Retina | Uveitis | Imaging | Pathology
Intraocular Tumours

[8443] Faricimab bei neovaskulärer altersabhängiger Makuladegeneration (nAMD): 1- und 2-Jahres-Ergebnisse der Phase-3-Studien TENAYA und LUCERNE zur Wirksamkeit, Sicherheit und Wirkdauer

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Fragestellung: 1-Jahres-Ergebnisse der Phase-3-Studien TENAYA/LUCERNE stützen die Hypothese, dass die duale Hemmung der Ang-2/VEGF-A-Signalwege mit Faricimab, dem ersten bispezifischen Antikörper zur intraokularen Anwendung, die Gefässstabilität und anhaltende Wirksamkeit über derzeitige Anti-VEGF-Therapien für nAMD hinaus fördert. 2-Jahres-Daten werden über die Langzeit-Wirksamkeit, -Wirkdauer und -Sicherheit von Faricimab bei Patienten mit nAMD informieren. **Methodik:** TENAYA (NCT03823287) und LUCERNE (NCT03823300) sind randomisierte, doppelblinde, aktiv kontrollierte, 112-wöchige Phase-3-Studien mit Faricimab bei Patient:innen mit nAMD. Behandlungsnaive Patient:innen wurden 1:1 randomisiert und erhielten Faricimab 6,0 mg bis zu Q16W (basierend auf protokolldefinierten Beurteilungen der Krankheitsaktivität in den Wochen 20 und 24 nach 4 initialen Q4W-Dosen) oder Aflibercept 2,0 mg Q8W bis Woche 108 nach 3 initialen Q4W-Dosen. Ab Woche 60 bis Woche 108 wurde Faricimab in personalisierten Therapieintervallen, basierend auf einem protokolldefinierten „treat-and-extend"-Regime, verabreicht. **Ergebnisse:** In den Studien TENAYA (n = 671) und LUCERNE (n = 658) wurde der primäre Endpunkt erreicht: Nach 1 Jahr wurden mit Faricimab bis zu Q16W dauerhafte Visusveränderungen erzielt, die denen mit Aflibercept Q8W nicht unterlegen waren. Dabei waren in Woche 48 etwa 80% der Faricimab-Patient:innen auf ein ≥ Q12W-, und etwa 45% auf ein Q16W-Dosierungsintervall eingestellt. Auch bei reduzierter Injektionshäufigkeit war die Reduktion der Netzhautdicke im zentralen Teilfeld (CST) zwischen den Armen vergleichbar. Faricimab bis zu Q16W wurde gut vertragen, mit geringen intraokularen Entzündungsraten. Ausgewählte 2-Jahres-Ergebnisse, wie die BCVA-Veränderung, anatomische Ergebnisse, Verteilung der Behandlungsintervalle sowie Sicherheit, werden am Kongress vorgestellt. **Schlussfolgerungen:** Nach den vielversprechenden 1-Jahres-Ergebnissen werden die 2-Jahres-Daten der TENAYA/LUCERNE-Studien zeigen, ob mit Faricimab die frühzeitige Visusverbesserung, CST-Reduktion und verlängerte Dosierungsintervalle (bis zu Q16W) bei nAMD-Patient:innen über 2 Jahre aufrechterhalten werden.

Grants: None
Financial Interests: Being a consultant with business interest.

This Free Paper will be jointly presented with ePoster [8542], p. 63.

[8544] Langzeitdaten (+ 3 Jahre) zur Sicherheit und Wirksamkeit des Port-Delivery-Systems: Ergebnisse der Interimsanalyse der Extensionsstudie PORTAL mit dem Port Delivery System mit Ranibizumab (PDS) bei Patienten mit neovaskulärer altersbedingter Makuladegeneration

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Fragestellung: Das PDS erlaubt die kontinuierliche intravitreale Abgabe einer angepassten Ranibizumab (RBZ)-Formulierung. Das PDS mit 100 mg/ml RBZ (PDS 100 ml/ml) demonstrierte im Vergleich zu monatlichen intravitrealen RBZ 0,5 mg-Injektionen (RBZ Q4W) vergleichbare Visus-/anatomische Ergebnisse bei handhabbaren Sicherheitssignalen. Die laufende, offene Extensionsstudie PORTAL (NCT03683251) untersucht Langzeit-Sicherheit und -Wirksamkeit des PDS 100 mg/ml bei nAMD-Patienten, die LADDER (Phase 2, NCT02510794) oder ARCHWAY (Phase 3, NCT03677934) abgeschlossen haben bzw. VELODROME (NCT04657289) abschliessen werden. **Methodik:** Patienten erhielten das PDS (10/40/100 mg/ml) mit Wiederbefüllungen nach Bedarf (PRN) (LADDER) bzw. das PDS 100 mg/ml mit Wiederbefüllungen in festen 24-wöchigen Abständen (PDS Q24W) (ARCHWAY) vs. RBZ Q4W. Nach dem Wechsel in PORTAL erhielten die Patienten ab Tag 1 PDS Q24W. Die Patientenpräferenz wurde mittels Fragebogen ermittelt. Die Wirksamkeitsanalyse erfolgte mit Patienten aus LADDER, die Sicherheitsanalyse mit gepoolten Daten aller PDS-Patienten. **Ergebnisse:** Bei Patienten, die aus LADDER in PORTAL wechselten, blieben zentrale Netzhautdicke und bestkorrigierte Sehschärfe von der Baseline (BL) bis Monat 48 in den Gruppen mit vorherigem PDS 100 mg/ml PRN (n=59) und RBZ Q4W (n=41) stabil; die mittlere (95% KI) Veränderung vs. BL im ETDRS Letters Score betrug 0,1 (-6,6; 6,8; n=31) bzw. 2,3 (-9,4; 14,1; n=15). Ca. 95% der Patienten benötigten keine zusätzliche Behandlung. 92% der Patienten, die von LADDER in PORTAL wechselten, bevorzugten in Woche 40 nach Umstellung von RBZ Q4W das PDS. In der PDS-Sicherheitspopulation (n=555; mittleres Follow-up 111 Wochen) hatten 137 Patienten (24,7%) ≥1 okuläres unerwünschtes Ereignis von besonderem Interesse (AESI), am häufigsten Katarakt (11,4%). Eine Endophthalmitis trat bei 11/555 Patienten (2,0%) auf. Die meisten AESI waren leicht oder moderat. **Schlussfolgerungen/Ausblick:** Die PORTAL-Interimsergebnisse unterstützen die bisherigen Daten zum Visuserhalt und die anatomischen Resultate mit PDS 100 mg/ml über 48 Monate und zeigen eine Patientenpräferenz für das PDS vs. monatlichen Injektionen. Das Langzeit-Sicherheitsprofil von PDS ist gut charakterisiert, kontrollierbar und zeigt keine neuen Sicherheitssignale. Die langfristige Bewertung von Patienten mit zusätzlich verlängerten Behandlungsintervallen gemäss dem VELODROME-Protokoll (Q36W) könnte einen weiteren Nutzen dieser Technologie aufzeigen.

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Financial Interests: Being a consultant with business interest.

[8434] Automated segmentation of pigmented choroidal lesions in OCT data with deep learning

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Purpose To present automated segmentation of pigmented choroidal lesions (PCL) in optical coherence tomography (OCT). **Background** The development of novel deep learning methods has shown drastic improvements for many applications in medical image analysis, such as automated segmentation of lesions on the pixel level. In ophthalmology, PCL are regularly found during fundus examinations and can be visualized with depth-resolution using OCT. **Methods** The PCL were annotated manually in volumetric OCT image stacks (n=121). In total, the dataset consists of 21 eyes with and 100 eyes without PCL. Three deep neural network architectures were applied to the data; a Multidimensional Gated Recurrent Unit (MD-GRU), the V-Net and the nnU-Net. All networks were applied to the OCT data in 3D, and cross-validation was performed on the whole dataset. The difference between the pixel-wise annotated lesions and the generated automated segmentation was evaluated with classical, similarity and distance measures and compared between the network architectures. Results Automated segmentation of PCL were generated in 3D with all network architectures. MD-GRU, V-Net and nnU-Net achieved an accuracy of close to 99.9%. nnU-Net predicted PCLs with a DICE similarity coefficient of 0.78 ± 0.13, outperforming MD-GRU (0.62 ± 0.23) and V-Net (0.59 ± 0.24). The smallest distance to the manual annotation was found using nnU-Net with a mean maximum Hausdorff distance of 315 ± 172 um compared to MD-GRU with 1542 ± 1169 um, and V-Net with 2408 ± 1060 um, respectively. **Conclusions** The feasibility of automated deep learning segmentation of PCL was demonstrated on OCT data. The network architecture had a relevant impact on PCL predictions. Improvements in the results are conceivable to meet clinical demands for the diagnosis, monitoring and treatment evaluation of PCL.

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Financial Interests: None

[8559] Feasibility and Clinical Utility of Widefield Optical Coherence Tomography Angiography compared to Ultra-Widefield Fluorescein Angiography in Patients with Diabetic Retinopathy

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Purpose: To test the diagnostic performance of a novel widefield swept-source optical coherence tomography angiography (WF-OCTA) device in detecting retinal non-perfusion (NP) and neovascularization (NV) in eyes with diabetic retinopathy (DR) and to compare it with the standard-of-care imaging method, ultra-widefield fluorescein angiography (UWFFA). **Methods:** Prospective, observational, cross-sectional study, evaluating patients with DR imaged with UWFFA (Optos California; Optos plc, Edinburgh, United Kingdom) and WF-OCTA (Xephilio OCT-S1; wavelength: 1060nm, scan speed: 100.000 A-scans/second; Canon Inc. Tokyo, Japan). WF-OCTA images of the superficial capillary plexus (SCP, layers: ILM-eIPL) consisted of single-capture 23x20 mm scans centered on the fovea. In UWF-FA and WF-OCTA, qualitative and quantitative measurements were assessed to analyze the retinal NP and NV. Quantitatively, vessel density (VD) in WF-OCTA and ischemic index (ISI) in UWFFA were calculated. Qualitatively, the presence of NV and NP was assessed in both WF-OCTA (posterior pole/ mid-peripheral retina) and UWFFA (posterior pole/ mid-peripheral retina/ far peripheral retina). **Results:** Ten consecutive patients with variable DR severity stages (17 eyes) were evaluated. Mean age was 58.9 (±SD: 15.4), male:female ratio was 10:7. UWFFA identified retinal NP in 14 eyes (82%). Posterior pole NP was present in 10 eyes, mid-periphery NP was present in 9 eyes and far-periphery NP was present in 7 eyes. Retinal NV was detected in 3 eyes using UWFFA (1 eye only mid-periphery NV and 2 eyes had mid-periphery and far-periphery NV). WF-OCTA detected retinal NP in the SCP in 13 eyes (11 with posterior pole and mid-peripheral NP, 2 with only mid-peripheral NP) and NV in the SCP in 4 eyes (2 with posterior pole and mid-peripheral NV, 4 with only mid-peripheral NV). Mean VD evaluated using WF-OCTA of the SCP was 0.40 (±SD: 0.1), and mean ISI in UWFFA was 0.09 (±SD: 1.3). **Conclusions:** Non-invasive WF-OCTA offers great potential for the management of many retinal diseases including DR. This new imaging modality might be useful in clinical daily routine to lower the number of invasive examinations. However, in a small percentage, OCTA images cannot be reliably graded for the presence of NP and NV: in these cases, conventional FA needs to be performed.

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[8476] Cardiovascular risk prediction by artificial neural networks using dye-based angiography and OCT angiography data

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Abstract Purpose: To investigate the contribution of machine learning Artificial Neural Network (ANNs) models applied on a

complex of dye-based angiography and OCT angiography data in the cardiovascular risk (CVR) prediction **Methods:** It was a monocentric retrospective observational study from RétinElysée, (Swiss Ethics Committee: 2019-01615). 177 eyes of 177 patients with refractive error ± 3.0 diopters were included and stratified in "non-CVR" group: 85 healthy patients (48.02%; mean age: 60.7±17.1 years; sex ratio M/F 1.07), and in "CVR group": 92 patients with CVR including diabetes I/II, hypertension and hypercholesteremia (51.98%; mean age: 69.2±13.7 years; sex ratio M/F 0.96) The original database for ANNs included patient characteristics (age, gender), fluorescein (FA) and indocyanin green (ICGA) angiography data: arterial time (AT), start of laminar flow (LF), arteriovenous time, end of LF, and ICGA AT, respectively, and OCTA data: vascular density (VD) of superficial (SCP), deep (DCP) capillary plexuses, and choriocapillaris (CC) Differences between groups were assessed using Wilcoxon rank sum test and Ki2 Fisher's Exact test after adjusting for age and gender confounders Multilayered perceptron ANNs architecture was applied to highlight linear and nonlinear relationships. The K fold random cross-validation procedure to train and test classifiers was used with K = 5. Models' predictive performance was evaluated by ROC AUC **Results:** Mean values of retinal and choroidal circulatory dynamics from FA and ICGA were significantly higher, and VD measurements of SCP, DCP and CC from OCTA, significantly lower, in the CVR group versus non-CVR group ($P < 0.05$, respectively) The best accuracy of created ANNs models (AUC = 0.815 and 0.915, training and validation, respectively) was obtained with ANNs topology of multilayer perceptron with one hidden layer, and data from age, gender, FA, ICGA and OCTA parameters **Conclusion:** ANNs models including data of dye-based angiography and OCTA may contribute in the CVR prediction and may be used as promising approach for a clinical decision making.

Grants: None
Financial Interests: None

[8436] Central retinal artery occlusion: long-term changes in the superficial and deep vascular plexus using optical coherence tomography angiography

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Purpose To analyse the morphological changes using optical coherence tomography angiography (OCTA) in the superficial vascular plexus (SVP) and deep vascular plexuses (DVP), immediately after retinal arterial embolism and after years of progression. **Methods** This study shows and analyzes the early and long-term changes in the superficial (including quantitative analysis) and in the deep vascular plexus in 5 recently observed cases of embolism of the central retinal artery or its branches with a follow-up of up to 4 years. **Results** At an early stage, OCTA analysis shows that retinal ischaemia is more marked in the deep vascular plexus than in the superficial one (qualitative morphological analysis). Analysis of morphometric data at the level of the SVP shows an average long-term decrease of 26% in the perfusion index, 13.5% in the vascular density index and 16% in total retinal thickness.The changes at the level of the deep vascular plexus are more serious and long-lasting because of its particular anatomical structure. **Conclusions:** This study allows the analysis of the alterations of the deep vascular plexus in case of embolism of the retinal arteries and the definition of its fundamental role in the maintenance of retinal integrity in case of severe and subdued ischemia.

Grants: None
Financial Interests: Inventor/Developer

[8538] Natural course of solar and laser-associated retinal and macular injuries at a primary care hospital in Switzerland

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Purpose: To report the natural course of solar or laser-associated macular injuries using multimodal imaging. **Methods:** This retrospective analysis assessed patients with solar or laser maculopathy seen at the University Hospital Zurich in Switzerland. Multimodal imaging findings, including optical coherence tomography (OCT) and fundus photography, were reviewed and analyzed at baseline and each follow-up visit. Areas of damaged outer retina, identified on en face OCT images as hyporeflective areas, were tagged and compared between visits. **Results:** Four eyes of 3 patients with solar macular injury and 6 eyes of 4 patients with laser-associated macular injury were included. Visual acuity (VA) at baseline ranged from 20/20 to 20/123. In 9 of 10 eyes with solar or laser injury, VA improved during follow-up. At last follow-up, ranging from 16 to 592 days, VA ranged from 20/16 to 20/50, with 8 out of 10 eyes presenting with a VA of 20/20 or better. A statistically significant decrease of the hyporeflective alterations measured in en face OCT scans was observed ($p = 0.003$). In OCT-cross sections, initial hyperreflective changes are observed in the interdigitation, myoid and ellipsoid zone as well as the outer nuclear layer and the Henle fiber layer. All cases presented a residual ellipsoid zone alteration, with the degree of aforementioned alterations depending on the size of the initial defect. **Discussion:** Multimodal imaging can help detect and monitor solar and laser-associated macular injuries. Most injuries are minor, with good functional outcome. VA recovery seems to correlate with structural restoration of the ellipsoid layer. Minor changes in the retinal pigment epithelium persist even in cases with full visual recovery.

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Financial Interests: None

[8388] Postoperative Ergebnisse bei der Versorgung von Netzhautablösungen mit eindellenden Operationen

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Hintergrund: In der vorliegenden Studie wird der Verlauf nach eindellenden Operationen bei Patienten mit rhegmatogener Netzhautablösung untersucht. **Patienten und Methoden:** Retrospektiv wurden die Krankenakten aller Patienten untersucht, die zwischen Januar 2005 und Dezember 2014 im Kantonsspital St. Gallen aufgrund einer rhegmatogenen Netzhautablösung mit einer eindellenden Operation behandelt wurden. Der primäre Endpunkt ist die anatomische Wiederanlage der Netzhaut drei Monate postoperativ. Die sekundären Endpunkte sind der Visusverlauf sowie das Auftreten von intra- und postoperativen Komplikationen. **Ergebnisse:** Eine Wiederanlage der Netzhaut 3 Monate postoperativ konnte bei 165 von 184 Patienten (89.7 %) durch eine eindellende Operation erreicht werden. Die Behandlung der rhegmatogenen Netzhautablösung verbesserte den Visus der Patienten im Durchschnitt um 4.8 ETDRS Buchstaben. Intraoperativ trat bei einem Patienten eine subretinale Blutung auf. Postoperativ wurde bei 24 Patienten (13.1 %) störendes Plombenmaterial entfernt. Eine pars plana Vitrektomie wurde bei 6 Patienten (3.2 %) aufgrund einer epiretinalen Fibroplasie, bei 2 Patienten (1.1 %) aufgrund eines Makulaforamens und bei 3 Patienten (1.6 %) aufgrund von störenden Glaskörpertrübungen durchgeführt. **Schlussfolgerungen:** Eindellende Operationen sind effektive und relativ komplikationsarme Methoden zur Behandlung ausgewählter Patienten mit rhegmatogener Netzhautablösung.

Grants: None
Financial Interests: None

[8411] Customized therapeutic medical retina regimen during COVID-19 pandemic guarantees functional long-term stability

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Background: The COVID pandemics imposed drastic changes on how hospitals conduct outpatient visits in order to minimize infection risk while preserving the highest quality of care and offering a positive "patient experience." These limitations impinged most on the medical retina consultation, as patients affected by age-related macular degeneration (AMD), diabetic retinopathy (DR), or macular edema linked to retinal vein occlusion (ME) require frequent follow-up visits and intravitreal injections. We assessed the efficacy in preserving visual acuity (VA) and limiting disease activity of the COVID protocol instituted at our department. **Methods:** Retrospective chart review of all patients who had missed intravitreal injection appointments during the first and second COVID waves in 2020. Pre-injection-pause VA was compared with visual acuity after COVID protocol—which was visit with OCT only without patient-doctor encounter—(August '20 and February '21), and 12 months later. Change in retinal morphology was assessed by review of OCT (Heidelberg Spectralis®) images. Additionally, patients completed an ad hoc-created 10-question survey to assess their experience, and feelings perceived during the pandemic. **Results:** Out of the 350 patients in our medical retina consultation, 66 eyes (56 patients) that had missed one or more scheduled injections during the first wave were enrolled. 18.8% (n=12 eyes) showed a worsening of their condition based on OCT, of which 53% were AMD-affected eyes, 17% ME, and 30% DR. VA 12 months post-COVID was worse (loss of 1 or more line in ETDRS letter score compared to pre-COVID) in 32% of the total eyes, while 45% had remained stable or improved. During the second wave, only 15 eyes (13 patients), missed injections, and only 2 worsened. 103 patients answered our survey. Only 14 reported missing visits due to the pandemics, and only 4 reported a worse VA. 12.6% (n=13) expressed fear of getting infected with Sars-Cov-2 at the hospital; 10.7% (n=11) expressed concerns regarding a worsening of their disease due to increased intervals; 10.7% (n=11) signaled a perceived lower quality of care with the COVID protocol applied. **Conclusions:** The treatment protocol during pandemic has shown that successful management of medical retina patients can be achieved by assessment of OCT data only. Furthermore, the vast majority of patients did not report feeling a worse quality of care. The information gained can be useful in reducing the visit burden

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Financial Interests: None

[8461] Treatment deferral during COVID-19 lockdown: functional and anatomical impact on neovascular age-related macular degeneration patients

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Purpose. To investigate the visual and anatomical impact of intravitreal (IVT) injection treatment deferral due to the COVID-19 lockdown on patients affected by neovascular age-related macular degeneration (nAMD). **Methods.** We retrospectively reviewed 314 patients (394 eyes) who were scheduled to receive IVT injections during the Swiss lockdown. We compared patients who continued to receive scheduled IVT treatment without clinical consultation (Group Continue 'C'; n=215) and patients for whom the IVT treatment was completely deferred (Group Stop, 'S'; n=179). Functional and anatomical parameters were collected at four timepoints before and after the lockdown. **Results.** In Group C, visual acuity (VA) at baseline and after lockdown did not differ significantly. In Group S, VA deteriorated significantly compared to baseline and then improved slightly after the resumption of treatment, but it did not recover to baseline values. Mean central subfield thickness remained stable in Group C, whilst it increased in Group S and then returned to pre-lockdown values

after the resumption of treatment. **Conclusion.** An "injection-only" approach was effective in managing nAMD patients during the pandemic lockdown, while patients who deferred their scheduled treatment showed partially irreversible deterioration of visual function. We recommend treatment continuation in nAMD patients during a lockdown.

Grants: None
Financial Interests: None

[8437] Immune dysfunction in non-HIV-related CMV-retinitis. A consecutive case series

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Purpose: Analyze CD4+ cells and gammaglobulin levels in patients with non-HIV-related CMV-retinitis. **Methods:** Retrospective chart review of consecutive cases of CMV-retinitis not related to HIV seen at the uveitis clinic of Jules Gonin Eye Hospital between 2000 and 2021. Blood cell count was analyzed and lymphopenia was graded into mild (800-1000 cells/mm3), moderate (200-500 cells/mm3) and severe (< 200 cells/mm3) forms. CD4 count was reported as well as the gammaglobulin levels. **Results:** Twelve patients were included in the study (mean age 58 years-old, 6 males). Systemic diagnosis was hematologic malignancy in 7 patients, solid organ transplant in 2 patients, rheumatic disease in 2 patients (lupus and rheumatoid arthritis) and thymoma in one patient. Median time between systemic diagnosis and diagnosis of retinitis was 4.8 years (range 4 month - 40 years). Total lymphocyte count was reduced (< 1000 cells/mm3) in 6 out of 12 patients; it was graded as mild in 2 patients, moderate in 3 patients and severe in 1 patient. CD4 count was abnormal (< 490cell/m3) in 8 out of 11 patients (1 missing) but lower than 100 cell/mm3 only in 3 patients. Hypogammaglobulinemia (< 7G/L) was detected in 6 out of 9 patients (3 missing). **Conclusion:** CMV-retinitis is a rare disorder that can affect patients suffering any kind of severe immunodeficiency. Lymphopenia and CD4 cell count reduction play a role in the pathophysiology of the disease as previously reported in HIV patients. However, they are not present in all cases of our series and seem less severe that in HIV-related CMV-retinitis. B cell dysfunction and gammaglobulin level seem to play a major role.

Grants: None
Financial Interests: None

External Diseases | Cornea | Glaucoma

[8474] Linear interstitial keratitis – a poorly explored clinical entity

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Background: To expand the existing knowledge on the rare clinical entity of linear interstitial keratitis. **History and Signs:** This case series includes four healthy patients aged 10, 18, 20, and 21 years at the initial referral to our ophthalmology department at the University Hospital Zurich in Switzerland. All patients reported a sudden onset of painful red eye, with only Case 3 using corrective contact lenses. In the acute phase, all patients were suspected of having unilateral keratitis with conjunctival injection, corneal epithelial defects, and linear stromal opacities, with Case 2 additionally showing anterior chamber reaction and Case 3 exhibiting nummular keratitis. In each patient, we performed diagnostic corneal swabs for common bacteria, fungi, and viruses, all of which were inconclusive. We further assessed autoimmune serological markers and screened for HIV, hepatitis B and C, and syphilis in Cases 1, 3, and 4, and performed in vivo confocal microscopy in Case 2. While infectious screening was negative, we detected antinuclear antibodies in Cases 3 and 4. **Therapy and Outcome:** Case 1 displayed recurrent keratitis, ultimately leading to corneal perforation after mild ocular trauma, which we treated conservatively using bandage contact lenses with topical and systemic antibiotic coverage. At a follow-up five years after the initial presentation, the corrected visual acuity deteriorated from 0.6 LogMAR to 0.5 LogMAR. Case 2 showed pan-stromal corneal inflammation on in vivo confocal microscopy. In Cases 3 and 4, there was no clinical evidence of underlying rheumatologic disease. We treated all three patients using topical antibiotics, lubricating and corticosteroid-containing eye drops, and in Cases 2 and 4 additional antiviral agents due to initially suspected herpetic origin. The corrected visual acuity deteriorated from 0 LogMAR to 0.3 LogMAR in Case 2 and improved from 0.3 LogMAR in Case 3 and 0.6 LogMAR in Case 4 to 0 LogMAR in both patients. **Conclusions:** Linear interstitial keratitis remains a rare entity. It seems to preferably affect adolescent patients. Future research should include autoimmune workup to reveal unknown causal relationships. Long-term patient follow-up is paramount to detect disease recurrence and activity, finally minimizing the risk for corneal rupture.

Grants: None
Financial Interests: None

[8399] Decision Tree for predicting visual benefit in keratoconus patients considering corneal cross-linking combined with refractive treatment

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Background: To develop a fast and frugal decision tree to identify keratoconus patients most likely to benefit visually from the combination of corneal cross-linking with topography-guided photorefractive keratectomy (named CXL plus). **Methods:** The outcome of interest was an improvement of uncorrected distance visual acuity (UDVA) by at least two lines at the 12 months follow-up. Preoperative and 12 months follow-up data from patients who received CXL plus (n=96) and CXL only (n=96) were used in a recursive partitioning approach to construct a frugal tree with three variables ("corneal thickness (>/< 430 um)", "patient interest in CXL plus (yes/no)", and "tomographic cylinder (< / > 3 D)"). In addition, we estimated the probability of the outcome from a multivariate logistic regression model for each combination of variables used in the decision tree. **Results:** In the complete sample, 101/192 (52.6%) patients improved by at least two lines in the 12 months follow-up. Patients affirmative in all three answers had a 75.6% (34/45) probability of gaining at least two lines of improvement in UDVA by CXL plus. The statistical model estimated a 66.0% probability for a successful outcome. **Conclusions:** A fast and frugal tree consisting of three variables can be used to select a patient group with a high likelihood to benefit from CXL plus. The tree is useful in the preoperative counseling of keratoconus patients contemplating the CXL plus option, an intervention that is not fully covered by many health insurances.

Grants: None
Financial Interests: None

[8402] Epi-off customized CXL with supplemental oxygen for keratoconus – 1-year results

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PURPOSE: To evaluate potential advantages of supplemental oxygen in of epi-off customized CXL. **SETTING:** Prospective observational study at the Department of Ophthalmology, University Hospital Bern, Switzerland **METHODS:** Forty eyes of 40 patients with documented progressive keratoconus were treated with epi-off customized CXL using 15 mW/cm2 and maximal energy levels of 10 J/cm2. Twenty eyes were treated in an atmospheric (21% O2) environment, while 20 eye were treated in a hyperoxic environment (>90% O2) and followed for 1 years. Analyzed parameters were Scheimpflug tomographies, endothelial cell count, BSCVA and anterior segment OCT. **RESULTS:** Keratoconus progression was halted in all eyes. Kmax regression in the supplemental oxygen subgroup was significantly greater compared to

the normoxic subgroup (-3.4 vs. -0.8 D). High flattening (>4D) was observed in 8 eyes (40%) in the hyperoxic vs. 1 eyes (5%) in the normoxic subgroup. BSCVA increased in both groups, however, significantly more in the supplementary oxygen subgroup. Densitometry peaked in both groups by month 3 and reached preoperative values in the normoxic subgroup, but not completely in the supplementary oxygen subgroup. Demarcation lines were observed significantly deeper using CXL with supplemental oxygen (334 vs 230 microns). **CONCLUSIONS:** Supplementary oxygen optimizes the effect and outcome of epi-off CXL with 15mW/cm2. Flattening, corneal regularization and visual acuity improvement go along with an increased haze formation and deeper demarcation line depth using supplemental oxygen.

Grants: None
Financial Interests: Yes (Inventor/Developer)

[8418] Safety Of Epithelium-Off Corneal Cross-Linking For Keratoconus Performed In An Office-Based Setting

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Purpose: To assess the safety of epithelium-off corneal cross-linking (epi-off CXL) in an office-based setting. **Setting:** ELZA Institute, Zurich, Switzerland **Methods:** We compared the complication rates of epithelium-off corneal cross-linking (epi-off CXL) performed in an office-based setting to those of epi-off CXL performed in an operating room. Consecutive epi-off CXL procedures (n=511), performed by a single surgeon in a procedure room at the ELZA Institute, Zurich, Switzerland. **Results:** No cases of postoperative infectious keratitis were observed, and sterile infiltrates occurred in 10/511 (1.95%) of patients, all of whom responded well to topical steroid therapy. Delayed epithelialization (>7 days) occurred in 14/511 (2.74%) patients. No other adverse events were noted. **Conclusions:** Office-based epi-off CXL does not seem to be associated with an increased complication risk when compared to operating room settings.

Grants: None
Financial Interests: None

[8465] Complications after corneal collagen cross-linking (CXL)

Frank Blaser[1], Nastasia Foa[1], Daniel Barthelmes[1], Sandrine Zweifel[1], Daniel Rudolf Muth[1]
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Purpose: To present a case series of rare and severe complications after corneal collagen cross-linking (CXL) of keratoconus patients. **Methods:** Single-center descriptive case series covering the period of 2015 to 2022 at the Department of Ophthalmology at the University Hospital Zurich, Switzerland. **Results:** We present four eyes of four patients that showed severe unusual complications within the first month after corneal cross-linking (CXL). Three patients had been treated with the classic epithelium-off "Dresden protocol" (30 minutes riboflavin followed by 30 minutes UV exposition). One patient had been treated with the accelerated epithelium-off protocol (30 minutes riboflavin, followed by 10 minutes UV exposition). One patient presented with an extensive corneal edema due to rubbing the eye after treatment. Two patients showed a bacterial infectious keratitis due to Streptococcus pneumoniae and Staphylococcus hominis, Micrococcus luteus, Streptococcus epidermidis respectively. The latter of the two patients showed an extensive infectious, crystalline keratopathy. The fourth patient showed a severe ulcerative lesion where no infectious cause could be found. Therefore, an autoimmune keratolytic process had to be suspected. Apart from the corneal edema which resolved ad integrum, the other complications resulted in permanent corneal scarring and thinning. One patient needed an emergency amniotic transplant. **Conclusion:** Severe complications after CXL remain rare. Most common causes are complications that are not directly associated with the treatment as such. Those indirect complications occur after the treatment during the healing course of the epithelium. Associations with the therapeutic contact lens and with inappropriate patient behavior are often suspected. Correctly performed corneal scrapings with repeated microbiological analysis and a detailed patient history are essential for establishing the correct diagnosis especially in complicated cases that do not respond to standard therapeutic regimes. This case series supports the efforts that are currently taken to improve the CXL technique in a way that postoperative complications are further reduced.

Grants: None
Financial Interests: None

[8609] EYEMATE-SC Trial: 12-Month Safety, Performance and Accuracy of a Suprachoroidal Sensor for Telemetric Measurement of Intraocular Pressure

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Background: Measuring and controlling intraocular pressure (IOP) are the basis of the follow-up and the treatment of glaucoma. Self-tonometry has been proposed as an alternative to measure IOP more precisely throughout the entire day. The novel EYEMATE-SC sensor is implanted in the suprachoroidal space to enable contactless continual IOP monitoring. The aim of the present study was to investigate the 1-year safety, performance and accuracy of the EYEMATE-SC in primary open-angle glaucoma (POAG) patients undergoing simultaneous non-penetrating glaucoma surgery (NPGS). **Methods:** In this prospective, multicenter, open-label, single-arm, interventional clinical trial, 24 eyes of 24 POAG patients who were due to undergo NPGS (canaloplas-

ty or deep sclerectomy) were enrolled. An EYEMATE-SC sensor was implanted during NPGS. Goldmann applanation tonometry (GAT) measures were compared with the sensors' IOP measures at all post-operative visits during 12 months. Device position and adverse events were recorded throughout the follow-up. **Results:** 15 eyes underwent canaloplasty and 9 underwent deep sclerectomy. Successful implantation of the sensor was achieved in all eyes with no reported intraoperative difficulties. Through the 12-month follow-up, no device migration, dislocation or serious device-related complications were recorded. A total of 536 EYEMATE-SC measures were pairwise included in the IOP agreement analysis. The overall mean difference between GAT and EYEMATE-SC measurements was 0.8 mmHg (limits of agreement (CI 95%, LoA): -5.1 and 6.7 mmHg). The agreement gradually improved and from 3-month post-operatively until the end of the follow-up, the mean difference was -0.2 mmHg (LoA: -4.6 and 4.2 mmHg) over a total of 264 EYEMATE-SC measures, and 100% of measures were within ± 5 mmHg of GAT. **Conclusions:** The EYEMATE-SC sensor was safe and well-tolerated throughout 12 months. Moreover, it allowed accurate continuous IOP monitoring.

Grants: None
Financial Interests: None

[8350] XEN Gel Stent implantation in open angle glaucoma: 5 year results of a prospective monocentric study

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Introduction: To evaluate 5-year treatment outcomes of XEN gel stent implantation in patients with open angle glaucoma. **Methods:** In this prospective, single-centre interventional study, XEN implantation either alone or combined with phacoemulsification (Phaco + XEN) was performed on consecutive eyes with uncontrolled intraocular pressure (IOP) or disease progression despite medical treatment. **Main outcome measures:** Surgical success was defined as 'complete' when 60-month unmedicated IOP was ≤15 mmHg with a relative IOP reduction ≥ 20% from medicated baseline, while the definition of qualified success allowed no more medications than at baseline. Secondary outcomes included mean IOP reduction, changes in ocular hypotensive medications and rates of reoperations. **Results:** Out of 170 eyes initially included, 80 eyes (53.7%) of 68 patients completed the 5-year follow-up and were included in the data (XEN: n = 17; Phaco + XEN: n = 63) after 46.3% were lost to follow-up. Mean age was 78.1 ± 9.1 years, and 69.8% were female. Mean medicated IOP decreased from 19.8 ± 7.0 mmHg (19.9 ± 7.8 [XEN] vs. 20.1 ± 7.6 mmHg [Phaco + XEN]) at baseline to 12.6 ± 3.1 mmHg (12.6± 3.1 [XEN] vs. 12.7 ± 3.1 [Phaco + XEN]) at 5 years (±37.0%; p < 0.001). Medications decreased from 2.0 ± 1.3 (2.0 ± 1.3 [XEN] vs. 2.0 ± 1.3 [Phaco + XEN]) to 0.8 ± 0.5 (0.8 ± 1.1 [XEN] vs. 0.8 ± 1.1 [Phaco + XEN]) (±60%; p < 0.001). Needling revision was performed in 39 eyes (49%), and 19.4% underwent reoperations. **Conclusion:** At 5 years, XEN gel stent implantation achieved clinically significant IOP and medication reduction. The procedure carries a substantial rate of needling and re-operations.

Grants: None
Financial Interests: None

[8393] Refraktive Ergebnisse nach der Implantation torischer Intraokularlinsen mit Hilfe des Zeiss Callisto Systems

Kenji Raemy[1], Mark Scherrer[2], Jörg E. Stürmer[2]
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Hintergrund Für Kataraktpatienten mit Astigmatismus ist das Einsetzen von torischen Intraokularlinsen (IOL) eine sichere und effektive Methode, um eine Emmetropie zu erzielen. Dabei ist die exakte Ausrichtung der Linse entlang des berechneten Meridians essentiell für eine effektive Astigmatismus-Korrektur. Das Ziel dieser Studie ist die Auswertung der Daten mittels deskriptiver Statistik. Der primäre Fokus liegt dabei auf den refraktiven Ergebnissen und somit der Überprüfung der Ausrichtungsgenauigkeit von torischen IOL mit dem Zeiss Callisto System. Patienten und **Methoden** Für die Studie wurden insgesamt 106 Augen von 72 Patienten ausgewertet, welche zwischen Januar 2019 bis Dezember 2020 eine Kataraktoperation mit Implantation einer torischen IOL im Kantonsspital Winterthur (KSW) erhalten haben. Die präoperative Biometrie und intraoperative Markierung der Implantationsachse wurde mittels Zeiss Callisto System durchgeführt. Die postoperativen Kontrollen erfolgten nach einem Tag, nach einer Woche und nach 4 Wochen im KSW oder beim zuweisenden Augenarzt. Für die Auswertung wurden nur die Daten der 4-wöchigen Kontrolle verwendet. **Ergebnisse** In 64 Augen (60%) wurde eine Zeiss AT Torbi 709 M und MP sowie in 42 Augen (40%) eine PhysIOL Ankoris toric yellow IOL implantiert. Bei 46 Augen wurde der unkorrigierte postoperative Visus nicht erfasst. Von den übrigen 60 Augen beträgt der mediane unkorrigierte postoperative Visus 0.9 (0.8 bis 1.0 [IQR]). Dabei konnte bei 48% der Augen eine Emmetropie und bei 92% ein Visus ≥ 0.6 erzielt werden. Der postoperative Zylinder beträgt im Median 0.5 Dioptrien (0.25 bis 0.75). Der Median des postoperativen Zylinders abzüglich des Zylinders der Zielrefraktion ist 0.33 (0.17 bis 0.64). **Schlussfolgerungen** Das Zeiss Callisto Systems ist eine effektive Methode mit sehr guten klinischen Ergebnissen, um torische Intraokularlinsen entlang der Implantationsachse auszurichten.

Grants: None
Financial Interests: None

[8416] 325° Arch-Length Intracorneal Ring Implantation Strain Maps Visualized With New Optical Coherence Elastography

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Purpose: The objective of this study was to record the axial corneal strain field in the cornea that resulted directly after creating a stromal tunnel as well as after implanting an intracorneal ring segment (ICRS). **Setting:** Swiss federal institute of technology **Methods:** Freshly enucleated porcine eyes were obtained and assigned either to ICRS implantation, to tunnel creation only or to virgin control. Immediately after manual tunnel creation and ICRS positioning, respectively, the entire eye globe was mounted within a customized holder and intraocular pressure (IOP) was adjusted to 15 mmHg. Then, IOP was increased in steps of 1 mmHg to 20 mmHg and decreased again. At each step, an optical coherence tomography volume scan was recorded. Displacements between subsequent scans were retrieved using a vector-based phase difference method. The induced corneal strain in axial direction was determined by taking the axial gradient. In addition, corneal surface was detected and sagittal curvature maps computed. **Results:** Corneal tissue presented a localized compressive strain in the direct vicinity of the stromal tunnel, which was independent of the sign of IOP change. The central and peripheral (exterior to the ICRS) cornea demonstrated compressive strains upon IOP increase, and tensile strains upon IOP decrease. ICRS induced an annular shaped tensile strain at its inner border, particularly during IOP increase. The compressive strains close to the tunnel remained with ICRS implantation. Corneal curvature changes were limited to the corneal regions subjected to strain. **Conclusions:** Tunnel creation and ICRS implantation induce localized strains in cornea regions that coincide with those of refractive changes[ETN1] [SK2] , suggesting that corneal strain and curvature are directly related. Studying corneal strain in response to surgical intervention may provide new insights on underlying working principles.

Grants: Supported by the Swiss National Science Foundation (Ambizione PZ00P2_174113 to SK).
Financial Interests: None

Neuroophthalmology | Oculoplastics | Miscellaneous

[8427] Design and evaluation of a hybrid information system to improve information delivery before cataract surgery

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Objective: To develop a hybrid information system (HIS) for patients and to investigate whether it leads to an improved information process before cataract surgery compared to the status quo. **Methods:** We applied the outcome-based "Design Science Methodology" from the field of information technology research and developed HIS for the eye clinic at Lucerne Cantonal Hospital. We evaluated the relative advantage of HIS based on five statements (speed, quality, simplicity, effectiveness, control) presented for evaluation on a 7-point Likert scale per statement for patients and treating eye surgeons in a survey. **Results:** The implementation of the HIS leads to a clearly perceived relative advantage over the previous status quo of information process among patients and treating eye surgeons. 52 patients with a mean age of 73 years (46% female) clearly perceive a relative advantage of the HIS over the status quo mean = 6.36, SD = 0.72). 16 eye surgeons with a mean age of 43.4 years (37.5% female) and with 10.4 years of surgical experience, also rate the HIS positively (mean = 4.94, SD= 1.0). **Conclusion:** The results of this work show the perceived relative advantage of the developed HIS. The provision of information prior to cataract surgery is improved, resulting in shared decision making between the ophthalmologist and the patient. The work also contributes to the field of digital health by demonstrating the benefits of hybrid information delivery and how it significantly supports the reach and effectiveness of everyday healthcare providers. The HIS is not only promising in the context of cataract surgery, but can be used for various other diseases in ophthalmology as well as other surgical medical disciplines to achieve the goal of shared decision making.

Grants: None; **Financial Interests:** None

[8558] Smartphone Slit Lamp Imaging – Usability and Quality Assessment

Nastasia Foa[1], Frank Blaser[1], Sandrine Zweifel[1], Daniel Barthelmes[1], Daniel Rudolf Muth[1]
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Purpose: To assess the usability and image quality of a smartphone adapter for direct slit lamp imaging. **Methods:** Single-center, prospective, clinical study conducted at the Department of Ophthalmology at the University Hospital Zurich, Switzerland. The participant group consisted of 23 doctors and 3 medical students. The control group consisted of 1 ophthalmic photographer. Both groups took images of the anterior segment and the fundus of the same proband. The control group used professional photo equipment. The participant group used an iPhone 11 mounted on the slit-lamp via a removable smartphone adapter (Custom Surgical GmbH). Acquisition time was defined as the mean time required for mounting the adapter, taking the picture, dismounting and export the images to the management software. A questionnaire was taken by all participants. The quality of all pictures was graded independently by 2 blinded ophthalmologists on a scale from 0 (low) to 10 (high quality). Images with a score ≥7.0 were

considered as good as the reference images. **Results:** Mean acquisition time for anterior segment and fundus imaging was 155 and 173 seconds respectively for the participant group and 100 and 136 seconds for the control group. No statistical correlation (Spearman Rho) was found between acquisition time and the participants' ophthalmological experience. On a scale from 0 (difficult) to 10 (easy), the mean subjective difficulty grade for taking a picture of the anterior segment was 8.2/10 and for the fundus photo 6.7/10. No statistical correlation was found between ophthalmological experience of the participant and subjective difficulty. The average quality of the anterior segment images (7.4/10) was rated as good as the reference image. The quality of the fundus photos was slightly lower (6.3/10). Acquisition time and image quality were not statistically correlated. **Conclusion:** Slit lamp imaging with the presented smartphone adapter provides high quality imaging of the anterior segment. Posterior segment imaging remains challenging in terms of image quality. The adapter constitutes a cost-effective, portable, easy to use solution for recording ophthalmic photos and videos. It can facilitate clinical documentation and communication among colleagues and with the patient outside regular consultation hours. Direct slit-lamp imaging allows to save time and increases the independence of ophthalmologists on patient mobility and on availability of photographic staff.

Grants: None; **Financial Interests:** None

[8438] Evaluation of the Reddesa chart, a new red desaturation testing method, for optic neuritis screening and grading in clinical routine

Dominik Bruegger[1], Anna-Lucia Koth[2], Muriel Dysli[3], David Goldblum[4], Mathias Abegg[1], Markus Tschopp[3], Christoph Tappeiner[4]

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Background. Optic neuritis usually leads to reduced color-sensitivity. Most often the change of red color, so called red desaturation, is tested in clinical routine. The aim of this study was to test the feasibility of the Reddesa chart, a new red desaturation test based on polarization, as a screening method for optic neuropathy. **Methods:** A total of 20 patients with unilateral optic neuritis and 20 healthy controls were included in this prospective pilot study. Ophthalmological examination included assessment of best corrected visual acuity (BCVA), slit lamp examination, fundoscopy, testing of relative afferent pupillary defect (RAPD) and red desaturation with the red cup test and the Reddesa chart. **Results:** The mean BCVA in the optic neuritis group was 0.76±0.36 in the affected eye (95% of eyes with RAPD, 75% of eyes with difference in the Reddesa test) and 1.28±0.24 in the healthy eye, whereas in the control group BCVA was 1.14±0.11 in the right eye and 1.15±0.14 in left eye (none of the eyes with RAPD or abnormal Reddesa test). In our study, the Reddesa test showed a sensitivity of 75% and a specificity of 100% for detecting optic neuritis. **Conclusion:** The Reddesa chart is a feasible screening test for optic neuritis in a clinical setting. In comparison to the red cap test, it has the advantage of quantifying red sensitivity. The relatively low specificity of the Reddesa chart in our study might be due to the relatively high number of patients with only mild optic neuritis.

Grants: None; **Financial Interests:** Yes (Inventor/Developer)

[8414] Could routine bicanalicular tear duct intubation improve surgical ectropium correction?

Anthia Papazoglou[1], Triantafyllia Chrysochoou[2], David Goldblum[2], Markus Tschopp[1], Tim Enz[1,2]

[1] Kantonspital Aarau; [2] University of Basel

Purpose To report on the combination of conventional lower lid shortening or punctal inversion procedures with concurrent bicanalicular nasolacrimal duct intubation as a novel surgical approach to treat lower eyelid ectropion. We aimed to analyze and compare the outcomes of isolated and combined surgical procedures in a cohort of patients with lower eyelid ectropion in order to identify the superiority of one of the two methods. **Methods** A retrospective review of all patients who underwent surgical correction for lower eyelid ectropion at the Cantonal Hospital of Aarau between January 2019 and December 2020 was performed. Patient medical records were investigated upon etiology, localization, surgical correction technique and intra- and postoperative complications of the ectropion. The postoperative punctal position, the pre- and postoperative epiphora as well as reoperation rate were also documented. Two study groups consisting of cases with isolated and combined procedures respectively were formed and compared to each other, with respect to postoperative punctual and lower lid position. **Results** A total of 53 lower lids of 35 patients were included in this study. Postoperatively, there was no statistically significant difference in the correct punctum position or the improvement of epiphora between the two groups. More complications were seen in the Nunchaku group (p=0.0041), mainly cheese wiring and one Nunchaku tube dislocation. **Conclusion** In our study, bicanalicular nasolacrimal intubation during ectropium surgery does not seem to improve the outcome of ectropium surgery and is therefore not recommended on a routine basis.

Grants: None
Financial Interests: None

[8477] Periocular Amyloidosis as a rare entity that should be known

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Purpose To describe 3 cases of periocular Amyloidosis and describe the management of this rare condition and its systemic risks and implications. **Clinical Cases** *Case 1*: A 38-year-old otherwise healthy female patient was sent with a unilateral right upper eyelid lesion and secondary ptosis. The biopsy revealed AL-amyloidosis. The

systemic work-up was inconspicuous. *Case 2:* A 79-year-old woman sent by her ophthalmologist due to epiphora and palpebral laxity for possible correction. The subtarsal conjunctiva was thickened and dark red with multiple suffusions in the periocular region. The further history revealed a known systemic amyloidosis and the biopsy confirmed the conjunctival involvement.
Case 3: A 67-year-old man with a known systemic Myeloma, who suffered from recurrent spontaneous palpebral hematomas. In the course of his disease was diagnosed with a systemic AL-amyloidosis. **Discussion** The amyloidosis can affect almost all organs as a systemical or as a localized disease. The ocular amyloidosis is rare and can affect almost any tissue. Symptoms depend on the affected area. A final diagnosis requires a biopsy. A systemic examination is needed as a systemic illness can be fatal in cases associated with systemic haematological malignancies, multiple myeloma and involvement of the liver and kidney. **Conclusions** Although rare, the ocular amyloidosis should not be missed due to its systemic risks and implications. An interdisciplinary work-up is important to rule out an underlying systemic and possibly fatal disease.

Grants: None; **Financial Interests:** None

[8170] Occurrence and outcome of firework-related ocular injuries in Switzerland

Ferhat Turgut[1], Alexander Bograd[2], Brida Jeltsch[3,4], Adrian Weber[5], Petra Schwarzer[6], Iulia Ciotu[7], Joao Amaral[8], Marcel Menke[8], Francois Thommen[9,10], Tamer Tandogan[6], Christoph Tappeiner[6]

[1] Stadt Spital Zürich Waid und Triemli; [2] Inselspital, Universitätsspital Bern; [3] Universitätsspital Zürich; [4] Universität Zürich; [5] Kantonspital Luzern; [6] Pallas Klinik, Olten; [7] Hôpital universitaire de Geneve; [8] Kantonspital Aarau; [9] Jules Gonin Eye Hospital; [10] University of Lausanne

Purpose: Firework-related ocular injuries (FWROI) are a major cause of preventable visual impairment. This study aimed to analyze the occurrence and outcome of FWROI in Switzerland. **Methods:** This retrospective multicenter study included patients with FWROI from seven centers in Switzerland from January 2009 to August 2020. Demographic information, type of injuries, medical and surgical treatments, the best corrected visual acuity (BCVA) at baseline and end of follow-up, occurrence and type of secondary complications, and duration of hospitalization were analyzed. **Results:** A total of 105 patients (119 eyes) with a mean age of 27.1 ± 15.9 years were included in the study (71.4% male patients; 29.5% underage). Most injuries occurred around New Year's Eve (32.4%) and the Swiss national holiday on 1 August (60.9%). The most common anterior segment findings were conjunctival or corneal foreign bodies (58%), whereas Berlin's edema was the most common posterior segment finding (11.4%). Globe ruptures were found in four patients. The mean BCVA in all patients at first presentation was 0.4 ± 0.8 logMAR and improved to 0.3 ± 0.8 logMAR at last follow-up. A primary surgical intervention was performed in 48 eyes (40.3%). Hospitalization directly after the trauma was necessary for 18 patients for a mean of 5.8 ± 4.1 days, and a total of 4.9 ± 7.6 follow-up visits were needed. **Conclusion:** This study provides the first data on FWROI

in Switzerland, which are helpful for further preventive and educational programs and comparisons with other countries.

Grants: None; **Financial Interests:** None

Interactive Cases (Friday, 11:00 – 12:30)

[8475] No Pain, No Gain – Topical Anesthesia-induced Keratopathy

Said Sadiq, Daniel Rudolf Muth, Daniel Barthelmes, Timothy Hamann, Anahita Bajka, Maximilian RJ Wiest, Sandrine Zweifel, Frank Blaser
UniversitätsSpital Zürich

Purpose: To raise awareness about topical anesthesia-induced keratopathy and its diagnostic challenge due to heterogeneity of clinical findings. Methods: Single case report and literature review at the Department of Ophthalmology, University Hospital Zurich in Switzerland. **Results:** The presented case was referred for treatment-resistant corneal epithelial defects and incipient ulceration of the left eye (OS). The patient had undergone bilateral cosmetic blepharoplasty eight weeks earlier abroad. We found mild bilateral lagophthalmos without corneal show. The OS exhibited marked conjunctival injection, extensive corneal epithelial defects, calcified corneal deposits with foamy borders without apparent infectious infiltrates. The corneal findings hardly improved under treatment with topical antibiotic ointment and a protective, sterile dressing. A third-party anamnesis revealed, with some delay, that the patient was regularly applying topical Proxymetacaine hydrochloride 0.5% (Alcaine, Alcon Laboratories, New South Wales, Australia) for pain relief. Therefore, we hospitalized the patient, stopped the topical anesthetics, and continued with topical antibiotics and lubricating ointment. After the corneal epithelial defects' closure, we smoothened the surface irregularities twice by mechanical corneal abrasion and applied an amniotic patch under a soft therapeutic contact lens. At a follow-up three months after the initial presentation, the visual acuity of her left eye improved from light perception to 0.3 LogMAR without refractive correction. **Conclusions:** Topical anesthetic abuse can severely damage the ocular surface. Physicians should take toxic keratopathy into consideration in treatment refractory cases and target their patient history assessment.

Grants: None
Financial Interests: None

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