azathioprine and valciclovir. Her vision, and her systemic symptoms, both improved with this treatment. However, the unveiling of a retinal vasculitis necessitated an escalation of immunosuppression, and she was started on Rituximab. Her vasculitis is now stable and non-progressive.
Conclusions: Although it is a benign disorder, the symptoms, cutaneous manifestations, biological and histopathological features of KFD can mimic a number of infectious, autoimmune and neoplastic diseases. Differentiating between entities can be a challenge, requiring experienced histopathology assessment. A multi-disciplinary approach is crucial when constructing the treatment plan, and to monitor side-effects of treatment.

EP-RET-83

Young healthy choroidal macular thickness

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Purpose: To analyse choroidal thickness (CT) all over the macula using swept-source optical coherence tomography (SS-OCT) in healthy young individuals.
Methods: Young healthy individuals between 18 and 35 years, with an axial length (AL) lower than 26 mm and without any ophthalmological or systemic treatment were recruited. They were examined with SS-OCT DRI Triton (Topcon). This device makes an automatic segmentation of choroidal boundaries and gives automatic measurements of CT in 900 points (30x30).
Results: 102 eyes of 51 young healthy subjects were studied. Mean age was 27.31±3.95 years old, mean AL was 23.68±0.73 mmHg. Choroid was thicker in the superior-central area with a kind of ellipsoidal shape. No symmetry was found.
Conclusions: Choroid follows no symmetric pattern, nor it ressembles retinal.

EP-RET-84

Progressive constriction of the visual field in a patient with extensive "dark without pressure" lesions

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Purpose: White and dark without pressure are supposedly benign (1) fundus lesions of unknown aetiology that have been correlated with localized hyper/hyporeflectivity of the photoreceptor ellipsoid zone on optical coherence tomography. Our purpose is to present a patient with extensive areas of ellipsoid zone hyporeflectivity who experienced progressive visual field constriction.
Methods: A case report.
Results: A 75-years old woman was presented at the Eye Hospital due to progressive worsening of her peripheral vision. She had first noticed that 7 months prior, while driving alongside the fence. She had cataract surgery three years before and the review from the referring ophthalmologist revealed that a visual field defects were present already 15 months before she became symptomatic. At presentation at the Eye Hospital her visual acuity was 6/6 on both eyes, eye pressure was 11 mmHg right eye and 13 mmHg left eye, and there was reduced sensitivity outside the vascular arcades (>15°) on photopic

static perimetry. The optic media were clear and the fundus exam was normal, without signs of glaucoma, with some faint darkening of the peripheral retina bilaterally. Multimodal imaging performed on Heidelberg Spectralis revealed confluent patches outside the vascular arcades, somewhere aligned with blood vessels; characterized by hyporeflective ellipsoid zone on OCT, faint hyperautofluorescence, mildly reduced infra-red reflectance and notably reduced blue-reflectance. Fluorescence angiography (FA), indocianine green FA, full field electrophysiology and dark adaptometry were normal. Head CT was normal and blood work was normal. Further electrophysiology and a paraneoplastic screen is underway.
Conclusions: this case suggests an association between extensive dark without pressure lesions and progressive visual field loss, although full-field electrophysiology failed to demonstrate extensive photoreceptor dysfunction.
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EP-RET-86

Topographic variations of choroidal thickness in healthy eyes on swept source optical coherence tomography

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Purpose: To evaluate the topographic variations of choroidal thickness in the posterior pole and beyond in healthy eyes.
Methods: Cross-sectional study on 66 eyes of 33 healthy subjects of mean age 37 years (23 to 55) and mean refractive error -0.7 D (-4.2 to +1.9). Images were acquired using a swept source (SS)-OCT working at 100kHz/sec. Choroidal thickness (CT) maps from 12 radial B-scans; and 9x9mm OCT-Angiography CT maps were analyzed.
Results: Mean CT was above 300µm at all locations of the ETDRS map except for the nasal outer macula. The subfoveal CT (SCT) was representative of the overall macular choroidal thickness. The thickest choroidal point (TCP) was 395.2 µm (164-548) and retrofoveal in only 1.7% of cases. The SCT was > 400µm in 30% of cases. The choroidal thickness pattern was symmetrical along a horizontal axis in 58% of cases. This CT pattern corresponded to the symmetrical or asymmetrical distribution of choroidal veins. In asymmetrical distributions, the watershed zone between superior and inferior choroidal venous drainage was oblique and outside the macula; and the mean vascularity index was 75.6% at the thickest and 74% at the thinnest zone (p=0.787) respectively.
Conclusions: Wide-field SS-OCT/OCT-A shows that different choroidal patterns exist in a healthy population. More than 1/3rd of the population has a "thick" choroid. The TCP is not retrofoveal. The asymmetrical thickness of the choroid is due to the asymmetry of large vessel density. These findings should be taken into consideration when evaluating choroidal thickness in diseases.

EP-RET-87

Unilateral subretinal hyperreflective material in a patient with a monoclonal gammopathy of unknown significance. A case report and literature review

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Purpose: To demonstrate unusual retinal findings in a patient with a monoclonal gammopathy of unknown significance using multimodal imaging.
Methods: Observational case report. The diagnostic elaboration and the management of the case is reported. The finding of subretinal hyperreflective material in macular disease is reviewed and discussed with regard to our case.
Results: Unilateral diffuse accumulation of subretinal hyperreflective material over the posterior pole and the midperiphery in one eye was associated with a sudden visual acuity drop, followed by rapid spontaneous regression of this deposition and functional recovery over a few weeks.
Conclusions: The case likely represents the first report of generalized homogenous deposition of a hyperreflective material in the subretinal space as documented through multimodal imaging with rapid morphological and functional recovery. It is hypothesized that a temporary paralysis of RPE phagocytosis is causative and might be a paraneoplastic phenomenon of MGUS.

EP-RET-88

Optical coherence tomography angiography in toxemia of pregnancy: a case report

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Purpose: To report swept-source optical coherence tomography angiography (OCTA) findings in a patient with toxemia of pregnancy.
Methods: A case report
Results: A 37-year-old woman diagnosed with toxemia of pregnancy presented with blurred vision in the left eye (LE) following delivery via Caesarian section. Best corrected visual acuity was 20/20 in the right eye (RE) and 20/32 in the LE. Fundus examination showed bilateral Elschnig's spots, with macular sparing in the RE. Fluorescein angiography revealed bilateral multifocal areas of delayed choroidal perfusion. Indocyanine green angiography showed areas of delayed choroidal perfusion in a geographic configuration in the early phase, with more severe involvement of the LE.
In the late phase, there were hyperfluorescent dots associated with ischemic lesions of the early phase. Swept-source OCT at the level of Elschnig's spots mainly showed localized retinal thickening with shallow subretinal fluid, disruption of the ellipsoid band, and small hyperreflective deposits on the retinal pigment epithelium. Macular swept-source OCT angiography revealed areas of loss of signal at the level of choriocapillaris. Lesions were more confluent and extensive in the LE. A week after presentation, OCT angiography demonstrated markedly improved flow deficits of the choriocapillaris in both eyes.
Conclusions: OCT angiography non-invasively shows choriocapillaris ischemia related to hypertensive choroidopathy during toxemia of pregnancy. It is useful for both diagnosis and monitoring.

EP-RET-89

Bilateral serous retinal detachment in preeclampsia - case report

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Purpose: Preeclampsia is leading cause of maternity and fetal/ neonatal mortality. This case report describe visual symptoms which can occur as a complication of preeclampsia.
Methods: Case report of 38 year old Caucasian nulliparous woman who developed serous retinal detachment in both eyes due to preeclampsia.
Results: 38 year old nulliparous woman in 37 weeks and 6 days of pregnancy developed hypertension, proteinuria, generalized edema and blurred vision in both eyes. One day after caesarean section patient was referred to department of ophthalmology. Fundus biomicroscopy and optical coherence tomography revealed serous retinal detachment in both eyes. 5 weeks postpartum blood pressure normalized, subretinal fluid resolved spontaneously and visual impairment released.
Conclusions: For ophthalmologist, acute onset of visual blurring, scotoma, or visual field defects accompanied by headache after 20th week of pregnancy may be a sign of severe preeclampsia. For obstetrician, pregnant patient with preeclampsia should be aware of potential significance of acute visual symptoms.

EP-RET-90

A case of torpedo maculopathy

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A 31-year-old gentleman was referred by his optometrist with an unusual lesion on his left eye's retina. Visual acuity was 6/6. Examination revealed a solitary, flat, torpedo-shaped, hypopigmented-area with well-defined margins involving the temporal macula. Fluorescein angiography revealed transmission hyperfluorescence of the lesion. OCT indicated an abnormally thin retinal pigment epithelium with a large underlying cleft, and Humphrey's visual field testing revealed a corresponding scotoma. The overlying retina appeared normal. The right eye had no pathological findings.
This was a rare case of Torpedo maculopathy: a congenital hypopigmented torpedo-shaped lesion which always localises to the temporal fovea and has a characteristic pigmented tip that points towards the central macula. Given that photoreceptor function is not possible without a functioning RPE, a corresponding scotoma is unsurprising. Studies suggest that the lesion is a developmental defect in the nerve-fibre layer at the horizontal raphe. The lesion can have varying degrees of decreased pigmentation, which allows visualisation of the larger choroidal blood vessels in half of cases.

EP-RET-91

LIPC rs10468017, rs493258 genotype and haplotype evaluation in patients with age-related macular degeneration

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Purpose: To determine the genotype frequencies of *LIPC rs10468017, rs493258* genotypes and haplotype evaluation in patients with age-related macular degeneration (AMD).
Methods: The study cohort consisting of 300 early AMD, 300 exudative AMD patients and 829 healthy controls. The genotyping was carried out using the real-time polymerase chain reaction method. Statistical analysis was performed using SPSS 20.0
Results: TT genotype of *LIPC* rs493258 polymorphism was associated with decreased odds of early AMD development under the codominant and recessive models (OR=0.446; 95 % CI: 0.258-0.772; p=0.004 and OR=0.455; 95% CI: 0.274-0.756; p=0.002, respectively). The haplotype containing the two minor alleles T-T in rs10468017-rs493258 were significantly (p=0.034) associated with decreased odds of early AMD development.
Conclusions: The study showed that *LIPC rs493258* and haplotype containing the two minor alleles T-T in rs10468017-rs493258 may decrease odds of early AMD development.

EP-RET-92

CETP and RAGE genotypes evaluation in patients with atrophic age-related macular degeneration

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Purpose: To determine the frequency of the genotypes of CETP and RAGE SNPs in patients with atrophic age-related macular degeneration (AMD).
Methods: 52 patients with atrophic AMD and 800 healthy controls were evaluated. The genotyping of CETP (rs5882, rs708272, rs3764261, rs1800775, rs2303790) and RAGE (rs1800624 and rs1800625) was carried out using the real-time polymerase chain reaction method. Statistical analysis was performed using SPSS 20.0
Results: Analysis showed that genotypes of rs5882 and rs3764261 in CETP gene were distributed statistically significantly differently between patients and controls (p=0.015 and p=0.01, respectively). Allele A at rs3764261 was statistically significantly less frequent in atrophic AMD group than in healthy controls (p=0.042).Allele G at rs1800625 in RAGE was statistically significantly more frequently observed in atrophic AMD patients than in controls (p=0.047). Genetic risk models in analysis of rs5882 revealed statistically significant variables with increased odds of atrophic AMD under the co-

dominant, dominant, recessive and additive models with the highest 25.4-fold increased odds of atrophic AMD under the co-dominant model. Analysis of rs3764261 showed a decreased odds of atrophic AMD under the co-dominant, dominant, over-dominant models. The RAGE rs1800625 was associated with highly increased odds of atrophic AMD under the co-dominant, recessive and additive genetic models.
Conclusions: We identified two polymorphisms (rs5882 and rs1800625) with higher odds of atrophic AMD development and one protective polymorphism (rs3764261).

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Uveitis

EP-UVE-001

Spectral domain optical coherence tomography findings in a patient with acute syphilitic posterior placoid chorioretinopathy

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Purpose: To report a case of acute syphilitic posterior placoid chorioretinitis (ASPPC), a rare manifestation of ocular syphilis, on spectral domain optical coherence tomography (SD OCT) both before and after treatment.
Methods: Our patient showed symptoms of subacute severe bilateral vision loss. He underwent fundus examination, SD-OCT imaging, fundus autofluorescence (FAF) and fluorescein angiography (FFA). There was a close follow-up for 3 months. Standard treatment of neurosyphilis was employed, including 4 million units of penicillin G administered intravenously every 4 hours for 14 days.
Results: Fundus examination and imaging studies were consistent with previous reports and confirmed the diagnosis of ASPPC. There was fundoscopic evidence of a central retinal placoid yellowish lesion centered in the posterior pole including the macular and peripapillary areas along with optic disk edema. Those placoid lesions were reflected as hyperautofluorescent areas with multiple pin-point hyperfluorescent dots mainly involving the macular area. FFA diplayed a typical leopard-spot pattern. Baseline SD OCT scans demonstrated thickening and hyperreflective nodularity of the choroid-RPE complex, with focal disruption of the overlying photoreceptor inner segment-outer segment (IS/OS) junction in the areas corresponding to the retinal lesions seen on clinical examination. Vision improved and the outer retinal abnormalities normalized after the treatment of neurosyphilis over a 3-month period of follow-up.Serologic examinations were positive for secondary syphilis and HIV-AIDS.
Conclusions: SD-OCT imaging in ASPPC demonstrates reversible, focal thickening, and nodularity of the RPE with disruption of the overlying photoreceptor IS/OS junction. These findings might support the concept that ASPPC involves an inflammatory process at the level of the choroid-RPE with resultant structural and functional changes in the retinal photoreceptors.

EP-UVE-002

Worm in anterior chamber of the eye (video case report)

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Purpose: To report our interesting case diagnosed and treated as worm in anterior chamber of the eye.
Methods: There is a 11 years old girl,who presented in emergency room of our clinic eye with red pain eye.
Visual acuity testing, biomicroscopic slit -lamp examination,indirect ophthalmoscopy, head MRI and hospitalization were performed in a 11 years old girl with red left eye and visual impairment.
Results: patient was consulted also to pediatric infectionist and was treated with steroid drops and systemic anthiparasitic therapy. The cist was remove intact by viscoexpression technique from anterior chamber.
Conclusions: Ocular involvement by cysticercosis is a rare and very uncommon situation.
Anterior uveitis as a reaction of the eye can be potentially blinding to the patient.
After the treatment patient achieved visual acuity of 20/20 post operatively.

EP-UVE-003

The incidence rates and treatment outcomes of secondary glaucoma in different types of uveitis treated in tertiary centre in Serbia

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Purpose: Secondary glaucoma is common complication of uveitis, that occurs in 5-20% of cases. Aim of the study was to analyze frequency and characteristics of glaucoma in patients with various types of uveitis.
Methods: Retrospective analysis included consecutive patients with diagnosis of uveitis and secondary glaucoma, hospitalized at Uveitis Department of University Eye Hospital, in Belgrade between January 2015 and December 2017. Uveitis was classified according to the SUN criteria (2005) into anterior uveitis (AU), intermediate uveitis (IU), posterior uveitis (PU) and panuveitis. Data analysis included demographic and clinical characteristics, antiglaucoma medication, laser and surgical procedures used. Data processing was done using Student's t-test and Chi-square test.
Results: A total of 348 patients with diagnosis of uveitis were hospitalized during study period. Out of these 62 (17.8%) had secondary glaucoma, with average age 52.7 ± 17.0 years (ranging from 17 to 77 years). Glaucoma was bilateral in 29 (46.8%) patients. Regarding the type of uveitis, glaucoma was present in 29 of 155 AU patients (18.7%), 7 of 38 IU patients (18.4%), 10 of 102 PU patients (9.8%) and 16 of 52 panuveitis patients (30.8%) ($p = 0.015$). Antiglaucoma medication included monotherapy in 29 (46.8%) patients, two-drug therapy in 15 (24.2%), and three-drug therapy in 18 (29.0%) patients. Maximum topical and systemic antiglaucoma therapy was needed in 12 (19.4%) patients. YAG laser iridotomy was performed in 4 (6.5%) patients, trabeculectomy with or without drainage implant in 5 (8.1%) patients and both

procedures in one (1.6%) patient. After interventions, there were no significant deterioration of intraocular inflammation that would require prolonged hospitalization, nor extreme hypotonia.
Conclusions: Secondary glaucoma was observed in 17.8% of all uveitis patients, most commonly in panuveitis patients (30.8%). In adequately selected cases, outcome of surgical intervention is successful.

EP-UVE-004

Multimodal imaging in a case of relentless placoid chorioretinitis associated with granulomatous anterior uveitis

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Purpose: to describe findings of multimodal imaging including OCT angiography in a case of relentless placoid chorioretinitis (RPC).
Methods: A case report.
Results: A 53-year-old woman presented with a 2-month history of ocular pain and blurring vision in the right eye (RE). The best corrected visual acuity was 20/32 in the RE and 20/20 in the left eye (LE). Slit-lamp examination revealed fine keratic precipitates, Koeppe nodules, and 1+ vitreous cells in the RE. Fundus examination showed disc swelling and active creamy placoid confluent lesions in the posterior pole and the temporal and the inferior periphery of the RE. There were atrophic pigmented lesions in nasal periphery in the LE. Active lesions were hypo and hyperautofluorescent on fundus autofluorescence, hypofluorescent in the early phase with late staining on fluorescein angiography, and hypofluorescent throughout the indocyanine green angiography sequence. Swept-source OCT showed disruption of the outer retinal layers and swept-source OCT angiography revealed extensive areas of loss of signal at the level of choriocapillaris. Results of work-up including a complete blood count, syphilis serology, C-reactive protein, erythrocyte sedimentation rate, chest X-ray, Mantoux test, and QuantiFERON-TB Gold test were normal or negative. The inflammation was controlled with oral corticosteroids associated with azathioprine and periocular injection of triamcinolone acetonide. OCT showed resolution of the major disruption except for the loss of the ellipsoid band, and the OCT angiography revealed a partial restoration of the choriocapillaris perfusion. Four months later, the patient developed a relapse evidenced by multimodal imaging.
Conclusions: RPC may be associated with granulomatous anterior uveitis. It is characterized by a prolonged and relapsing course. Multimodal imaging is helpful in diagnosis, in differentiating between active and inactive lesions, and in monitoring the disease course.

EP-UVE-005

Vitreous hemorrhage associated with ocular inflammatory conditions

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Purpose: To describe clinical features, management and outcomes among patients diagnosed with vitreous hemorrhage associated with ocular inflammatory conditions.
Methods: Twelve eyes of 11 patients diagnosed with vitreous hemorrhage complicating ocular inflammatory diseases were retrospectively reviewed. Mean follow-up was 31 months (range, 3- 48).
Results: Nine patients were male and 2 patients were female. Mean age was 28 years (range, 8-66 years). The mean best corrected visual acuity (BCVA) was 20/1600. Vitreous hemorrhage occurred during the course of a previously known ocular inflammatory disease in 6 patients (54.5%), and it revealed the underlying inflammatory disorder in 5 patients (45.5%). Vitreous hemorrhage was unilateral in 10 cases and bilateral in one case. Etiologies were Eales disease (4 patients; 36.4%), idiopathic intermediate uveitis (2 patients; 18.2%), Behçet disease (2 patients; 18.2%), tuberculosis (2 patients; 18.2%), and sarcoidosis (1 patient; 9%).
The underlying mechanism of vitreous hemorrhage was ischemic retinal new vessels in 8 eyes (72.7%), inflammatory optic disc new vessels with no evidence of peripheral ischemia in 3 eyes (27.3%), and vasoproliferative retinal tumor complicating intermediate uveitis in one case (9%). Treatment modalities included systemic corticosteroids (n=11), immunosuppressive drugs (n=2), antitubercular therapy (n=4), intravitreal bevacizumab (n=4), scatter retinal laser photocoagulation to ischemic areas (n=6), pars plana vitrectomy (n=3), and transconjunctival cryotherapy (n=1).
In 2 cases, vitreous hemorrhage resolved spontaneously. Mean BCVA was 20/63 (range, no light perception-20/32) at the end of follow-up. Vitreous hemorrhage recurred in 2 cases.
Conclusions: Vitreous hemorrhage, due to multiple mechanisms, may complicate various intraocular inflammatory diseases. Early management of inflammation and hemorrhage is essential for better outcomes.

EP-UVE-006

Pattern of ocular involvement in Behçet disease: a retrospective study of 281 cases

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Purpose: To study predictive factors of ocular involvement in Behçet disease (BD).
Methods: We retrospectively reviewed the medical records of BD patients followed up in the Internal Medicine and the Ophthalmology Departments of Fattouma Bourguiba University Hospital (Monastir, Tunisia) between January 1990 and December 2017. BD was diagnosed according to the International Study Group for Behçet Disease criteria. Ocular manifestations were first described than predictive factors were studied in univariate than multivariate analysis.

Results: Among 281 patients, 108 (38.4%) had ocular manifestations. Anterior uveitis was diagnosed in 17 patients (15.9%), panuveitis in 47 patients (43.9%), posterior uveitis in 23 patients (21.5%), intermediate uveitis in 13 patients (12.2%), optic neuritis in 4 patients (3.7%), central retinal vein occlusion in 2 cases (1.9%) and orbital inflammatory pseudotumor in 1 case (0.9%). Ocular inflammation revealed the disease in 33 cases (11.7%). Uveitis was found to be unilateral in 20 cases (18.7%). Patients with ocular involvement were significantly less likely to have family history of BD (8% vs 17.9%; p=0.025), less likely to have oral and genital ulcers (97.2% vs 100%; p=0.028 and 63% vs 84.3%; p=10-3, respectively). They were also less likely to have deep venous thrombosis (10.2% vs 20.3%; p=0.025) and mucocutaneous onset (61.3% vs 94.8%; p=10-3).
In multivariate analysis, we found that genital ulcers, deep venous thrombosis and mucocutaneous onset are protective factors for ocular involvement (OR=0.44, 95% CI= 0.23-0.84, p=0.013), (OR=0.34, 95% CI= 0.14-0.81, p=0.016), (OR=0.085, 95% CI= 0.03-0.16, p=10-3)
Conclusions: Prevalence of ophthalmic involvement in our cohort seems to be in agreement with previous published data. Patients with mucocutaneous onset, genital ulcers and deep venous thrombosis seem to be less prone to develop ocular manifestations.

EP-UVE-008

Differentiated approach to the diagnostics in children with juvenile idiopathic arthritis associated uveitis

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Purpose: to develop a differentiated approach to the diagnostics in children with juvenile idiopathic arthritis (JIA) associated uveitis.
Methods: 26 children (46 eyes) aged 5 to 16 years with JIU associated uveitis were observed. The patients were divided into three groups.
Children with anterior uveitis (18 eyes) were included into the first group.
The second group included children with middle and posterior uveitis (12 eyes).
The third group - with panuveitis (16 eyes).
All children underwent a comprehensive ophthalmological examination with electroretinography, ultrasonic B-scanning, spectral optical coherence tomography (SOCT), ultrasonic biomicroscopy (UBM). Patients with a ribbon-like corneal dystrophy additionally underwent confocal microscopy and corneal SOCT.
By the time of treatment, the children were verified diagnosis of endogenous uveitis associated with JIA, which was confirmed by laboratory and instrumental methods.
Results: In anterior uveitis, ultrasound biomicroscopy, SOCT, laser confocal microscopy gives a detailed picture of the eye anterior segment. In the first group, 3 eyes had iridocyclitis without any optical media opacification. In 15 eyes precipitates on endothelium were revealed in combination with the posterior synechiae and complicated cataract.
When the eye posterior segment involved in the process, the pathological changes were estimated during electroretinography, ultrasound in B-scanning, SOCT. In the second group, exudate into the vitreous body was recorded in combination with retinal edema in the macular zone. In the third group, ribbon-like corneal dystrophy was recorded in combination with posterior synechiae, complicated cataract, varying severity exudate in the vitreous body, traction syndrome, macular edema.
Conclusions: Complex high-precision diagnostics depending on the pathological process localization is necessary to achieve stable functional results in children with JIA associated uveitis.

EP-UVE-009

Effectiveness of treatment of noninfective uveitis associated with cataract surgery

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Purpose: Implantation of „Ozurdex“ is well known effective method of treatment of noninfective uveitis. But very often it is necessary to remove cataract in these patients. We designed method of combined phacoemulsification and implantation of „Ozurdex“ into the retrolental space. The aim of our work is to assess effectiveness of retrolental implantation of „Ozurdex“ in patients with noninfective uveitis.
Methods: 18 patients with noninfective uveitis were performed combined phacoemulsification with „Ozurdex“ implantation into the retrolental space through posterior capsulorhexis. We assessed visual acute, IOP, precipitates in the anterior chamber, retinal thickness in macular zone during 1 year after operation.
Results: There were no unsuccessful case or any complications during the surgery. Visual acuity was 0,83±0,11 after surgery and in remains during 1 year. IOP was 16±2,1mmHg. In three cases it was necessary to repeat “Ozurdex” implantation through 4-6 months, because we observed inflammation return. There were no cases with macular edema.
Conclusions: Implantation of “Ozurdex” in combination with cataract surgery is the effective method of treatment of the patients with noninfective uveitis. It allows to rich a high visual acuity in all patients, exclude complications after implantation of “Ozurdex” through ocular wall and prevent the development of uveitis.

EP-UVE-010

Peripheral retinal vasculitis presenting as the first manifestation of multiple sclerosis (MS)

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Purpose: To report the case of a 38-years-old woman experiencing visual symptoms such as bilateral blurring of the visual acuity and increased glare sensitivity, that were eventually found to be caused by retinal periphlebitis, an inflammatory process of the anterior visual pathway, which is common during MS, but rarely symptomatic.
Methods: The patient underwent dilated fundus examination, optical coherence tomography (OCT) and fundus fluorescein angiography (FFA).
Afterwards she had a neurologic assessment and magnetic resonance imaging (MRI).
Results: Best corrected visual acuity (BCVA) was 0.6 in both eyes. Dilated fundus examination showed round dot-like opacities overlying the inferior peripheral retina and a mild cellular activity in the vitreous body (BIO-score +1). FFA revealed a vasculitic process involving the peripheral retinal veins with no signs of ischemic or proliferative retinopathy, as well as leakage from the optic disks. Review of systems was otherwise unremarkable. The patient denied symptoms supportive of Behcet’s disease or sarcoid. 5 days later the patient reported migratory paresthesias. On brain and optic nerve MRI, no signs of cerebral vasculitis were discovered, but numerous lesions in bihemispheric white matter were evident in T2-hyperintense and FLAIR. The patient underwent therapy with intravenous methylprednisolone (1 g/day for 5 days) with improvement of visual acuity (up to 0.8 in the right eye and 1.0 in the left eye).

Conclusions: This case reinforces the concept that in all patients with retinal vasculitis and complaining visual symptoms, a complete and precise work-up should be performed in order to readily diagnose MS and also to prevent potential occlusive, ischemic retinal complications.

EP-UVE-011

Application of the novel choroidal parameters in eyes with the first onset of acute anterior uveitis

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Purpose: Little is known about choroidal involvement in anterior uveitis. The EDI-OCT technique may provide a useful tool for the treatment monitoring and outcome prognosis in patients with anterior uveitis. The aim of our study was to evaluate changes in choroidal thickness and volume in eyes with acute anterior uveitis (AAU) using enhanced depth imaging-optical coherence tomography (EDI-OCT) at baseline and after treatment, which were compared with healthy fellow eyes.
Methods: For the study, 36 individuals with unilateral acute AAU at the first onset were enrolled. Subfovealthickness and choroidal volume were measured with EDI-OCT in nine Early Treatment of Diabetic Retinopathy Study (ETDRS) subfieldsbefore and after the completion of treatment. Moreover, axial length measurements of both eye bulbs were determined by optical biometry.
Results: No statistically significant differences in choroidal thickness or choroidal volume were detected between AAU eyes at baseline and after treatment and fellow eyes. Negative correlations between age and both choroidal thickness and choroidal volume were detected in AAU eyes at baseline and after treatment, as well as in fellow eyes.
Conclusions: Evaluation of the choroid with EDI-OCT does not appear to be a reliable tool for the treatment monitoring of eyes with anterior uveitis.

EP-UVE-012

Acute retinal necrosis in patient with lung adenocarcinoma

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Purpose: Acute retinal necrosis (ARN) is a rare disease usually caused by herpes virus family, that affects older and inmunodeficient patients. Our objective is to remember the importance of the systemic study in a patient with suspected ARN.
Methods: We presented a clinical case of 70-year-old inmunocompetent man with redness, photophobia and vision loss of 12 days of evolution. No relevant clinical history. Decimal visual acuity was (VA): 0.7 RE and light perception in left eye. At ocular examination, we observed "mutton fat" keratic precipitates, and intense cells in anterior chamber. Also present intense vitiritis with areas of retinal whitening. Started treatment with intravenous acyclovir and intravitreal foscarnet.
Results: Blood test was positive for IgG Varicella Zoster and Herpes virus type 1. HIV test and toxoplasmosis was negative. In chest radiograph appreciate a mediastinal widening that led to the realization of a TAC with later diagnosis of lung adenocarcinoma. Two month after treatment he was vitrectomyzed for tractional retinal detachment and finally VA was 0.05.
Conclusions: In patients who present ARN, the physician must consider a complete evaluation to rule out other etiologies, or that may lead to the casual diagnosis of severe pathologies

EP-UVE-013

Cytomegalovirus retinitis in HIV positive patients

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Purpose: To identify the prevalence of cytomegalovirus (CMV) retinitis in HIV positive patients with low CD4+ T-cells count and its association with antiretroviral therapy (ART).
Methods: The prospective study was conducted. Patients with CD4+ cell count less than 100 cells/mL were examined in Central AIDS Hospital in Kyiv, Ukraine.
Results: 387 patients, including 209 (54%) with CD4+ cells ≤50 cells/mL and 178 (46%) - 51-100 cells/mL, were examined during 6 month. 23 cases of CMV retinitis were found, all of them had CMV PCR positive blood test. Among 23 cases of CMV retinitis - 22 were defined as active disease and 1 case of inactive state. 19 patients (82%) with CMV retinitis had CD4+ cells less than 50 cells/mL, 9 (39%) patients didn't have any complaints, 3 patient had retinal detachment. 22 patients didn't take an ART treatment and were treated with ganciclovir as inpatients. There were bilateral disease in 4 patients (17%).
Conclusions: There were 9% cases of CMV retinitis in patients with CD4+ cell count ≤50 cells/mL and 2% with CD4+ cell count 51-100 cells/mL. There were no cases of new CMV retinitis in patients, who started an ART treatment.

EP-UVE-014

Prevalence of infectious uveitis in a tertiary center

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Purpose: To determine patterns and main etiologies of infectious uveitis in a tertiary center
Methods: Retrospective study of patient charts evaluated from January 2010 to August 2015 in the outpatient unit of the Laboratory of Clinical Research in Infectious Ophthalmology, National Institute of Infectious Diseases, Oswaldo Cruz Foundation. Individuals with clinical and laboratory diagnosis of ocular infection were included.
Results: Charts of 6746 patients were reviewed. Ocular infection was observed in 2960 patients (43.88%) with homogenous distribution of sex 1495 (50,54%) men and 1465 (49,46%) women. Mean age was 35 years and 86,80% were between 18 to 59 years. Infectious uveitis was identified in 2483 patients. Posterior uveitis was observed in 2437 (98,1%), anterior uveitis in 37 (1,49%), intermediate uveitis in 7 (0.28%) and diffuse uveitis in 2 (0,08%) individuals. Toxoplasmosis was diagnosed in 2241 (75.71%) patients with uve-

itis, cytomegalovirus in 56 (2,26%), herpes 47 (1,89%), syphilis 43 (1,73%), Bartonella 34 (1,37%), tuberculosis 38 (1,53%) and Hansen 12 (0,48%), rubeola, HTLV and fungi 12 (0,48%). Among uveitis patients 399 (13.47%) were HIV positive.
Conclusions: Toxoplasmosis has an extremely high prevalence in Brazil, remaining the major cause of ocular infection in the studied population.

EP-UVE-015

Churg-Strauss syndrome: a rare cause of bilateral central retinal artery oclussion

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Purpose: We present the case of a 65-year-old woman with Churg-Strauss syndrome (CSS) who presented sudden and painless loss of vision of both eyes (OA), being finally diagnosed of bilateral central retinal artery oclussion (CRAO)
Methods: A 65-year-old woman with CSS with secondary polyneuropathy and hypereosinophilia, consulted for sudden and painless loss of vision of OA of few hours of evolution, with subsequent recovery of the right eye (RE) vision. On examination, a visual acuity of 0.7 and 0.001 was found in left and right respectively, with opacification and retinal whitening and stenosed arterioles with segmentation of the blood column in the LE, without a clear cherry red spot. It was oriented as CRAO, and treatment was started with intravenous corticosteroid boluses.
Results: Optic coherence tomography showed asymmetric retinal edema in both eyes, superior in LE, and in the fluorescein angiography no emboli were observed, although we found arteriolar narrowing probably related to vascular spasms. This, added to the fact that a complete systemic study was performed, which was negative, since prior to admission, progression of the polyneuropathy in the electromyogram, increase in ANCA and eosinophilia had been detected, it was oriented as CRAO associated with Churg-Strauss syndrome.
Treatment with cyclophosphamide boluses and maintenance corticosteroids were initiated, but the visual acuity of the LE did not improve and complete retinal atrophy was demonstrated in the subsequent visits.
Conclusions: CRAO is a rare but serious cause of vision loss. Although the main cause is cholesterol emboli, other entities should be taken into account, such as primary vasculitis, which may present with ophthalmological manifestations that may even be the only symptoms of the disease. There have only been a few case reports of CSS associated with CRAO and most of the patients had a poor visual outcome, but early diagnosis and treatment could improve prognosis.

EP-UVE-016

Results of phacoemulsification surgery of complicated cataract cases in different types of uveitis

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Purpose: Uveitic cataract represents a challenge regarding surgical outcome due to high rate of intraoperative (posterior capsule rapture or loss of zonular support) and postoperative complications (inflammation, cystoid macular edema (CME) and secondary glaucoma). The aim of the study was to analyze outcomes of phacoemulsification with intraocular lens implantation in uveitic patients.
Methods: Retrospective analysis of patients with diagnosis of uveitis and complicated cataract, hospitalized at Uveitis Department of University Eye Hospital, in Belgrade between January 2015 and December 2017. Uveitis was classified according to the SUN criteria (2005). Data analysis included demographic and clinical characteristics such as visual acuity, intraocular pressure (IOP) and postoperative complications. Data processing was done using Chi-square test, Freidman test and Wilcoxon signed rank test.
Results: Study included 38 consecutive uveitic patients who underwent cataract surgery. The postoperative follow up was at least 12 months. Average age of patients was 49.3 ± 13.4 years (ranging from 22 to 75 years).
There were no intraoperative complications.
Significantly better visual acuity ($p < 0.001$) was noted postoperatively (0.5) and during controls (0.85) when compared to preoperative (0.025) values. The IOP was within normal values during the follow up and there were no new cases of glaucoma or hypotonia.
Statistically lower IOP ($p< 0.05$) was observed during controls (12) when compared to preoperative (15) values. In four (10.5%) patients there was a relaps of intraocular inflammation after surgery, out of which 3 had CME and 1 developed exudative retinal detachment (all patients were successfully treated with medications). There were no cases of endophthalmitis.
Conclusions: Preoperative control of inflammation for at least three months, proficient surgical technique and close postoperative monitoring are important for the outcome of cataract surgery in uveitic patients.

EP-UVE-017

Efficacy of the vitrectomy among patients with posttraumatic endophthalmitis

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Purpose: Was to analyze the efficacy of vitrectomy with subsequent *inner limiting membrane* (ILM) peeling and silicon oil tamponade among patients with posttraumatic endophthalmitis.
Methods: In this retrospective study 7 eyes with acute posttraumatic endophthalmitis (after a penetrating trauma without intraocular foreign body) and ineffective intravitreal injection of vankomycin were included. All patients underwent scraping of the corneal epithelium, cleansing *of the anterior chamber, lens extraction,* complete vitrectomy, inner limiting membrane peeling combined with silicon oil tamponade. Postoperative visual acuity (VA) and pathological changes of the retina in 1, 6 months after the operation were taken into a consideration.

Results: Preoperative visual acuity among all patients was light perception. In 1 month after the operation VA increased up to 0,01-0,02 among 4 patients, hand movement in 2 patients and 1 patient became completely blind (due to total necrosis of the retina). In 6 months 4 patients saved VA 0,01-0,02 and 2 patients it decrease to light perception (due to proliferative vitreoretinopathy).
Conclusions: These cases demonstrate that vitrectomy with subsequent inner limiting membrane (ILM) peeling and silicon oil tamponade among patients with posttraumatic endophthalmitis are effective in saving an eye as an organ and achieving objective vision.

EP-UVE-018

An interesting case of Behcet's uveitis

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A 34-year-old patient presented to Eye Casualty with acute painless loss of vision of the left eye. There was a past medical history of painful lumps in the legs and frequent mouth ulcers, which was undiagnosed. Visual acuity was 6/5 in the right eye and counting fingers in the left eye. There were extensive intraretinal haemorrhages and venous sheathing in the superior quadrant of the left eye with associated disc oedema. Optical Coherence Tomography showed macular oedema of the left eye.
The case was discussed in a multidisciplinary meeting in the presence of ophthalmology, dermatology and immunology and a diagnosis of Behçet's disease was reached. Intravenous methylprednisolone was started followed by a switch to oral steroids. Due to recalcitrant uveitis, an intravitreal steroid implant was administered. Eventually, immunosuppressants including azathioprine and infliximab were commenced with frequent review by ophthalmology and immunology. The macular oedema improved but unfortunately the patient's visual acuity did not recover.
Behçet's Disease is a complex vasculitis involving multiple organ systems. Ocular manifestations are common. A tailored multidisciplinary approach is required in the management, with corticosteroids being the mainstay of treatment.

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