magnus Group

INTERNATIONAL OPHTHALMOLOGY CONFERENCE

VIRTUAL EVENT

27-28 OCT 2022

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BOOK OF ABSTRACTS

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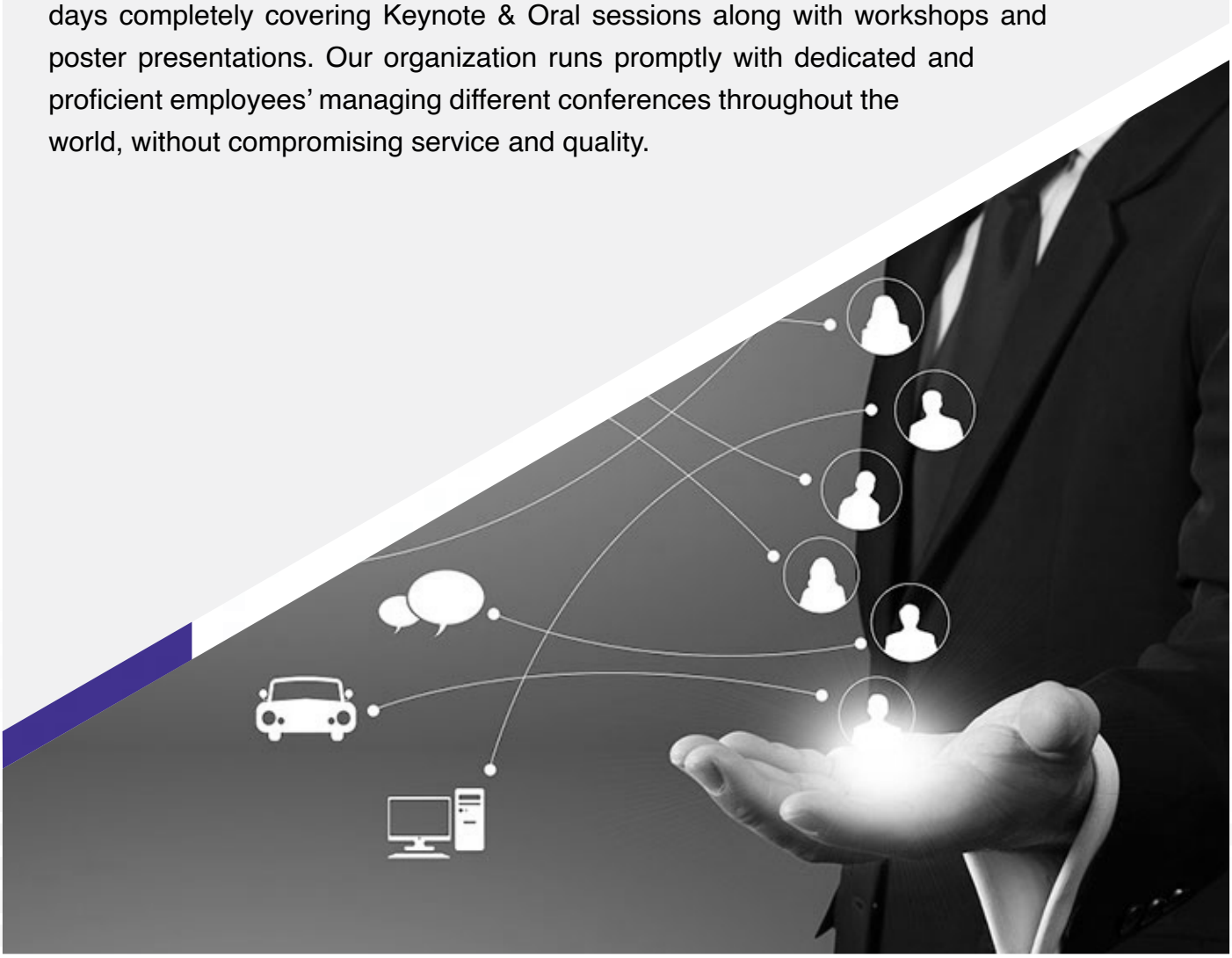
ABOUT MAGNUS GROUP

Magnus Group (MG) is initiated to meet a need and to pursue collective goals of the scientific community specifically focusing in the field of Sciences, Engineering and technology to endorse exchanging of the ideas & knowledge which facilitate the collaboration between the scientists, academicians and researchers of same field or interdisciplinary research. Magnus Group is proficient in organizing conferences, meetings, seminars and workshops with the ingenious and peerless speakers throughout the world providing you and your organization with broad range of networking opportunities to globalize your research and create your own identity. Our conference and workshops can be well titled as 'ocean of knowledge' where you can sail your boat and pick the pearls, leading the way for innovative research and strategies empowering the strength by overwhelming the complications associated with in the respective fields.

Participation from 90 different countries and 1090 different Universities have contributed to the success of our conferences. Our first International Conference was organized on Oncology and Radiology (ICOR) in Dubai, UAE. Our conferences usually run for 2-3 days completely covering Keynote & Oral sessions along with workshops and poster presentations. Our organization runs promptly with dedicated and proficient employees' managing different conferences throughout the world, without compromising service and quality.



ABOUT IOC 2022

"International Ophthalmology Conference" (IOC 2022) scheduled on October 27-28, 2022 as an Online Event under theme "Envisioning the Future of Ophthalmology". This conference offers an unmatched chance to coordinate with partners, opportunity to network with colleagues and gain from the recognized pioneers in Ophthalmology and Ophthalmology research.

ONLINE EVENT: You can participate Virtually from your home or work place.

This Ophthalmology Conference shares an instinct into the new exploration and driving edge innovations, which acquires significance with the giant and cheerful presence of Doctors, adepts, youthful and splendid specialists, business delegates and talented student communities. IOC 2022 are going to be an innovative and informative International Conference reflecting the direction of Ophthalmology surgery while offering a good range of diversions to participants of all backgrounds.

We are confident that our conference will provide you with an incredible chance to explore new horizons in your field and we hope to see you at our upcoming IOC 2023 conference during October 19-21, 2023 at Boston, Massachusetts, USA.

KEYNOTE FORUM

DAY 01

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Magali taiel

GenSight Biologics, Paris, State, France

Lumevoq gene therapy in leber hereditary optic neuropathy

Leber Hereditary Optic Neuropathy (LHON) is a rare, maternally inherited mitochondrial genetic disease with a continued high unmet medical need. Three primary point mutations in the mtDNA are responsible for LHON in approximately 90% of subjects: G3460A, G11778A and T14484C, located respectively in the *ND1*, *ND4* and *ND6* genes. The m.11778G>A *ND4* mutation is known to cause the most severe clinical form of LHON, and is also the most frequent mutation, as it accounts for about 75% of LHON in North America and Europe. Lenadogene nolparvovec (Lumevoq) is a recombinant Adeno-Associated viral vector, serotype 2 (rAAV2/2), containing a cDNA coding the human wild-type mitochondrial NADH dehydrogenase 4 protein (ND4), which has been specifically developed to treat *MT-ND4* LHON subjects, and is targeting the root cause of the disease. Restoring the expression of the ND4 protein could correct the deficiency due to the m.11778G>A *ND4* mutation, leading to the improved activity and assembly of Complex I of the mitochondrial respiratory chain, helping to protect RGCs, eventually halting and reversing the disease.The three Phase-3 multi-center clinical trials RESCUE, REVERSE and REFLECT showed sustained bilateral improvement of Best-Corrected Visual Acuity (BCVA) following unilateral or bilateral intravitreal injection of lenadogene nolparvovec (rAAV2/2-*ND4*) gene therapy for the treatment of Leber Hereditary Optic Neuropathy (LHON) caused by the m.11778G>A mitochondrial DNA mutation in the *MT-ND4* gene. Overall, 189 *MT-ND4* patients were treated with lenadogene nolparvovec in clinical trials. Early expanded access programs have been granted in the US and Europe. Lenadogene nolparvovec brings a novel and efficacious treatment option, fulfilling an ongoing unmet medical need whilst restoring visual function in MT-ND4 LHON patients.

Audience Take Away:

- LHON, a rare disease, with unmet medical need.
- Insights on clinical development of lenadogene nolparvovec to treat MT-ND4 LHON patients.
- US and Europe regulatory pathways.
- Next steps for lenadogene nolparvovec registration.
- Key learnings.

Biography:

Magali Taiel, M.D. – Chief Medical Officer – GenSight Biologics. Dr.Taiel completed her doctorate in Medicine with board certified in Ophthalmology from Lariboisiere Saint Louis University, Paris, France, in 1993, and her Associate Professor degree in 1998. Dr Taiel completed her internship at academic Paris hospitals, was an Associate Professor of Ophthalmology, served as an Ophthalmology Department Head, and ran Surgical and Medical Ophthalmology private practice. After 13 years of Ophthalmology public and private practice, Dr. Taiel has been engaged in the Pharma Industry for 20 years; she brings extensive experience and expertise in drug clinical development, gene therapy, and medical affairs. She started her carrier at Servier company headquarter, and then worked in Ophthalmology area at Pfizer for several years; she then held international and management positions in various therapeutic areas, including both technical and supervision duties, at Eli Lilly Company for many years. Then, as VP Clinical Development, she led Clinical Development and Operations, to develop antisense oligonucleotides in Inherited Retinal diseases at ProQR Therapeutics. She then moved to GenSight-Biologics in 2018, to supervise the Medical Department and lead Gene Therapy programs in Inherited Retinal and Neuro-Ophthalmology diseases, as the CMO of the company. Dr. Taiel has authored numerous protocols and articles published in peer reviewed journals, and made critical contributions to successful clinical development and launch of many products. She brings extensive years of experience from both academic medicine and pharma industry.

Jeffrey Freedman

SUNY Brooklyn, United States

The living bleb. Clinical application of cytokines and bleb survival

The pathophysiology of blebs, in relation to glaucoma implant surgery, and the reasons for success or failure of the blebs will be presented. The importance of intraocular pressure on the success of the bleb will be emphasized.The presentation will discuss the mechanisms whereby blebs, formed by glaucoma surgical tube implants, fail. The audience will understand the significance of the preoperative Intra-Ocular pressure, and thereby, the cytokine levels in the aqueous forming the bleb. Lowering the pressure prior to allowing aqueous to reach the plate surface will demonstrate how the deleterious effects of pressure on bleb failure can be avoided. The choice of implant, valved or Non-Valved, will be shown to be important in relation to the effectiveness of bleb survival. Thus the presentation, will present why the immediate preoperative intraocular pressure needs to be decreased, why choice of implant can effect outcome, and how modifications in respect to implant use, can be utilized to make the effect of the implant more successful. The presentation does not suggest further improvement in design of the implant, as a number of iterations of the original Molteno implant are already available. The pathophysiology of the bleb thereby remains the most important aspect of success or failure of the bleb.

Biography:

Dr. Freedman received his medical degree from The Medical School of the Witwatersrand University in Johannesburg South Africa. In 1964, and his PhD in Medicine from the same university in 1975. He received the degree of "Fellow of the College of Surgeons South Africa" in 1969, and "Fellow of the Royal College of Surgeons Edinburgh " in 1971 both degrees by written and practical examinations. He has published over 80 research articles, and is Professor (HS) T Emeritus at State University of New York, Downstate Medical Center.

Roberto Proano S*[1], Mauricio Sauerbrey[2], Dra. Raquel Lovato[3]

[1]Member of Ecuadorian Medicine Academy, Ecuador
[2]Director de O.E.P.A.(Guatemala)
[3]Directora Tecnica del equipo de eliminacion, de la oncocercosis en el Ecuador (MSP)

Onchocerciasis elimination from the America's

Onchocerciasis is filariasis whose greatest morbidity affects the eyes causing blindness. It is found geographically in Fast-Flowing rivers. The continent that is the most affected is Africa and it is also found in 31 countries, becoming endemic. The parasite is Onchocerca volvulus and is transmitted by a dipteran insect of the genus Simulium.In the Americas, it is found in 6 countries Mexico, Guatemala, Colombia, Ecuador, Venezuela, and Brazil.The regional initiative organized by OPS is OEPA (Onchocerca Elimination Program of America) to achieve the elimination of onchocerciasis in these six countries has been coordinating the actions of the teams formed in each country since 1993. In the world, it is estimated that around 20 million people suffer from being infected by this parasite. In the Americas, there were 500 thousand people affected. This parasitosis is the second cause of infectious blindness in the world, the first corresponds to trachoma.The purpose of this exhibition is to tell you about the achievements made to date in each of the countries of the Americas and also to demonstrate that fieldwork is possible in a specialty that has become offices, operating rooms, and sophisticated laboratory cabinets. Rural areas also need our help to combat endemic diseases, but it requires will, passion, and knowledge.

Audience Take Away:

- Search for unserved populations with ocular pathologies (cataracts, glaucoma, ROP, refractiva errors etc.
- Each ophthalmology service must include a field activity to serve those that are most in need. Performing research work that contributes to the Ministries of Health to execute Low-Cost, High-Benefit projects. Examples; study populations with keratoconus better and offer practical solutions.

Biography:

Dr. Roberto Proano S. studied Medicine at Central University of Ecuador and graduated as a Medical Doctor and Surgeon in 1978, post graduated studies in Ophthalmology at Vozandes Hospital in QuitoEcuador, Puerto Rican University, University of Toronto (fellowship in vitreo and retina surgery). Team member as ophthalmology in the research of River Blindness in Ecuador. Independent expert like ophthalmologist invited for OEPA to participated with the programs in Guatemala, Colombia, Ecuador, Venezuela. Active member of the PCC / OEPA (Comité CentraldePrograma cion) until now. Actually private practice.

SPEAKERS

DAY 01

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Insights into the treatment of idiopathic intracranial hypertension with an LP or temporary lumbar drain

Peter Colin Gates
Deakin University Waurn Ponds, Australia

Six cases that provide insights into the pathophysiology of IIH and a new approach to management will be discussed. Four developed a low-pressure headache, 2 after an LP, 1 with a malfunctioning Lumbo-Peritoneal(L-P) shunt, 1 with a malfunctioning Ventriculo-Peritoneal (V-P) shunt. All 4 went into remission. One case describes the influence of LP-induced progressive lowering of CSF pressure on transverse sinus narrowing and 1 illustrates that an epidural blood patch did not prevent the resolution of IIH in the setting of a Low-Pressure headache. These cases provide a potential explanation for why IIH sometimes resolves following a lumbar puncture and why it recurs when Ventriculo-Peritoneal and LP shunts occlude. In our case series of 90 patients, 27 had an LP-Induced remission, 14 in the setting of low-pressure headache. Four patients had a temporary lumbar Drain-Induced remission the concept of using a "therapeutic LP" or a temporary lumbar drain represents a potential paradigm shift in the management of IIH.

Biography:

Prof. Peter Colin Gates is working at Deakin University Waurn Ponds Vic Australia. His research interests are Cerebral Vascular Disease, Hypertension, Obesity, Idiopathic Intracranial Hypertension.

Identifying diabetes from conjunctival images using a novel hierarchical multi-task network

Xinyue Li*[1] and Hong Zhang[2]
[1]Shanghai Children's Hospital, Shanghai Jiaotong University, Shanghai, China
[2]The First Affiliated Hospital of Harbin Medical University, Harbin, China

Diabetes can cause microvessel impairment. However, these conjunctival pathological changes are not easily recognized, limiting their potential as independent diagnostic indicators. Therefore, we designed a deep learning model to explore the relationship between conjunctival features and diabetes, and to advance automated identification of diabetes through conjunctival images. Images were collected from patients with type 2 diabetes and healthy volunteers. A hierarchical multi-tasking network model (HMT-Net) was developed using conjunctival images, and the model was systematically evaluated and compared with other algorithms(Figure).The sensitivity, specificity, and accuracy of the HMT-Net model to identify diabetes were 78.70%, 69.08%, and 75.15%, respectively. The performance of the HMT-Net model was significantly better than that of ophthalmologists(Table). The model allowed sensitive and rapid discrimination by assessment of conjunctival images and can be potentially useful for identifying diabetes.

Audience Take Away:

- First, the HMT-Net model only uses conjunctival images for diabetes recognition, which may provide a new method for diabetes screening in the absence of special medical equipment in the future.
- Second, the model can automatically process data without manual calculation, which is more effi- cient. Moreover, the algorithm is more accurate than ophthalmologists in terms of diagnostic accuracy.
- Third, developers creatively use the problem-oriented training network architecture to effectively overcome the problem of insufficient datasets, which can be extensively applied to other fields.

Biography:

Xinyue Li is a junior doctor in Shanghai Children's Hospital. The objectives of her research are

(i) Application of deep learning in ophthalmology and Myopia in children.

(ii) She has Phd degree from Harbin Medical University in ophthalmology. She speaks Chinese and English. If you are interested in her research topics, please feel free to contact her via.

Fundus changes evaluated by octa in patients with cerebral small vessel disease and their correlations: A cross-sectional study

Yongzhe Gu*, Wang Fu
Department of Neurology, Shanghai Tenth People's Hospital, School of Medicine, Tongji University, Shanghai, China

Objective: To detect fundus changes in patients with Cerebral Small Vessel Disease (CSVD) using Optical Coherence Tomography Angiography (OCTA) and to investigate the correlations between CSVD and fundus changes.

Methods: From January 2019 to January 2020, patients diagnosed with CSVD by Magnetic Resonance Imaging (MRI) were enrolled in our study and received fundus examinations using OCTA. CSVD was defined as white matter hyperintensities, enlarged perivascular spaces, lacunes, or microbleeds on MRI. OCTA parameters included foveal avascular zone areas, retinal nerve fibre layer thickness, and capillary densities of the superficial retinal capillary plexuses, deep retinal capillary plexuses, and the radial peripapillary capillary network of the disc. Univariate and multivariate logistic regression analyses were performed to explore the correlation between CSVD and fundus changes.

Results: A total of 115 patients (40% male) were enrolled and analysed, and the mean age was 65.11 ± 11.23 years. After multivariate logistic regression analysis, the radial peripapillary capillary network density was negatively correlated with severity of deep white matter lesions (OR: 0.909; 95% CI: 0.828–0.998; P = 0.046) and perivascular spaces (OR: 0.881; 95% CI: 0.779–0.995; P = 0.041). Parafoveal vessel densities of the superficial retinal capillary plexuses were independently correlated with lacunes (OR: 0.889; 95% CI: 0.817–0.967; P = 0.006).

Conclusion: OCTA parameters were correlated with CSVD, indicating that OCTA is a potential method for CSVD screening.

Audience Take Away:

- OCTA is a feasible screening method for CSVD.
- Fundus changes revealed by OCTA are correlated to four types of cerebrovascular diseases.
- The radial peripapillary capillary network density is negatively correlated with the severity of deep white matter lesions and perivascular spaces.

Biography:

Dr. Gu studied Clinical Medicine at Wenzhou Medical University and graduated as BM. She then studied Neurology at Tongji University as PhD. She now is a member of the research group of Prof. Xueyuan Liu at the Department of Neurology, Shanghai Tenth People's Hospital, School of Medicine, Tongji University, Shanghai, China.

IOLCon – The roadmap for reliable IOL calculation. New features of modern international internet data-base for updated and optimized IOL constants: The "Lens Power Calculation Module"

Sibylle Scholtz[*1], Prof. Oksana Vitovska[2], Achim Langenbucher[1]
[1]Institute of Experimental Ophthalmology, Saarland University, Homburg/Saar, Germany
[2]University Eye Clinic, Bogomolets National Medical University, Kyiv, Ukraine

Purpose: The Internet database IOLCon (www.iolcon.org), founded in 2017, established itself meanwhile as a reliable, worldwide available source for optimized IOL constants and specifications. Based on modern optimization strategies, IOLCon also offers individually optimized IOL constants free of charge for ophthalmic surgeons. Recently, IOLCon supports ophthalmic surgeons e.g. in selecting the individual IOL by its new "Lens Power Calculation Module" (LPCM).

Methods: Close cooperation with Institute of Experimental Ophthalmology, University Homburg/Saar (Germany), the University Eye Clinic, Bogomolets National Medical University, Kyiv (Ukraine) and Arunodaya Deseret Eye Hospital (ADEH), Gurgaon (India).

Results: The method used by IOLCon to optimize IOL constants is characterized as an "intelligent IOL constant optimization strategy", which uses modern nonlinear optimization methods. Optimizations of the constants for the following published formulae can be found on IOLCon: Haigis, Hoffer-Q, Holladay 1, SRK/T - and now also for the new Castrop formula. The prerequisite is the use of current measurement techniques that precisely measure all distances of the eye. IOLCon´s newly launched online calculator, LPCM, is based on the Castrop formula, and supports ophthalmic surgeons when selecting the individual IOL power. The calculator is intended to be used for scientific purpose only and in combination with comprehensive eye exams, respective diagnostics and measurements required for patients undergoing cataract surgery.

Conclusions: A modern database for optimized IOL constants and lens specifications that meets the demands of today's cataract surgery is just as urgently needed today as modern online calculation tools that serve as a decision-making aid when selecting the individual IOL power. IOLCon offers both: With its (individually) optimized IOL constants and the online calculation tool "Lens Power Calculation Module", it is an essential instrument for modern cataract surgery and will also meet future demands of ongoing developing ophthalmic surgery.

Biography:
Dr. Sibylle Scholtz, Biologist, Chemist, Ph.D. in Ophthalmology, International Science Correspondent, Associated Senior Research Fellow (Institute of Experimental Ophthalmology, Saarland University Faculty of Medicine, Germany), longstanding experience in the ophthalmic medical device industry.

A case of '60-day glaucoma'

Jagruti Godhaniya
Foundation year 2 Doctor, United Lincolnshire Hospitals NHS Trust, Pilgrim Hospital, Boston, NHS England, United Kingdom

Introduction: Neovascular Glaucoma (NVG) has been called '90-' or '100-day glaucoma' in the past due to its typical development 3 months after the onset of Central Retinal Vein Occlusion (CRVO). In reality, NVG can occur anywhere between 2 weeks and 2 years after initial CRVO with over 80% occurring within 6 months.

Case Presentation: A 90-year-old female presented to eye casualty with painless loss of vision in the left eye, onset less than 12 hours. Right eye visual acuity (RVA) was 0.10 logMAR (6/7.5 snellen) and left eye visual acuity (LVA) was Counting Fingers (CF), previous LVA was 6/6. Fundus examination revealed left CRVO with normal bilateral Intraocular Pressures (IOP). Two months later the patient presented to the emergency department with an excruciatingly painful left eye. IOP was 10mmHg and 42mmHg in the right and left eye respectively. On examination of the left eye there was corneal edema, shallow anterior chamber angle, hyphema, rubeosis iridis and a RAPD. LVA had dropped to hand movement and a diagnosis of left neovascular glaucoma secondary to ischaemic CRVO was made. Due to the hazy cornea PRP was unsuitable and so the patient was treated with topical IOP lowering agents, topical steroids and cyclopentolate. One month later the left IOP had come down to 27mmHg. The corneal oedema had slightly improved but LVA was now light perception. The patient no longer reported any ocular pain or discomfort and has been referred to a glaucoma specialist for consideration of left cyclodiode.

Conclusion: More than 90% of patients with ischaemic CRVO have a final visual acuity of 6/60 or worse. 30% of eyes with non-ischaemic CRVO may convert to an ischaemic CRVO over 3 years, with a 16% conversion rate within the first 4 months of the initial occlusion. This case highlights the importance of early detection of cases likely to convert to an ischaemic CRVO and the importance of regular follow up of these patients.

Audience Take Away:

- Importance of early detection of non ischaemic CRVO cases likely to convert to ischaemic CRVO.
- What characteristics to look out for to help diagnose ischaemic CRVO.
- Management of CRVO with neovascular glaucoma.
- Importance of regular follow up of patients with CRVO.

Biography:

Dr. Jagruti Godhaniya graduated from the University of Leicester, UK in 2021 with a MBChB. Prior to embarking on a career in medicine she graduated from Aston University, UK with a BSc (Hons) in Optometry. She is currently working as a foundation year 2 doctor for United Lincolnshire Hospitals NHS Trust and aspires to specialise as a doctor in Ophthalmology.

The usual suspects: Bilateral astrocytic hamartomas in tuberous sclerosis

Nishi Meghna Satish*[1], V Rajshekhar[2], RK Duvesh[3]

[1]Post Graduate Student, Department of Ophthalmology, VMMC & Safdarjung Hospital, New Delhi, Delhi, India

[2]Professor & Consultant, Department of Ophthalmology VMMC & Safdarjung Hospital, New Delhi, India

[3]Consultant and Head of Department, Department of Ophthalmology VMMC & Safdarjung Hospital, New Delhi, India

The objective of this clinical case report is to stress upon the importance of careful clinical examination in patients of Tuberous sclerosis. We present three cases out of which two had very prominent retinal hamartomas and one patient had inconspicuous small hamartomas in the peripheral retina. Hamartomas are usually referred to non malignant growths that are composed of normal cells proliferating in aberrant locations. Various hamartomas are seen in Tuberous sclerosis, a rare multisystem genetic disorder that commonly involves the skin, brain, lungs, heart, kidneys and the eyes. It results from the mutation of the TSC1 or the TSC2 genes (Tumor Suppressor Genes) that may occur sporadically or that may be inherited in an autosomal dominant pattern. These hamartomas are usually asymptomatic and not detected until they start presenting with either breathing difficulties or Tuberous Sclerosis Associated Neuropsychiatric Disorders (TANDs). Angiomyolipomas and rhabdomyomas can also occur in tuberous sclerosis and should be extensively evaluated as they may pose risks, such as rupture and haemorrhages which can be potentially fatal. The purpose of our case series is thus, to familiarise the various presentations that a patient may be brought in with this disease and how we as ophthalmologists can help with a high index of suspicion. The betterment of the patient always lies in a multidisciplinary approach, and that is what we advocate as well.

Audience Take Away:

- This case report can help ophthalmologists learn the ocular features of tuberous sclerosis and how commonly it can be missed out during a routine examination. Special emphasis should be made on thorough fundus examination of these seemingly benign lesions as they form one of the major criteria to clinically make a diagnosis of tuberous sclerosis.
- In routine practice, this can help ophthalmologists learn how astrocytic hamartomas appear on fundus examination, as well as their characteristics seen through Spectral - Domain Optical Coherence Tomography (OCT) as well as OCT angiography.

Biography:

Dr. Nishi Meghan Satish has done her MBBS from MVJ Medical College and Research Hospital in Bangalore (Gold Medalist), and is currently pursuing her Masters of Surgery degree from the well reputed VMMC & Safdarjung Hospital in New Delhi, India.

A rare case of welding arc maculopathy

Kshitij Suchit Tamboli
Tamboli hospital, Ahmednagar, Maharashtra, India

I hereby report a rare case of welder's arc maculopathy in a 22-Year-Old patient professional welder working for 4 years as welder came with bilateral, symmetrical decrease in the visual acuity since 1 month. Fundus revealed dull foveal reflex (OU) with subtle foveal alterations surrounded by halo. He later revealed a history of infrequent use of protective glasses and glasses did not have filter during work. OCT is a very sensitive test to establish diagnosis, which showed ellipsoid zone disturbance as a square shaped defect, keeping the RPE & ELM intact. Patient was explained guarded visual prognosis and was advised strictly to wear protective eye gears with filters at work.

Biography:
Dr. Kshitij S Tamboli is a practicing vitreoretina surgeon completed fellowship in Vitreoretina from Retina Institute of Karnataka, Bangalore and fellowship in Retinopathy of prematurity from L.V. Prasad Institute, Hyderabad, India. Has published and presented research work and in various national and international journals and conferences and received various awards.

Fluorescent and biocompatible nitrogen and sulfur Co-Doped carbon nanodots as an ocular fundus angiography imaging agent

Burak Erdem*[1], Hasan Ilhan[2], Sezgin Ozkasapoglu[3], Muhammed Yayla[4], Orphan Bas[5], Huseyin Celikkan[6]
[1]Department of Chemistry, Faculty of Science, Ordu University, Altinordu /Ordu, Turkey
[2]Department of Ophthalmology, Faculty of Medicine, Ordu University, Altinordu/Ordu, Turkey
[3]Turkish Nuclear Energy and Mineral Research Agency (TENMAK), Boron Research Institute (BOREN) Ankara, Turkey
[4]Department of Pharmacology, Faculty of Medicine, Kafkas University, Kars, Turkey
[5]Department of Anatomy, Faculty of Medicine, Samsun University, Samsun, Turkey
[6]Department of Chemistry, Faculty of Science, Gazi University, Ankara, Turkey

Purpose: Fundus Angiography (FA) imaging is limited by the drawbacks of standard fluorescein dye, including a narrow excitation spectrum, a Non-Uniform spectral emission pattern, photobleaching, and kidney toxicity. Carbon Dots (CDs) nanoparticle may be a feasible alternative to sodium fluorescein dye due to its adjustable fluorescent light wavelength, photostability, low toxicity, and low cost. We examined the FA images of two rats using the conventional fluorescein dye and the newly synthesized nitrogen and sulfur (N&S) co-doped CDs material.

Methods: After chemically characterizing N&S CDs nanoparticle, we evaluated its cytotoxicity on two distinct cell lines, HUVEC (Human Umbilic Vein Endothelial Cells) and L929 (Mouse fibroblast cells). In our in vivo experiment comparing the FA image output of N&S CDs and standard fluorescein dye, two 6-8 week old healthy 200-250 g Sprague-Dawley type rats were provided. After intraperitoneal anesthesia with 10% chloral hydrate (0.3mL/100g), and pupillary dilation with %1 tropicamide, one animal received 100 µL of 10% sodium fluorescein intraperitoneally. The other animal received an intraperitoneal injection of 100 µL of 0.3 mg/ml N&S-CDs agent dissolved in 0.9% saline. FA images were started to be taken at intervals 10 minutes after the imaging agents were injected.

Results: N&S CDs nanoparticle was found to be not cytotoxic in HUVEC and L929 cells after 24 hours of incubation (Figure 1). In contrast, N&S CDs nanoparticle was found to inhibit the cell viability of HUVEC cells at the highest concentration of 1 mg/ml. Moreover, N&S CDs nanoparticle was found to significantly inhibit the cell viability of L929 cells at the concentrations of 1 mg/ml and 0.5 mg/ml. The images in Figure 2 were taken 12 minutes following intraperitoneal administration of both imaging agents. The quality of the FA image acquired with the N&S CDs agent is comparable to that obtained with the conventional fluorescein dye in our investigation.

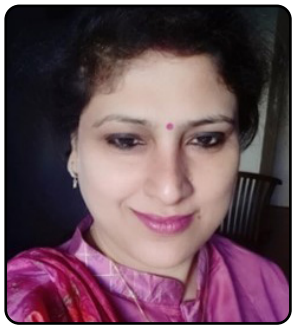
Conclusion: In our study, as a result of its great biocompatibility and inexpensive cost, it was determined that N&S CDs may be a viable alternative to fluorescein.

Audience Take Away:

- In this work, we produced a simple, sensitive, and cost-effective fluorescent sulfur and nitrogen co-doped carbon nanodots (S/N-CDs) nanomaterial with a superior photoluminescence quantum yield value to be 85.5%.
- The toxicity of S/N-CDs is very low, and the cell viability was not altered through S/N-CDs.
- S/N-CDs could offer a promising imaging agent for an ocular fundus angiography and serve as an alternative method for commercial fluorescent materials.

Biography:

Dr. Burak Erdem works as an assistant professor in the Department of Ophthalmology at Ordu University Faculty of Medicine. After completing his assistant training, he focused on laboratory studies as well as clinical studies on the retina and glaucoma. He carries out three projects with his teammates, especially in the field of nanomedicine in ophthalmology.



Morphological and functional assessment of filtering blebs on anterior segment optical coherence tomography

Anuradha Raj
All India Institute of Medical Sciences, India

Glaucoma has been surgically treated by various surgical procedures and one of them is trabeculectomy. Bleb morphology in addition to various characteristics by classification systems is an important clinical parameter that indicates bleb function and predicts Bleb-Related complications. Successful blebs are elevated and diffuse with a cystic pattern, but failed blebs are either flat, encapsulated or profusely vascularized. Filtering bleb function can be evaluated subjectively by Slit-Lamp examination, but the connective tissue hinders the observation at depth. Ultrasound Biomicroscopy (UBM) and in vivo confocal microscopy are not viable options for bleb evaluation in the early postoperative period, due to the increased risk of bleb infection and its damage. Indiana Bleb Appearance Grading Scale (IBAGS) and Moorfields Bleb Grading System have been introduced for objective clinical evaluation and classification of filtering blebs. Cross-Sectional non-invasive imaging modalities like Anterior Segment Optical Coherence Tomography (AS-OCT) can depict the internal structures of blebs and thus provide complementary information to slit-lamp biomicroscopy about the morphological structure and functionality of filtering blebs. AS-OCT helps to provide a High-Resolution, Non-Contact, cross-Sectional objective evaluation of filtering blebs and their internal visualization and may be used to predict the functioning of blebs at a later stage.

AS-OCT could be considered a useful tool for examining the internal structures of the filtering blebs for evaluating their function. Bleb morphology, which is not visible on the Slit-Lamp, can be imaged on AS-OCT. It can differentiate functional from scarred blebs and planning like needling and bleb revision for encapsulated blebs can be done to make them functional. Blebs with thick walls, more height, and multiple Hypo-Reflective spaces control IOP effectively. They can be considered successful blebs for Long-Term months and predict the success of trabeculectomy.

Biography:
Dr. Anuradha Raj is working at All India Institute of Medical Sciences, India.

A case of late onset stargardts disease

Kshitij Suchit Tamboli
Tamboli hospital, Ahmednagar, Maharashtra , India

I hereby report a case of late-onset Stargardt's disease in a 51-year-old patient who came with bilateral, symmetrical decrease in the visual acuity. Stargardt disease is the most common form of juvenile macular degeneration. Clinically, it is characterized by pisciform flecks at the level of the retinal pigment epithelium and a bull's-eye maculopathy. This observation draws attention to the existence of Stargardt's disease at a late stage. Fundus images, red free images and OCT findings gave a clinical conclusion of stargardts disease in a patient who was not a juvenile .

Biography:
Dr. Kshitij S Tamboli is a practicing Vitreoretina surgeon. Completed fellowship in Vitreoretina from Retina Institute of Karnataka, Bangalore and fellowship in Retinopathy of prematurity from L. V. Prasad Institute, Hyderabad, India. Has published and presented research work and in various national and international journals and conferences and received various awards.

Extended depth of focus versus trifocal for intraocular lens implantation: An updated systematic review and meta analysis

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Objective: To compare the outcomes of Extended Depth of Focus (EDOF) versus trifocal Intraocular Lenses (IOLs) in patients undergoing cataract surgery.

Methods: A systematic review and meta-analysis were performed as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines and a search of electronic information was conducted to identify all comparative studies of EDOF versus trifocal lenses were included. Postoperative refraction and visual acuity were primary outcome measures. Secondary outcome measures included postoperative defocus curves, intraocular aberrations, Contrast Sensitivity (CS), Quality Of Vision (QoV) questionnaire score, haloes and glare, spectacle independence and patient satisfaction. Fixed and random effects models were used for the analysis.

Results: A total of 28 studies enrolling 3065 eyes from 1766 patients were identified. Trifocal IOL showed a significant improvement in postoperative refraction, particularly sphere (Mean difference [MD] = -0.17; P = 0.01) and spherical equivalence (MD = -0.11, P = 0.0001) compared to EDOF IOL. However, no statistically significant difference was observed in postoperative cylinder (MD = -0.02, P = 0.36) or postoperative astigmatism. Trifocal IOL reported significantly superior postoperative visual acuity only at near vision outcomes, namely uncorrected near visual acuity (UNVA) (MD = 0.12, P <0.00001) and distance-corrected near visual acuity (DCNVA) (MD = 0.12, P = 0.002). Distant visual acuity was statistically significantly improved for the EDOF group, particularly in postoperative corrected distance visual acuity (CDVA) (MD = -0.01, P = 0.002), although no significant difference was noted in postoperative uncorrected distance visual acuity (MD = -0.00, P = 0.97). Intermediate visual outcomes were not statistically significant between the two groups, namely uncorrected intermediate visual acuity (UIVA) (MD = 0.00, P = 0.89) or Distance-Corrected intermediate visual acuity (DCIVA) (MD = -0.01, P = 0.39). For secondary outcomes, defocus curve demonstrated favourable results for trifocal IOLs at near vision and EDOF IOL at intermediate vision. Ocular aberration and CS were not statistically significant between the groups. Haloes (Odds ratio [OR] = 0.66, P = 12), glare and patient satisfaction were comparable in both groups. Finally, trifocal IOL group had a statistically favourable QoV questionnaire score (MD = 1.24, P = 0.03) and spectacle independence (OR = 0.26, P = 0.02) over the EDOF IOL group.

Conclusions: Overall, outcomes of EDOF IOLs are comparable to trifocal IOLs. The latter group yields improved near visual acuity as well as postoperative refraction, particularly sphere and spherical equivalence. Overall, the use of trifocal versus EDOF IOLs should be based on individual basis and the clinician's judgement.

Audience Take Away:

- Common clinical knowledge dictates that trifocal IOLs provide more spectacle independence at the price of more photic phenomena, whereas EDOF IOLs are associated with better QoV but suboptimal near visual acuity compared to trifocal IOLs.
- This is one of the few meta-analyses that amalgamate the data of all studies comparing these two types of IOLs to best guide clinical practice.
- Both EDOF and trifocal IOLs provide comparable performance in intermediate VA and distance. However, trifocal lenses had significant improvement in post-operative refraction especially in sphere and spherical equivalence, as well as near visual acuity.

Biography:

Dr. Karam obtained his Bachelor of Medicine and Bachelor of Surgery (MB ChB) degree from the University of Leeds in 2021. He then worked as a junior doctor in Kuwait and joined AlBahar Ophthalmology Research Group in Kuwait as a graduate researcher.

Intravitreal diclofenac versus intravitreal bevacizumab in diabetic macular edema: Systematic review and meta analysis

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To compare the outcomes of Intravitreal Diclofenac (IVD) versus Intravitreal Bevacizumab (IVB) in Diabetic Macular Edema (DME).

Methods: A systematic review and meta-analysis were performed as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines and a search of electronic information was conducted to identify all comparative studies of IVD versus IVB in DME. Best-Corrected Visual Acuity (BCVA), Central Macular Thickness (CMT) and paracentral or parafoveal macular thickness were primary outcome measures. Secondary outcome measures included Intraocular Pressure (IOP) changes, macular leakage and injection-related complication. Fixed effects modelling was used for the analysis.

Results: Three studies enrolling 149 patients were identified. There was no significant difference between the IVD and IVB groups in BCVA at 4-6 weeks (Mean Difference [MD] = 0.01, P = 0.87) and 3 months (MD = 0.01, P = 0.68) postoperatively. There was no significant difference between the two groups in CMT at 4-6 weeks (MD = 13.53, P = 0.40) and 3 months (MD = 21.85, P = 0.30) postoperatively. Similarly, there was no statistically significant difference between the two groups in the change in paracentral macular thickness. For secondary outcomes, no statistically significant difference between the IVD and IVB groups in IOP changes, macular leakage as well as Injection-Related complication.

Conclusions: Intravitreal diclofenac is an alternative to bevacizumab in the treatment of DME as they both produced similar postoperative changes in BCVA, CMT, paracentral macular thickness and IOP.

Audience Take Away:

- This is the first meta-analysis that compares the outcomes of Intravitreal Diclofenac (IVD) versus Intravitreal Bevacizumab (IVB) in Diabetic Macular Edema (DME) to best guide clinical practice.
- Intravitreal diclofenac can be considered a safer intravitreal drug option for patients with high risk factors for cerebrovascular events.
- Intravitreal diclofenac can be considered an economically cheaper drug choice for low economic countries with limited resources.

Biography:

Dr. Karam obtained his Bachelor of Medicine and Bachelor of Surgery (MB ChB) degree from the University of Leeds in 2021. He then worked as a junior doctor in Kuwait and joined AlBahar Ophthalmology Research Group in Kuwait as a graduate researcher.

Effect of mesenchymal stem cell-derived extracellular vesicles (EVS) on cornea nerve regeneration

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Purpose: Corneal nerves and innervation are susceptible to several diseases including diabetes. Despite the clinical need to promote corneal nerve regeneration, few specific therapeutic interventions are available. MSCs and their paracrine effect mediated by EVs presents an attractive treatment for enhancing nerve regeneration. In this study, we assessed the neuro regenerative potential of EVs from BM-MSCs cultured in 2D and 3D systems.

Method: Human BM-MSCs were cultured in 2D monolayer and 3D bioreactor systems. EVs were isolated using ultracentrifugation followed by size and concentration measurements utilizing Nanosight and Exoview. Mouse Trigeminal Ganglia (TG) neurons were isolated from Thy1-YFP mice possessing fluorescent corneal nerves. The neurons were plated in the presence and absence of EVs derived from 2D or 3D culture systems. Neuronal growth and morphology were monitored over 5 days. Thereafter, the neurons were fixed and immune-stained with β3 tubulin followed by confocal microscopy. Images were analyzed by Neurolucida software to obtain the density and length of the neurites.

Results: The Nanosight tracking analysis revealed significant increase in concentration of EVs obtained from 3D vs. 2D culture condition (24X Fold-Change). Exoview analysis showed significantly higher concentration of CD63, CD81 and CD91 exosomal markers in 3D vs. 2D condition. Furthermore, a notable shift towards a more heterogeneous EVs phenotype was observed in the 3D compared to 2D culture systems. EVs derived from both 2D and 3D condition significantly induced neurite growth after 5 days in culture compared to untreated control. Neurolucida analysis of the Immunostaining images (β3 tubulin) showed a significant increase in density and complexity of the neuronal growth of TG neurons in 3D vs. 2D condition. Additionally, a significant increase in neuron branching was observed in 3D versus 2D.

Conclusion: Our results demonstrate the distinct effect of BM-MSCs-Derived EVs in neurites growth and elongation. EVs obtained from 3D culture system enhanced the neurite complexity and branching compared to the effect of vesicles from 2D culture. This specific property could potentially enhance the therapeutic effect of EVs in vivo and provide new therapeutic interventions for the restoration of damaged corneal nerves.

Biography:

Dr. Jalilian is interested in studying novel stem cell and tissue engineering approaches as therapeutics for corneal nerve regeneration. She was previously a postdoctoral fellow at the University of Michigan and developed 3D Co-Culture systems to generate cortical brain organoids, and studied mechanisms of brain development during embryogenesis. Prior to this, she worked at Harvard Medical School, studied 3D Bio-Printing technology to generate Pre-Vascularized muscle fibers with the aim of designing the next generation of scaffold for vascular tissue engineering constructs. Dr. Jalilian completed her Ph.D. in Stem Cell and Developmental Biology at University College London (UCL) in England. She studied signaling pathways that regulate endothelial cell phenotype during angiogenesis and vasculogenesis. Dr. Jalilian did her MSc in Medical Genetics at the University of Newcastle in England and her bachelor's in Cellular and Molecular Biology at Tehran University in Iran.

POSTER

DAY 01

INTERNATIONAL

OPHTHALMOLOGY CONFERENCE

27-28 OCT

Long-term visual outcomes in diabetic patients with diabetic foot ulcers along with peripheral vasculopathy and/or diabetic neuropathy

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Introduction: Diabetes affects 15% of South Texans, leading to disabling conditions including Diabetic FootUlcers (DFU) and Diabetic Retinopathy (DR). DR is the leading cause of blindness in among young Americans.Peripheral Vasculopathy (PV) and Diabetic Neuropathy (DN) have been reported as independent risk factors for developing DFU. However, the relationship between systemic parameters of DFU (PV and DN) and ocular outcomes of DR (visual acuity) remain unknown. Therefore, we investigated visual outcomes of diabetic patients with DFU alone compared to patients with additional PV or DN in relation to Diabetic Retinopathy (DR).

Methods: A retrospective review was done on patients visiting a tertiary center in San Antonio that werediagnosed with DFU and underwent ophthalmic and neurovascular examinations within the past 10 years;144 diabetic eyes were included. The prevalence of DR with DFU with or without concomitant PV or DNwas assessed using visual acuity (Log MAR) as the primary endpoint.

Results: The study group of 144 eyes (72 subjects) had an average age of 60.4 and was 54.2% male. At thefinal visit, Proliferative Diabetic Retinopathy (PDR) was found in 73.4% of the DFU-only group, 75.0% of the DFU-with-PV group, and 73.4% of the DFU-with-DN group. New onset of PDR was noted in 43.3% ofthe DFU-only group, 63.3% of the DFU-with-PV group, and 54.1% of the DFU-with-DN group during the follow-up period. Initial average visual acuity, represented by Log MAR, was 0.627 for the DFU-only group, 0.491 for the DFU-with-PV group, and 0.514 for the DFU-with-DN group. Final average visual acuity was 0.429 for the DFU-only group, 0.515 for the DFU-with-PV group, and 0.593 for the DFU-with- DN group. Over the course of the study, with an average follow-up period of 50.7 months, the DFU-only group demonstrated an average Log MAR change of -0.198 compared to +0.024 in the DFU-with-PV groupand +0.078 in the DFU-with-DN group ($p=0.036$). Furthermore, diabetic patients with DFU were more likely to require PanRetinal Photocoagulation (PRP) during the follow-up period if they experienced concomitant PV (72.9%) compared to DFU alone (60.9%) or with concomitant DN (29.7%, $p=0.0007$).

Conclusions: The majority of patients with DFU, regardless of additional PV and/or DN, experienced a progression of DR to PDR. DFU patients with DN experienced significant declining visual acuity despite necessary treatment for DR. Those with PV were slightly more likely to develop PDR and were significantly more likely to require PRP treatment. All patients with DFU should undergo timely retinal examinations and management to prevent premature blindness from DR. In addition, patients with multiplesystemic manifestations of DFU, especially PV and DN, should receive higher stratification for such screenings. A better understanding of the relationship between DR and the systemic manifestations of diabetes will help in creating a coordinated approach to managing these life-altering conditions.

Audience Take Away:

- The audience will understand a new schema for stratifying patients with diabetic eyes based onadditional systemic diabetic signs and symptoms, especially in resource-Limited settings.
- The audience will gauge the prevalence of DFU in DR patients in a geographic location with anintensely high-Burden of diabetes with translation to other high-burden diabetic areas.
- The audience will understand the difference in progression of DR in diabetic subgroups, with possibletranslation into clinic work to determine length of follow-up and treatment plans.

Biography:

Mr. Zhu expects to graduate medical school at the University of Texas Health at San Antonio in 2023 and hopes to begin work as an ophthalmology resident next year. He has clinically rotated with their Department of Ophthalmology and subsequently joined their research group. He is currently Editor-In-Chief of his campus' literary magazine, Connective Tissue, and has presented at ARVO and AAO in the United States.He has published a book chapter on pediatric conjunctivitis and multiple research articles in SCI(E) journals, including on topics such as ocular surface squamous neoplasia in pterygia, endophthalmitis, and IOL parameters for cataract surgery.

KEYNOTE FORUM

DAY 02

INTERNATIONAL

OPHTHALMOLOGY CONFERENCE

27-28 OCT

Aleksandar Stojanovic

University Hospital Northern Norway, Tromso, Norway

Planned vs. objectively measured postoperative ablation depth and the amount of postoperative epithelial remodeling after alcon's "streamlight" laser vision surgery

Purpose: To find the difference between the planned ablation depth (given by the laser manufacturer) and the measured reduction in corneal stroma thickness in the ablation area.

Setting: Memira Eyecenter, Tromso.

Methods: Prospective study of 40 eyes of 40 patients undergoing treatment for low myopia and astigmatism with mean spherical equivalent of -2.75±1.1 D, using transepithelial (tPRK) "StreamLight" ablation, with the Alcon EX-500 laser. Twenty-Nine corresponding points (one point in the center and one point at every 0.5 mm in the 7-mm ablation zone along two cylinder meridians, were measured. The stromal and epithelial thickness map taken with the OptoVue-Avanti OCT, as well as the laser ablation map were used. The difference in thickness between preoperative and 6-Month postoperative measurements produced changes in the stroma and epithelium thickness, respectively.

Results: Mean planned and achieved central stromal ablation depths were 47.89 µm and 58.76 µm, respectively, corresponding to a mean exceeded depth of 10.87 µm (p= 0.132)) = 22.7%. The mean pre- And Postoperative central epithelial thickness was 53.97 and 62.11 µm, respectively, which corresponds to a mean postoperative increase in thickness of 8.14 µm (p=< 0.001) (15.0%). The mean epithelial thickness increase added to the mean exceeded stromal ablation depth resulted in 2.73 µm (5.1%) more corneal tissue reduction relative to the planned ablation depth.

Conclusion: Measured mean central reduction in stromal thickness after StreamLight tPRK was 22.7% greater than the manufacturer's stated ablation depth. However, it seems that this excessive reduction was planned by the laser manufacturer to compensate for the postoperative increase in epithelial thickness, which brought the mean difference between the planned and the achieved central corneal tissue reduction down to only 5.1%. The 22.7% higher than nominal stromal ablation depth should be still taken into consideration when treating cases with low calculated postoperative residual stromal thickness.

Audience Take Away:

- Laser refractive surgeons should be aware that the laser ablation depth claimed by the laser manufacturers may be significantly lower than the actual amount of the removed corneal stroma.
- The surgeons should remember to take a special attention of this issue when treating higher refractive errors with a relatively low corneal pachymetry, in which case the residual stromal thickness after the ablation may exceed the safety margins.

Biography:

Aleksandar Stojanovic is a Consultant in charge of refractive surgery and keratoconus, University Hospital of North Norway, Department of ophthalmology, Tromsø, Norway from 2001 to present. He worked as a Medical director at SynsLaser Kirurgi AS, Tromsø and Oslo, Norway and he is a Practicing ophthalmologist at Øyelegesenteret, Tromsø, Norway from 1985 to present. He is a scientific and societies member of NOF, AAO, ASCRS, ESCRS, ISRS, KMSG and Norwegian Medical Association, Norwegian Society of Ophthalmologists, European Society of Cataract & Refractive Surgeons, American Society of Cataract & Refractive Surgery, American Academy of Ophthalmology, International Society of Refractive Surgery. He also received Achievement award from AAO in the year 2013, grants in the year 2011 from Norwegian Research Council, Nominated for Kritzinger award at the International Society of Refractive Surgery in the year 2012, best paper award from Socleta Italiana Cellule Staminali e Superficie Oculare, Rome, Italy in the year 2012.

SPEAKER

DAY 02

INTERNATIONAL

OPHTHALMOLOGY CONFERENCE

27-28 OCT

White-dot syndrome like presentation secondary to ibrutinib therapy: A case report

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A Forty-Eight-Year-Old male of Indian descent with a haematological malignancy on systemic immunosuppression presented with reduced vision in both eyes approximately 8 weeks following commencement of Ibrutinib. His medical history is complex with recent changes to medication, new onset mouth ulcers, treatment resistant fungal infection and exposure to people from an area endemic for TB. Examination revealed a severe anterior chamber reaction with grade 4 cells and flare along with vitreous activity (Bioscore1). Interestingly, fundal photography demonstrated white opacities on the retina with small retinal haemorrhages peripherally in both eyes. A host of investigations including infective and autoimmune screens were negative. Subsequently, Ibrutinib was stopped by the Haematology team. Following cessation of the drug, anterior chamber and vitreous activity subsided bilaterally and the white opacities on the retina disappeared. Ibrutinib was restarted at a lower dose by the Haematology team due to rising paraproteins. Fundal photographs one month following recommencement of the drug showed the reappearance of the white dot opacities proving a causative relationship between Ibrutinib therapy and appearance of white dot opacities on the retina. This case details the complexities in eliminating potential aetiologies in uveitis and approaches to finding a diagnosis.This gentleman had a wide differential of aetiologies and eventually the underlying cause was found to be a previously unpublished idiosyncratic drug reaction. A literature search offered case reports of anterior uveitis related to Ibrutinib and one case of panuveitis thought to be secondary to Ibrutinib therapy. This case report is the first in literature to describe a 'white dot syndrome like picture' associated with Ibrutinib. This report also adds to existing literature demonstrating ocular complications secondary to small molecule kinase inhibitors bringing into question whether patients commencing on these drugs necessitate routine review by Ophthalmology.

Audience Take Away:
As a result of presentation:

- The audience will further their understanding on the systematic approach needed when faced with challenging uveitis cases.
- The audience may consider a change to their clinical practice when a patient on a small molecule kinase inhibitor is identified – May decide to monitor the patient more closely for any ocular symptoms.
- The audience will have greater insight into the side effect profile of small molecule kinase inhibitors.

Biography:
Dr. Shailja Chalishazar graduated with a MBBCh degree from Cardiff Medical School, South Wales in 2019. She completed her foundation training in the West Midlands deanery in England between 2019-2021. She is currently a Clinical Teaching Fellow in Ophthalmology at the University Hospital of Wales. Along with her clinical and teaching responsibilities, she is undertaking a Certificate and Diploma in Medical Education. Dr. Chalishazar enthusiastically participates in presenting the research and interesting cases from her health board at a global level.

Ophthalmic manifestations of severe acute respiratory syndrome coronavirus 2(SARS-Cov-2) infection

Luca Roncati
Institute of Pathology, Department of Surgery, Medicine, Dentistry and Morphological Sciences with interest inTransplantation, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Polyclinic Hospital, Modena, Italy

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is the aetiological agent of the most dramatic pandemic of the new millennium, the Well-Known Coronavirus Disease 2019 (COVID-19). It is characterized by many Clinical-Pathological facets, which can be summarized as follows: Pulmonary (oedema,interstitial pneumonia, fungal superinfection, diffuse alveolar damage, scarring fibrosis), vascular (endotheliitis, vasculitis, thrombosis, disseminated intravascular coagulation), cardiac (myocarditis, pericarditis, infarction),hemolymphatic (spleen white pulp depletion, immunodepression, herpetic reactivations, naked megakaryocyte nuclei increase, hemophagocytosis, leukoerythroblastic reaction), hepatic (fulminant hepatitis, microvesicular steatosis), pancreatic (autoimmune pancreatitis), renal (acute tubular damage), and neuronal (stroke, olfactory epithelium shedding, demyelination). Even the visual apparatus can be a target of the infection in some circumstances. These ophthalmic manifestations include conjunctivitis, Blepharoconjunctivitis, keratitis, Herpes Zoster ophthalmicus, Rhino-Orbital mucormycosis, fungal and bacterial endophthalmitis, posterior ischemic optic neuropathy, acute macular neuroretinopathy, ciliary madarosis, sub-retinal abscess, and Purtscher-Like retinopathy. Surprisingly, similar alterations can also occur after COVID-19 vaccination, such as central retinal artery occlusion, retinal venous occlusion, retinal detachment, retinal vasculitis, herpetic keratitis, acute maculopathy, panuveitis, bilateral papillitis, optic neuritis, scleritis, multifocal choroiditis, multiple evanescent white dot syndrome, and eyelid oedema. Therefore,ophthalmologists should be aware of the possible manifestations of the disease and the potential adverse events of vaccination to prevent it.

Audience Take Away:

- Awareness of the complex clinical-pathological framework of COVID-19.
- Awareness of the possible ophthalmic manifestations from SARS-CoV-2 infection.
- Awareness of the possible ophthalmic adverse events from COVID-19 vaccination.

Biography:

Prof. Dr. Luca Roncati, Italian pathologist, physician-scientist, anti-cancer patent inventor, academic editor, medical lecturer, and award-winning author with more than 250 publications to his credit, specialized in gynecologic oncologyand hematopathology, eponym of Roncati-Manenti triad, describer of T rex lymphoma, pioneering researcher in COVID-19, forensics expert and adjunct professor of anatomical pathology at the University of Modena and Reggio Emilia (Italy).

Connection between myopia and glaucoma; A cross-sectional study

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Purpose: To investigate the association between glaucoma and myopia.

Methodology: A multi-centered cross sectional study was conducted from January 2022 to July 2022. 250 people between the ages of 40 and 65 were recruited using a non-probability purposive sampling technique. Mild (up to 3D), moderate (3D to 6D) and severe degree (more then 6D) of myopia who had never had a cataract or refractive surgery were included. All subjects underwent refraction evaluation, and the optic disc ratio was assessed using a slit lamp examination. In order to evaluate the visual field defects, primetry was also performed, and IOP was determined using an air puff tonometer. Frequency of glaucoma, as indicated by the presence of visual field abnormalities, glaucomatous optic disc and may or may not raised IOP. SPSS software was used for data analysis.

Results: 145(58%) of the 250 total subjects were female and 105(42%) were men. 67 (26.8%) people had refractive errors of mild myopia up to 3 D. While 85 (34%) had a severe degree of myopia (refractive error greater than 6D) and 98 (39.2%) had a moderate degree. No subgroup's intraocular pressure showed a significantly distinct configuration. Older age was linked to both glaucoma and high myopia-related VF abnormalities (a larger blind area, a vertical ste and an unidentified defect). According to study findings, people with high myopia were more likely to get glaucoma (p 0.001).

Conclusion: Myopia that is characterized to high degree (more than 6 D) may be a risk factor for glaucomatous optic neuropathy.

Audience Take Away:

- The prevalence of myopia rise dramatically. Myopia is currently becoming more common in various parts of the world.
- For people with high myopia, the study suggested comprehensive eye exams. to avoid any more complications. Like in glacuoma, eyesight change is irreversible.

Biography:

Maryam Jabbar is a young researcher and optometrist based in Pakistan. She presented her 4 scientific paper in 2 National and 2 International conferences. She received her Doctor of Optometry degree from The University of Faisalabad, Pakistan in 2021. She joined as a Research Associate, Optometry Department at The University of Faisalabad in 2021. Currently she enrolled in MPhil Optometry, The University of Faisalabad (Batch 2021-2023). She has published 9 research articles including HEC recognized journal. Currently working on three research projects.

Knowledge, attitude and practice of diabetic retinopathy amongst diabetic patients in a tertiary care hospital in Jammu North India

Pallavi Sharma
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Background: Diabetes mellitus is a common metabolic disorder which is characterized by elevated blood sugar level. It is a major cause of blindness in our country, which is preventable and treatable, if healthy practice and knowledge regarding this disease is applied. The study was undertaken to assess the knowledge, attitude and practice of Diabetic Retinopathy, amongst diabetic patients attending eye OPD in GMC Jammu.

Methods: 300 patients diagnosed with Diabetes mellitus attending eye OPD, over a period of 10 months, in GMC Jammu, were incorporated in this study. Self-administered questionnaires were used to assess knowledge, practice and attitude of Diabetic Retinopathy.

Results: This study incorporated 300 diabetic patients, out of which 168 (56%) were males and 132 (44%) were females. Most of the patients (70%) were aware that Diabetes can cause eye disorders. 67.33% believed that they should go for regular eye checkups. 79.33% agreed that timely intervention can delay the complications in Diabetic eye disease.

Conclusion: Diabetes can lead to serious Ocular complications which can be prevented by proper awareness, optimistic attitude and good approach towards the disease.

Audience Take Away:

- Diabetic retinopathy is a major cause of visual impairment in developing countries like India. Our study emphasizes on the early screening, awareness , education , practical approach towards the management of Diabetic Retionopathy. This is a simple and effective study towards decreasing the ocular morbidity of this disease.

Biography:

Dr. Pallavi Sharma completed her MBBS in 2006 from GMC Jammu, and was awarded Gold medal for the overall best graduate in 2007. She joined MS Opthalmology in 2007. She worked as a registrar in department of Opthalmology and also worked in Centre for Sight Eye Hospitals. She has published many research articles and has attended many opthalmological conferences.

Femtosecond assisted stromal lenticule addition keratoplasty

Farideh Doroodgar*[1,2], Sana Niazi[3]

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[2]Co-founder and Consultant, Negah Eye Hospital Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[3]Senior Member and Consultant of Medical Students Research Committee, Shahid Beheshti University of Medical Sciences, Tehran, Iran

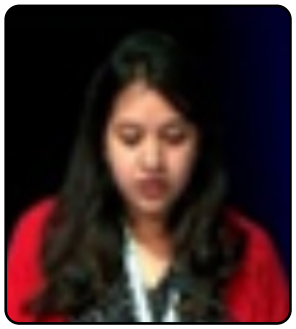
Currently, additive keratoplasty is a practically useful method in keratoconus, hyperopia, and reduction of tube exposure. It is called CAIRS, Corneal Allogeneic Intrastromal Ring Segments; FAISCG, Femtosecond-Assisted Intrastromal Corneal Graft; FLEx, Femtosecond Lenticule Extraction; LIKE, Lenticule Intrastromal Keratoplasty; SFII, Small-Incision Femtosecond Laser-Assisted Intracorneal Concave Lenticule Implantation; SILK, femtosecond laser-assisted small incision sutureless intrastromal lamellar keratoplasty; SLACK, femtosecond laser-assisted stromal lenticule addition keratoplasty; SMILA, FSL-Assisted Small-Incision Lenticule Addition; SMILE, Small Incision Lenticule Extraction, and CuSLI, Customized Stromal Lenticule implantation. Illustrations of implantation of a myopic lenticule with different shapes or profiles of donut-shaped tissue Customized or hyperopic SMILE lenticule is for ectasia. We observed the modest improvement in the keratometric parameters of the cornea, the improvement in mean values from the preoperative (Pentacam) mean values aberration between the preoperative and 24 months post-op) (μm). During the follow-up period, densitometry decreased, which indicates more corneal clarity and better light scattering. In agreement with previous reports about densitometry after CXL or ICRS implantation, the highest values were illustrated in the anterior corneal layer after additive keratoplasty. Optical coherence tomography showed smooth attachment of the lenticule to the stromal layer with visible boundaries. preoperatively and after 1, 3, and 6 months postoperatively. MS-39 uses Spectral-domain OCT (SD-OCT) and Placido Disk corneal topography to obtain measurements from the anterior segment of the eye.

Audience Take Away:

- Regarding the safety, stability, and reversibility of additional keratoplasty in different fields of corneal surgeries, the processing of lenticule banking seems a necessity.
- Advanced monogram using artificial intelligence can improve the efficacy and predictability of additional keratoplasty from the refractive aspect.

Biography:

Prof. Farideh Doroodgar, MD is one of the Influential Iranian Ophthalmology Women with specialties in the cornea, anterior segment, and refractive surgery. Her 20 years of experience in research, teaching, and practice on this subject, as well as her very extensive and successful background in research for which she has published dozens of renowned papers and books (which are available to examine in the attached CV file), could very much qualify her as the author. Also, the comprehensive knowledge of her and her team on this subject is a guarantee of the credibility of the book in question.



Topical and intrastromal amphotericin b in refractory fungal corneal ulcerpatients: A prospective study

Abdi rhizlane
Departement of ophtalmology, CHP fquih ben saleh, Morocco

Purpose: Corneal ulcer is one of the important ophthalmic conditions causing significant morbidity especially in the developing countries. Bacteria and fungi are frequently responsible for suppurative corneal ulcers especially in the developing countries.The present study aimed to know the safety and efficacy of topical and intrastromal injection of Amphotericin B in the management of non-responding fungal corneal ulcer patients.

Methodology: It was a hospital based prospective, non-randomized, analytical study. Thirty patients of non-responding fungal corneal ulcer of any age group, of either sex were studied. Cases were studied in terms of clinical examinations, relevant investigations, appropriate treatment and documentation.

Results: All 30 patients were given topical Amphotericin B. Out of them, 10 patients (33.33%) responded well and healed. Twenty patients not responsed to topical Amphotericin B. Out of them 3 patients did not give consent for intrastromal injection and rest 17 patients were given intrastromal Amphotericin B injection. Post-intrastromal injection, all patients were continued with drops of topical Amphotericin B 0.15%, 1% Atropine eye drop thrice a day, antibiotic eye drop Besifloxacin 0.6% and tablet fluconazole 150mg OD. Out of them 15 patients (88.23%) responded well and healed and remaining 2 were treated with other treatment modalities.

Conclusion: Topical Amphotericin B eye drop was found less effective in management of non-responding fungal corneal ulcer patients, because of poor penetration of the drug topically. Intrastromal injections of Amphotericin B was safe and effective in the treatment of this pathology.

Biography:

Dr. Abdi Rhizlane, medical Doctor, Ophthalmologist, Studied at university hospital center oujda morocco, then joined the ophtalmologydepartment oh chp fquih ben saleh morocco.

PANIS method (Plasma Assisted Noninvasive Surgery) is about treatment of more than 15 ocular surfacediseases

Farhad Nejat*[1], Shima Eghtedari[2]
[1]Vision health research center, Tehran, Iran
[2]Biomedical engineering faculty, Amir Kabir University of technology, Tehran, Iran

PANIS method (Plasma Assisted Noninvasive Surgery) is about treatment of more than 15 ocular surfacediseases with just one device using plasma technology. But the difference between PANIS and past modalities which attracts ophthalmologists all over the world is that, this novel approach is safe, cheap, office-based and without operationroom, easy for patient and doctor as well, with fast learning curve and also fast time of procedure, substitution for sutureand glue in some eye operations and last but not least it has not any side effect or pain during procedure. This device isso ergonomic for surgeon's hand and it has a needle that should be at a special distance like 1 millimeter with target tissue so that it could ionizes the air between needle and tissue named plasma. Plasma can sublimate very very thin layer of tissue and in our animal phase of study our team proved that it can't pass epithelial cells and also this sublimationfootprint can heal in just 2 or 3 days. Before ophthalmology usage of this plasma technology, dermatologists and someophthalmologists used it for patients who need blepharoplasty surgery but they are contraindication for surgery for any possible reason. They applied plasma spots on eyelid skin and sublimate it so eyelid will stretch and eyelid ptosis will treat. Since 2016, Dr Nejat applied plasma spots on conjunctiva tissue of eye for the first time and of course his team evaluated the safety of this method for eye before human phase on rabbit and rat. Our team 14 articles about treating ocular surface diseases with PANIS method and we are working on many different and novel projects using plasma inophthalmology which will be publish soon.

Audience Take Away:

- Learning PANIS method can help ophthalmologists all over the world for treating more than 15ocular surface diseases and also more than 5 benign periocular lesions and Blepharoplasty usingplasma technology, in their office in a safe and easy way (Just with 1 plasma generator).
- We all know some patients will refuse to come to operation room and all hospital processes, Soophthalmologists can treat more patients and raise their income from their office.
- This method has a short learning curve. Our team hold more than 21 conferences and workshops inmany countries, ophthalmologists just need to register to buy this plasma generator and then they will be aware of all international workshops.
- PANIS method is invented base on simplicity, treatment procedures can happen in ophthalmologist'soffice without any general anesthesia and operation room, without any bleeding or suture.

Biography:

Dr. Farhad Nejat studied general medicine in Chamran University in Ahwaz, Iran. He then joined more than 5 hospitals in Iran and he has been general doctor for almost 10 years. Dr. Nejat studied ophthalmology at the Sofia University, Bulgaria. He is one of the members of European society of ophthalmology. Then he became the head ofophthalmology department of Atieh hospital in Tehran, Iran. Now he is the headmaster of a private research center named vision health research center which is joined with an ophthalmology office. He has published more than 200articles in this years and he invented PANIS method as a new approach for treating ocular surface diseases.

Transscleral cyclophotocoagulation with diode laser in the treatment of refractory glaucoma: Tolerance and efficacy

Abdi Rhizlane
CHP fquih ben saleh, Morocco

The management of refractory glaucoma remains a challenge for the ophthalmologist today. Despite a literature rich in clinical studies, there is no consensus for its management.The multitude of possible treatments undoubtedly reflects the complexity and etiological heterogeneity of this pathology. The objective of this work is to evaluate the effect of cyclophotocoagulation on Intraocular Pressure (IOP), visual acuity, the number of medications and the main complications in patients with refractory glaucoma through a series of cases.

Methods: It was a series of 60 cases, carried out at the CHU Mohammed VI of oujda. Between May 2018 and FEBRUARY 2020. The parameters studied were: Intraocular pressure (IOP), visual acuity, the number of eye drops and Complications as well as postoperative pain assessment.

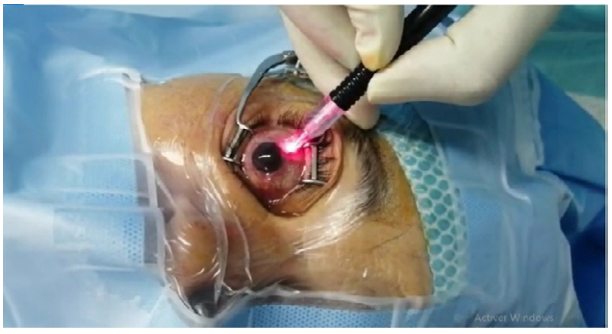
Result: Our series includes 40 women and 20 men with an average age of 62.5 years. All patients presented with eye pain during their preoperative consultation.The etiologies of glaucoma were divided into 4 groups:

- Neovascular glaucoma: 60%
- Secondary glaucoma by angle closure: 16.66%
- Congenital glaucoma: 10%
- Uveitic glaucoma: 13.33%

Preoperatively, the mean intraocularpressure was 44.5mmHg. All patients were on maximum hypotonic therapy. The postoperative intraocular pressure was significantly lower. Pain was controlled in all of our patients in our series we did not find any complications.

Conclusion: Technical progress in the use of lasers in ophthalmology has led to considerable therapeutic benefits, relegating the oldest methods of cyclodestruction.

Background: It is necessary to be able to explore the results in the very long term, but the currently demonstrated efficacy, associated with low iatrogenicity, may lead us to reflect on a possible extension of the indications of transscleral cycloweakening with diode laser, especially on less severe glaucoma?



Biography :

Abdi Rhizlane is a medical doctor Ophtalmologist, she studied at the university hospital center oujda in morocco. Then she joined the ophtalmology department oh CHP FQUIH BEN SALEH MOROCCO.

Utility of plasma rich in growth factors (PRGF) in the anterior segment

Carolina Mercado
[1]Department of Ophthalmology, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, USA
[2]Escuela Superior de Oftalmologia, Instituto Barraquer de America. Bogota, Colombia

Plasma rich in growth factors is an autologous blood product that potentiates regeneration. It has been widely used in the treatment of pathologies such as ulcers, dry eyes, and burns. But the nature of this therapy allows for numerous treatment possibilities beyond the ocular surface.

Audience Take Away:

- I will be describing the benefits of PRGF.
- I will discuss the latest research on this topic.

Biography:

Dr. Carolina Mercado started her career in Ophthalmology as Pre-Residency research fellow at Bascom Palmer Eye Institute. She has published more than 20 research articles in SCI(E) journals focused on Ocular Surface tumors and Regenerative medicine of the cornea. In 2019, she joined the Barraquer - Higher school of Ophthalmology in Bogota, Colombia to complete residency. Dr. Mercado currently is a clinical fellow in Cornea and External diseases at Bascom Palmer Eye Institute, in Miami, Florida.

Orbital venolymphatic malformation: Clinical profile and management outcomes of 20 cases

Chandana Chakraborti
Regional Institute of Ophthalmology, Medical College & Hospital, Kolkata, India

Background: Orbital Venolymphatic Malformations (OVLMs) are rare, benign cystic vascular malformations.

Materials and Methods: A retrospective study of treatment modalities for OVLM in 20 patients was studied over 2 years at a Tertiary Eye Care Centre. They were categorised under observation, medical (oral Propranolol and oral steroids) and surgical management (intralesional sclerotherapy and debulking surgery). The results were graded as poor, moderate or good response.

Results: 3 patients kept under observation were lost to follow up, 4 patients showed moderate response to oral Propranolol, 4 patients showed moderateresponse to oral steroids, 7 patients showed moderate response to intralesional sclerotherapy, 2 out of the 7 patients were taken up for debulking and showed good response.

Conclusion: Intralesional Sclerotherapy is a good option for superficial lesions. Additional debulking surgery in deep seated lesions cases has shown goodresponse and proven to be sight saving.

Biography:

Dr. Chandana Chakraborti completed MBBS from Calcutta Medical College, MD from R.P.centre AIIMS, New Delhi. She served as consultant ophthalmologist in several district and subdivisional Hospitals of West Bengal .Presently she is an associate professor at Regional Institute of Ophthalmology, Medical College & Hospital , Kolkata. Her area of interest is Oculoplasty, Paediatric Ophthalmology, Ocular Trauma, Community ophthalmology. She served as a convenor of PG education Sub Committee of the State Ophthalmology Society(OSWB) during 2013 -2015. Joined in various State and National CME,conferences as faculty. Her free paper on "Orbital Tuberculosis" was highly appreciated in 2012 World Ophthalmology Congress at Abu Dhabi.Author of " Sure success in Ophthalmology Viva Voce & practical examination",a book for MBBS students.Fifty five (60) Publications in National , International journals and State level journals.Journal Editor .Editorial Board member Indian Journal of Ophthalmology since 2017.Associate editor of ACOIN Journal from 2014- 2018.Editor ,Journal of ACOIN since 2019. Assistant Editor (since 2014)ACOIN journalEditor: Bengal Ophthalmic Journal.Editor in Chief ,Indian Journal of Community Ophthalmology(Published by ACOIN). Journal reviewer:

a. Indian Journal of Ophthalmology
b. Indian Journal of Public Health
c. Medical Journal of D.Y.Patil Medical University since
d. Ophthalmic Plastic and Reconstructive Journal
e. Soudi Journal of Ophthalmology
f. Nepal Journal of Ophthalmology
g. Case Report in Ophthalmology

Awards Received: Recipient of Smt. Satya Rani Hazra Memorial Award by the West Bengal Ophthalmic Society in 2011 for best paper in community ophthalmology session. Received Anadi Bhusan Memorial Award for best poster during the year 2014 (OSWB).

Ocular manifestations and management of rhino-orbital mucormycosis during the time of COVID-19

Nurettin Bayram*[1,2], Cemal Ozsaygılı[1], Hafize Sav[3], Yucel Tekin[4], Medine Gundogan[1], Emine Pangal[1], Ayse Cicek[1], Ibrahim ozcan[5], Mehmet cıtırık[2]

[1]Department of Ophthalmology, Kayseri City Training and Research Hospital, University of Health Science, Kayseri, Turkey
[2]Department of Ophthalmology, Etlik City Training and Research Hospital, University of Health Science, Ankara, Turkey
[3]Department of Mycology, Kayseri City Training and Research Hospital, University of Health Science, Kayseri, Turkey
[4]Department of Pathology, Kayseri City Training and Research Hospital, University of Health Science, Kayseri, Turkey
[5]Department of Otorhinolaryngology-Head and Neck Surgery, Kayseri City Training and Research Hospital, University of Health Science, Kayseri, Turkey

Background: Mucormycosis is a deadly opportunistic fungal infection characterized by direct invasion with marked tissue necrosis of adjacent structures followed by rapid progression and angioinvasion from the nasal and sinus mucosa into the orbit and brain. It has been an increase in the incidence of rhino-orbital mucormycosis worldwide during the time of COVID-19. Prolonged hospital stay with the possibility of nosocomial infection, immunosuppression treatments, and associated comorbidities like diabetes mellitus are risk factors attributed to the increasing incidence of rhino-orbital mucormycosis.

Purpose: This study aimed to present the patient demographics, risk factors including comorbidities, and severity and treatment of COVID-19 focused on ocular symptoms and signs, and management's outcome.

Methods: This retrospective observational study included 30 eyes of 29 COVID-19 patients hospitalized between January 2021 and January 2022, and developed microbiologically confirmed ROM co-infection.

Results: There were 23 and 6 women with a mean age of 66.4 ± 11.5 years. Twenty-two patients had uncontrolled type 2 diabetes with a mean diagnosis duration of 12.2 ± 4.1 years. All patients had COVID-19-Associated acute respiratory distress syndrome and received corticosteroids and/or tocilizumab. The mean time interval between COVID-19 diagnosis and rhino-orbital mucormycosis diagnosis was 16.8 ± 6.4 days. Eighteen patients (62.1%) had orbital apex syndrome, and 12 patients (37.9%) were examined with orbital cellulitis. Endophthalmitis was detected in 46.7% of eyes, and one of these eyes developed retinoschisis. Posterior scleritis was detected based on ocular ultrasonographic findings in 5 (16.7%) eyes. One patient (3.4%) developed mucor keratitis, and the other (3.4%) was examined with periocular cutaneous mucormycosis. CT scan and/or MRI revealed sino-orbital involvement in all patients, and seven of these had cerebral involvement at initial presentation. All patients underwent radical debridement of the involved sinuses and received intravenous and retrobulbar liposomal amphotericin B. Intravitreal, posterior Sub-Tenon, and topical liposomal amphotericin B were performed in patients with endophthalmitis, patients with posterior scleritis, and patients with keratitis, respectively. Despite all measures, 68.9% of the patients died.

Conclusions: Therapeutic management in Rhino-Orbital mucormycosis includes extensive surgical debridement, local and systemic antifungal therapy, regulation of the underlying metabolic and/or impaired immunological status, and control of other concomitant infections. The early recognition of ocular symptoms and signs and a multidisciplinary treatment strategy are crucial to help salvage the life and eyes of these patients.

Audience Take Away:

- Mucormycosis is a deadly opportunistic fungal infection and has increased incidence worldwide during the time of COVID-19.
- Besides radical debridement of the involved sinuses and intravenous liposomal amphotericin B therapy, the audience will learn the benefits of the local applications of liposomal amphotericin B such as intravitreal, posterior sub-tenon, and topical in the treatment of post-COVID-19 Rhino-Orbital mucormycosis.
- The audience will understand the significance of the early recognition of ocular symptoms and signs and a multidisciplinary treatment strategy.

Biography :

Nurettin Bayram graduated from Istanbul University Faculty of Medicine (Istanbul, Turkey) in 2003 and completed his ophthalmology residency at Ankara University Faculty of Medicine (Ankara, Turkey) in 2008. He worked with Dr. Ron Adelman, the Director of the Retina and Macula Service, at Yale University School of Medicine (New Haven, CT, USA) in 2018. He currently works at Ankara Etlik City Hospital (Ankara, Turkey). His clinical interests include macular holes and puckers, macular degeneration, diabetic retinopathy, retinal detachments, retinal vein occlusion, retinal lasers, and surgery. His research interests are primarily in the area of retinal and macular diseases and surgery.

Ocular microbiota by Ezenwa C.M and Obum-Nnadi charity

Ezenwa C.M*[1], Obum-Nnadi[2]
[1]Department of Microbiology, Imo state university, Owerri, Imo state, Nigeria
[2]Department of Microbiology, Veritas university, Bwari, FCT-Abuja, Nigeria

Human eye when recklessly exposed directly to the environment it will become vulnerable to a number of uncommon infectious diseases caused by fungi, bacteria, parasites and Viruses. Natural defense mechanisms directed against these microorganisms will be affected once anatomical barriers are breached. Therefore, the timely identification and treatment of the involved microorganisms are paramount. The anatomy of the eye and its surrounding structures is presented with an emphasis upon the association of the anatomy with specific infection of bacteria, fungi, parasites and viruses. Acute bacterial conjunctivitis is caused by Staphylococcus aureus, Streptococcus pneumonia and Heamophilus influenza, other ones are caused by Pseudomonas aureginosa, moraxella lacunata, Streptococcus viridians and Streptococcus mirabilis. Filamentous fungal infections of the eye are usually due to penetrating trauma by objects contaminated by vegetable matter with fungal endophthalmitis and chorioretinitis, on the other hand, they are usually the result of antecedent fungemia seeding in the ocular tissue. Candida spp. is the most common cause of endogenous endophthalmitis, although initial infection with the dimorphic fungi may lead to infection and scarring of the chorioretina. Contact lens is associated with keratitis caused by yeasts, filamentous fungi and Acanthamoebae spp. Ocular cisticercosis is caused by cellulosae larva of Taenia solium (pork tapeworm). Candida spp can cause ocular candidiasis. Most parasitic infections of the eye, however, arise following blood borne carriage of the microorganism to the eye or adjacent structures. Viral conjunctivitis is the most common cause of conjunctivitis. It is majorly caused by Adenovirus, herpes simplex, zoster virus. Therefore we should always guide our eyes jealously to avoid unnecessary injure to the natural structure of the eye. Also rubbing of one's eyes should be seriously avoided.

Audience Take Away:

- Microbiology of the eyes.
- How different Microbiota affects the eyes.
- Different causes of common eye infection.
- Precautionary and preventive measures of the eyes.
- Early diagnosis and treatment of common eye infections.
- Having known hat micro-organisms can affect the natural structure of the eyes, audience should go for regular eye checkups so as to promote early detection and treatment of these ocular microbial infections.
- Ocular microbiota is a general course which can help the faculty of medicine and health sciences in understanding and effective diagnosis of common ocular infections. This will help them to produce their diagnosis and treatment of the infections more effectively. Ocular Microbiology can sharpen the mind of ophthalmologists in their practical research on different causes and treatment measures of eye defect.

Biography:

Dr. Ezenwa C. M studied Microbiology at Imo state University Owerri, Nigeria. She has MSc and Ph.D in medical parastiology and public health. She is currently a senior lecturer in the faculty of Biological and health sciences. She has passion for her academic career and has many publications in different aspects of microbiology. She is a Google, LinkedIn, Kudos, Academia and Researchgate scholar. She is an eBook master creator genius and with a general knowledge of data analysis using SPSS. She is also a member of PPSN, OWSD, ASM, NSM, and FEMS. She is also one of the founders of healthmicrobiolglobal.com.

Air versus fluorinated gas tamponades in pars plana vitrectomy for rhegmatogenous retinal detachment: Systematic review and meta-analysis

Abdulmalik Alsaif[1], Mohammad Karam[2,5,7], Talal Alabduljalil[3], Narvair Kahlar*[4], Eiman Shareef[5], Mohammad Alzaid[6], Abdulaziz Alotaibi [7]

[1]Department of Surgery, Walsall Healthcare NHS Trust, West Midlands, UK

[2,5,7] AlBahar Eye Center, Ibn Sina Hospital, Ministry of Health, Kuwait

[3]Assistant Professor, Department of Surgery, Faculty of Medicine, Kuwait University, Kuwait

[4]Department of Surgery, Sandwell and West Birmingham Hospitals NHS Trust, West Midlands, UK

[5]School of Medical Sciences, University of Manchester, Manchester, UK

Objective: To compare air versus gas tamponades in Pars Plana Vitrectomy (PPV) for Rhegmatogenous Retinal Detachment (RRD).

Introduction: Rhegmatogenous Retinal Detachment (RRD) is the most common type of retinal detachment involving full-thickness retinal breaks in the neurosensory retina due to vitreous traction. This requires urgent surgical interventions. Pars plana vitrectomy is the most commonly adopted surgical technique that involves the removal of the vitreous and vitreoretinal traction, sealing the retinal breaks and the introduction of a tamponading agent. Several studies in the literature compared the use of air against gas as a potential tamponading agent for patients with RRD undergoing PPV. This is the first systematic review and meta-analysis that aims to amalgamate all comparative studies of air versus gas tamponades for primary RRD and evaluate their surgical outcomes following PPV.

Methods: A systematic review and Meta-Analysis were performed as per the PRISMA Guidelines and a search of electronic information was conducted to identify all comparative studies of air versus gas tamponades in PPV for primary RRD. Surgical success and re-detachment rate were primary outcome measures. Secondary outcomes included Best-Corrected Visual Acuity (BCVA), Intraocular Pressure (IOP), complications and predictive factors of surgical success. Fixed effects model was used for the analysis.

Results: Seven studies enrolling a total sample size of 1954 eyes from 1942 patients were identified. No statistically significant difference was noted between air and gas tamponade in primary surgical success (OR = 1.26, P = 0.53) and retinal re-detachment (OR = 1.42, P = 0.25). However, the final surgical success rate was significantly higher in the gas tamponade group (OR = 0.47, P ≤ 0.00001). For secondary outcomes, the air group had similar results compared with the gas group in the changes of BCVA and IOP and overall complications, including cataract, ERM, proliferative vitreoretinopathy, macular hole and pucker formation. Potential predictive factors of surgical success included the choice of tamponade and location of RRD.

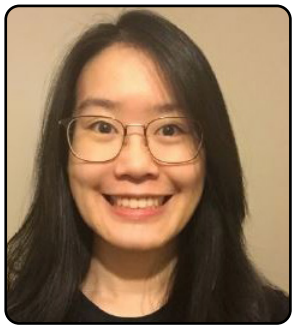
Conclusions: Air is equivalent to fluorinated gas tamponade for patients with primary RRD undergoing PPV as both are not statistically different in terms of primary surgical success and Re-Detachment rates. However, as expected, gas tamponade is significantly superior to air in the final surgical Re-Attachment.

Audience Take Away:

- Our research has shown significant conclusions when comparing air to gas tamponade which has been taken from the best available evidence thus will help VR surgeons with guiding their surgical approach for RRD and teaching within their faculty.
- The findings from this research provide further opportunities to evaluate the different surgical approaches to provide the best patient care possible.

Biography:

Dr. Narvair Kahlar studied Medicine at the University of Leeds, UK and graduated as a Doctor in 2021. He then joined Sandwell and West Birmingham Hospital Trust to complete a 2 year foundation programme which he is still undergoing. He has published multiple research articles of which he has presented many in prestigious international conferences.



Outcome of primary rhegmatogenous retinal detachment surgery in a tertiary referral centre in Scotland – One year experience

Hiu Kwan Fiona Fung
Department of Ophthalmology, Aberdeen Royal Infirmary, NHS Grampian, United Kingdom

Introduction: Retinal detachment is a sight threatening condition, causing it to be one of the most common eye emergencies in the United Kingdom with an annual incidence of about 10-15 per 100,000 people. NHS Grampian, as a health board responsible for over half a million people, have 3 highly trained vitreoretinal surgeons. The objective of this study is to measure the outcomes of primary rhegmatogenous retinal detachment surgery in a tertiary referral centre within a one-year period.

Methods: A retrospective review of case notes of all patients who underwent primary RRD repair in Aberdeen Royal Infirmary between January and December 2021. Medical records were reviewed using the web-based healthcare information system. Patient demographics, outcome measures including primary and final anatomical success, functional outcome and complications were recorded.

Results: A total of 119 cases of primary RRD were included, with a mean age of 56.7 years at the time of surgery. Myopia was the most common ocular risk identified, with 52% of patient having bilateral myopia. 107 patients underwent pars plana vitrectomy, 11 patients had scleral buckle with cryopexy,1 patient had cryopexy only and 3 patients received pneumatic retinopexy. Primary anatomical success rate was 86% while the final success rate was 94%. Over 70% of patients showed improvement in their visual acuity in the 3-month follow up and 77% demonstrated functional success in their most recent follow up. 2 cases of suprachoroidal haemorrhage were identified as complications.

Conclusion: This study shows that the anatomical success and functional outcome in this centre is comparable to the latest national audit.

Audience Take Away:

- Experience of a tertiary referral centre.

Biography:

Dr. Fiona Fung graduated from the University of Aberdeen, UK in 2020. She completed her foundation training in Aberdeen Royal Infirmary including a rotation in the Department of Ophthalmology. She is currently working as a general practice trainee in the NHS Greater Glasgow and Clyde Board.

A "flicker" of hope for early cardiovascular disease detection

Anchal Lal*[1], Neha Dave*[2]
[1]Centre for Vision Research, Westmead Millenium Institute, Sydney, NSW, Australia
[2]School of Medicine and Public Health, The University of Newcastle, Callaghan, NSW, Australia

Background: Impaired digital reactive hyperaemia and flicker-stimulated retinal vascular response are early risk markers of cardiovascular disease. In 119 controls and 120 participants with diabetes mellitus, this cross-sectional study is the first to investigate the correlation of impaired hyperaemic Micro - And Macro-Vascular responses with diabetes mellitus. This was determined using our novel Flicker-Modulated ECG-Gated fundoscope measuring Flicker-Stimulated retinal vascular changes from baseline and the EndoPAT2000 system measuring reactive hyperaemia index respectively. Our study is the only existing study to explore the potential of ECG-gated flicker-stimulated retinal vascular changes from baseline as an early marker of diabetes mellitus.

Methods: The EndoPAT2000 system assessed digital reactive hyperaemia under fasting conditions. A mydriatic ECG-Gated fundoscope attached to a novel flicker module acquired digital retinal images of the left eye before, during and after flicker stimulation. An inhouse semi-automated software measured single retinal vessel diameters using a standardised and validated protocol with two observers repeating measurements in a subset of 10 controls and 10 participants with diabetes mellitus. Intra- and Inter-Observer reliability analyses occurred by the interclass correlation coefficient. A receiver operating characteristic curve established associations of variables with diabetes mellitus.

Results: Diabetes mellitus was more strongly associated with Flicker-Stimulated retinal arteriolar calibre change from baseline (AUC 0.81, 95%CI 0.75-0.87, $p<0.0001$) than reactive hyperaemia index. Median Flicker-Stimulated arteriolar calibre change from baseline (controls: 2.74%, IQR 1.07 vs Diabetes Mellitus: 1.64%, IQR 1.25, $p<0.0001$) and reactive hyperaemia index (controls: 1.87, IQR 0.81 vs diabetes mellitus: 1.60, IQR 0.81, $p=0.003$) were lower in diabetes mellitus than controls. Intra- and Inter-Observer reliability coefficients were high ranging from 0.87-0.93.

Conclusion: Our research demonstrates that impaired Flicker-Stimulated retinal arteriolar calibre change from baseline is more highly correlated with diabetes mellitus in this study than a reduced reactive hyperaemia index. Therefore, the ECG-Gated Flicker-Modulated Fundoscope may assist in cardiovascular risk screening by detecting early abhorrent microvascular pathophysiological changes in patients with diabetes mellitus.

Audience Take Away:

- The ECG-Gated Flicker-Modulated Fundoscope is a Non-Invasive device that is routinely used in the management of diabetes mellitus.
- It has shown to have an added benefit of detecting early abhorrent microvascular pathophysiological changes in patients with diabetes mellitus, which may assist in the secondary prevention of diabetes-related complications as well as cardiovascular risk screening.
- Flicker stimulation to the retina results in the local release of endothelial nitric oxide into the retinal microvasculature, and is therefore useful in the investigation of endothelial function.
- Capturing photographs of the retina at the end of diastole (trough of the aortic pressure wave) improves the precision and reproducibility of the measurement of retinal vessel calibre, in both controls and diabetes mellitus.

- Unlike other Non-Invasive endothelial function tests, including peripheral arterial tonometry (EndoPAT2000 system), the ECG-Gated Flicker-Modulated fundoscope does not require patients to fast prior to examination nor be examined in a secluded room due to a lack of autonomic innervation to the retina, which would otherwise affect the results.
- Additionally, the ECG-Gated Flicker-Modulated fundoscope does not require additional training of the operator and is therefore a convenient and safer alternative to Hypercapnia - And Hypoxia-Induced retinal vasodilation for the examination of endothelial function.
- In summary, due to its Non-Invasive nature and greater accuracy in detecting impaired hyperaemia, the ECG-Gated fundoscope in our study challenges the viability of the commonly used endothelial function test, peripheral arterial tonometry, and may assist in early cardiovascular disease detection.

Biography:

Dr. Anchal Lal completed a PhD in 2019 where she investigated the association of retinal vessel calibre changes with cardiovascular disease risk in diabetes mellitus. She will be completing her Doctor of Medicine degree this year and will beginning her internship at Westmead Hospital next year. Dr. Neha Dave has completed her Doctor of Medicine degree and is a Junior Medical Doctor working at Royal Prince Alfred Hospital. She has a strong interest in ophthalmology, particularly diabetes-related ocular changes.

POSTERS

DAY 02

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OPHTHALMOLOGY CONFERENCE

27-28 OCT

Impact of atmosphere in keratoconjunctivitis sicca: A meta-analysis on different components of air pollutants

Donghui Yu*, Meijiang Zhu, Wenting Cai, Tianyi Shen, Chengda Ren, Tingting Li, Huizi Jin, Chengyu Hu, Jing Yu

Department of Ophthalmology, Shanghai Tenth People's Hospital, Shanghai, People's Republic of China, Yanchang Road, Shanghai, China

Aim: Previous studies assessed the ocular surface integrity and tear stability are climate dependent. Although previous prevalence studies of KeratoConjunctivitis Sicca (KCS) associated with air pollutants were reported from some countries worldwide, there is no uniform conclusion about the influence of different components of air pollutants on cornea in this field. In this study, meta-analysis will be used to summarize the existing papers and get a more objective and comprehensive result.

Methods: A systematic search was finished in MEDLINE, EMBASE, CINAHL, Google Scholar, and the Cochrane Library for relevant articles published from January 01, 1990 to April 29, 2022 without language restrictions. STATA 15.0 was used for data analysis and the results included PM2.5, PM10, SO2, NOx, CO, O3were expressed in the form of Odds Radio (OR) and 95% confidence interval (95% CI).

Results: The potential risk factors for KCS were PM2.5(OR=1.048, 95%CI[1.016, 1.081], p=0.003), SO2 (OR=1.034, 95%CI[1.018, 1.051], p<0.001), NOx (OR=1.028, 95%CI[1.018, 1.039], p<0.001), PM10 (OR=1.004, 95%CI[1.003, 1.005], p<0.001) and O3 (OR=1.072, 95%CI[1.045, 1.100], p<0.001), respectively. While CO (OR=1.000, 95%CI [0.995, 1.005], p=0.962) was not associated with KCS.

Conclusions: Meta analysis showed that the potential risk factors for KCS were: PM2.5, SO2, PM10, NOx and O3. While CO was not associated with DED.

Audience Take Away:

- The prevalence of Keratoconjunctivitis Sicca (KCS) is high and KCS patients complain a lot about their symptoms. As a result, it has a huge economic burden on patients.
- Cornea, as a part of the human body surface, is in Long-Term contact with air pollutants, which assesses the ocular surface integrity and tear stability are climate dependent.
- Air pollutants including PM2.5, O3, NOx, PM10 and SO2 are potential risk factors of KCS.

Biography:

Dr. Yu Donghui studied Clinic Medicine at Anhui Medical University, Anhui, China as MD from 2011 to 2016. She then joined the research group of Prof. Yu Jing at Department of Ophthalmology, Shanghai Tenth People's Hospital, Tongji University, Shanghai, China. She will receive her PhD degree in 2023 at the same institution. She had been an intern in Hospital of Marburg University, Germany for 1 month in 2018.

Rare case report - MOG syndrome or disease

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Department of ophthalmology, Government Medical College, Aurangabad, Maharashtra, India

Purpose: To report a case presented to tertiary care center of Neuromyelitis optica.

Case Report: We described a case of neuromyelitis optica a 28 years old female presented to our hospital with complaints of diminution of vision in right eye since 35 days. History of cough, cold, fever, redness & watering of right eye 40 days ago. Diagnosed as case of neuromyelitis optica in our hospital with relevant investigations. She underwent conservative medical management and relieved.

Results: we diagnosed case as neuromyelitis optica based on antibody assay (Anti MOG-Myelin Oligodendrocyte Glycoprotein – Positive).

Conclusion: Neuromyelitis optica is a chronic autoimmune disease. Anti MOG antibodies are produced in 7.4 % of patients.

Audience Take Away:

- Neuromyelitis optica is rare autoimmune disease causing blindness which can be reversed if diagnosed and treated early.
- Appropriate treatment within time is important.
- Blindness in the young age can be preventable with timely antibody assay and confirmation of diagnosis.
- With intravenous immunoglobulins visual outcome of patients improved.

Biography:

Dr. Nikhat Iqbal Tamboli from Government Medical College, Aurangabad, Maharashtra. She is studying 3rd year of post-graduation (of MS ophthalmology).

Ocular pyogenic granuloma: A case series

Chandana Chakraborti
Regional Institute of Ophthalmology, Medical College & Hospital, Kolkata, India

Background: Pyogenic Granuloma(PG) is a benign vascular proliferation of immature capillaries, leading to a lobular lesion. It is a misnomer, as it is neither purulent in nature nor of granulomatous variety. Ocular PG usually arises from conjunctiva and eyelids. Predisposing factors includes previous surgery, trauma, infection, BRAF mutation, hormonal and drug induced.

Objectives: To study the clinical profile and management outcome of patients with ocular PG.

Methods: Clinical features and management outcome of all PG cases presented over a period of one year were analysed retrospectively.

Results: Twenty five patients with age range from 10 to 65 years were included in the study. Out of 25 patients 15 were female and ten male. Ten patients had history of ocular surgery and 3 patients had history of Non-Surgical trauma and 12 patients had no significant history. 18 cases were from bulbar conjunctiva and 7 were from tarsal conjunctiva. Excisional biopsy was performed in 20 cases and confirmed diagnosis by histopathologic examination, topical steroid alone relieved 2 cases. Two cases lost to follow up and one case recurred after surgery.

Conclusion: Pyogenic Granuloma may mimic various ocular lesions like squamous papilloma, conjunctival lymphoma, lymphangiectasis and rhinosporidiosis. Diagnosis of PG is mainly clinical. Management options are surgical excision, topical steroid, topical timolol and cauterization. Small size cases can be treated with topical steroid alone.

Biography:

Dr. Chandana Chakraborti completed MBBS from Calcutta Medical College, MD from R.P.centre AIIMS,New Delhi. She served as consultant ophthalmologist in several district and subdivisional Hospitals of West Bengal .Presently she is an associate professor at Regional Institute of Ophthalmology, Medical College & Hospital, Kolkata.Her area of interest is Oculoplasty, Paediatric Ophthalmology, Ocular Trauma, Community ophthalmology. She served as a convenor of PG education Sub Committee of the State Ophthalmology Society (OSWB) during 2013 -2015.Joined in various State and National CME,conferences as faculty.Her free paper on "Orbital Tuberculosis" was highly appreciated in 2012 World Ophthalmology Congress at Abu Dhabi.Author of " Sure success in Ophthalmology Viva Voce & practical examination" ,a book for MBBS students.Fifty five (60) Publications in National , International journals and State level journals. Journal Editor, Editorial Board member Indian Journal of Ophthalmology since 2017, Associate editor of ACOIN Journal from 2014- 2018. Editor ,Journal of ACOIN since 2019, Assistant Editor (since 2014)ACOIN journal, Editor: Bengal Ophthalmic Journal, Editor in Chief ,Indian Journal of Community Ophthalmology(Published by ACOIN).

a. Indian Journal of Ophthalmology
b. Indian Journal of Public Health
c. Medical Journal of D. Y. Patil Medical University since
d. Ophthalmic Plastic and Reconstructive Journal
e. Soudi Journal of Ophthalmology
f. Nepal Journal of Ophthalmology
g. Case Report in Ophthalmology

Awards Received: Recipient of Smt. Satya Rani Hazra Memorial Award by the West Bengal Ophthalmic Society in 2011 for best paper in community ophthalmology session. Received Anadi Bhusan Memorial Award for best poster during the year 2014 (OSWB).

Diclofenac versus corticosteroids following strabismus surgery: Systematic review and meta-analysis

Khaled Alkandari*[1], Mohammad Karam[1,2], Abdulmalik Alsaif[2,3], Abdulrahman Al-Naseem[4], Abdulredha Almuhanna[2], Ahmed Aldubaikhi[5,6], Fatemah Hussain[1,2], Khaled Alkandari*[1], Ian Simmons[7], Shatha Alfreihi[8]

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The current study aims to compare outcomes of diclofenac versus corticosteroids following strabismus surgery. A systematic review and meta-analysis were performed in line with the PRISMA guidelines. An electronic search was performed to include comparative studies of diclofenac versus corticosteroids following strabismus surgery. The analysis was based on fixed and random effect models. Primary outcomes included discomfort, chemosis, inflammation, conjunctival gap, Intraocular Pressure (IOP) and conjunctival injection. Secondary outcomes were conjunctival congestion, discharge and drop intolerance. Eight studies with a sample of 469 eyes were included. At weeks 1 and 4 post-operatively, there were no statistically significant differences between diclofenac and corticosteroid groups, except for conjunctival injection at week 1 (Mean Difference [MD]=-0.21, P=0.04) favoring diclofenac. Interestingly, all primary outcomes significantly favored diclofenac at week 2, namely discomfort (MD=-0.34, P=0.03), conjunctival chemosis (MD=-0.16, P=0.04), conjunctival inflammation (MD=-0.16, P=0.02), conjunctival gap (MD=-0.17, P=0.002), IOP (MD=-2.53, P<0.00001) and conjunctival injection (MD=-0.30, P=0.03). Moreover, conjunctival congestion was significantly improved for dexamethasone whilst discharge and drop intolerance was not statistically different. In conclusion, diclofenac is comparable to various corticosteroids when used following strabismus surgery. However, it is important to note that diclofenac yielded significant improvements in discomfort, conjunctival chemosis, inflammation, conjunctival gap, IOP and conjunctival injection mainly at two weeks post-operatively.

Audience Take Away:

- This is the first meta-analysis that compares the outcomes of surrounding various corticosteroids and diclofenac to determine the most effective post-surgical anti-inflammatory agent for strabismus patients.
- Diclofenac is comparable to various corticosteroids when used following strabismus surgery.
- Diclofenac yielded significant improvements in discomfort, conjunctival chemosis, inflammation, conjunctival gap, IOP and conjunctival injection mainly at two weeks post-operatively.

Biography:

Dr. Alkandari obtained his Bachelor Degree in Doctor of Medicine from the Jordan University of Science and Technology in 2021. He then worked as a junior doctor in Kuwait and focused on research in the field of ophthalmology.

Designing molecules to treat ophthalmologic diseases caused by sorbitolexcess

Ashkhan Hojati*[1], Shonit N. Sharma BS[1,2], Rahul S. Yerrabelli[1], Christopher Nelson[1]
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Background: Cataracts, diabetic retinopathy, and peripheral neuropathy share a commonpathophysiology: Osmotic damage from sorbitol buildup. Over a lifetime, metabolism of glucose results insorbitol buildup in certain tissues (lens, retina, Schwann cells) that have limited amounts of the sorbitol dehydrogenase enzyme to degrade it into fructose. Current State-Of-The-Art techniques to treat this pathophysiology target the ultimate effects (i.e. surgical replacement of cataracts with artificial lenses) or prevent the initial glucose excess (i.e. Anti-Diabetic medications). Approaches to targeting the sorbitol pathway itself were attempted when the pathophysiology was first elucidated decades ago. With advancements in molecular design, novel drugs may play a promising role in new therapeutic avenues.

Methods: Protein Data Banks (PDB) in Europe's Chemical Components and Research Collaboratory for Structural Bioinformatics (RCSB) were utilized to identify the ligand D-Alito alone and contained in ABC transporter solute binding protein from Agrobacterium vitis. Using PyMOL, computational modeling was utilized to iteratively generate mutations in residue-ligand interactions to identify structureswith improved stabilization of sorbitol in the binding pocket.

Results: We found multiple proteins that have potential to sequester sorbitol. We demonstrate athermodynamically favorable (highly negative) Gibbs free energy for these molecules. Our results indicate that molecules likely do exist that can treat diabetic eye diseases via a mechanism of actiontargeting sorbitol.

Discussion: Computational modeling is an efficient approach for identifying potentially successful molecules, but validation in animal models needs to be done. Additionally, so far, we have only studied sorbitol-sequestering molecules that are Protein-Based (biologics). Biologics in general pose greater pharmacologic problems including decreased molecular stability and the requirement for more invasive routes of administration (i.e. bevacizumab- intravitreal or intravenous injection). As such, small moleculeagents are highly favored if they can produce the same pharmacodynamic effect. Future research may focus on a targeted drug design to create small molecules that can sequester sorbitol. Possible mechanisms of action for these small molecules include inhibition of the metabolic pathway's key enzymes (Aldose Reductase And Sorbitol Dehydrogenase) and molecular efflux of the reaction products (sorbitol and fructose).

Audience Take Away:

- The audience will learn about the background and pathophysiology of cataract formation andassociated causes. This will help provide a general foundation to understand our work and important outcomes of this study.
- Possible mechanisms and treatments for sorbitol build up in the lens of the eye.The audience will hopefully be able to utilize this information to make comparisons between different modalities of treatment. Since we identified specific protein moleculesand their ability to sequester sorbitol, the results we obtained from our study could be very useful for others as an initial starting point for subsequent studies.
- Our study provides information on how computational modeling can be utilized to understand protein-ligand interactions. We provide information obtained and analyzed from datasets, contributing novel findings to the field. This is a huge benefit in the current age of technology where so much data is available to analyze and come up with novel approaches and treatments.

Biography:

Ashkhan Hojati is a 4th year medical student at Carle Illinois College of Medicine at University of IllinoisUrbana-Champaign. He graduated in 2016 with a BS in Biomedical Engineering from Virginia Commonwealth University (VCU) and received his MS in Physiology & Biophysics at VCU Medical Center in 2019. He has held multiple research positions at VCU Medical center and has published and presented on a variety of topics including molecular psychiatry, medical device design, and pharmaceuticals.

Goldmann Applanation Tonometer (GAT) simulator: A novel approach to training

Ashkhan Hojati*[1], Rahul S. Yerrabelli[1], Atish Amin[2], Peter R. Kastl[3]
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Introduction: Measurement of Intraocular Pressure (IOP) is critical for the management of glaucoma. The current gold standard measurement apparatus is the Goldmann Applanation Tonometer, a tool which utilizes the Imbert-Fick Principle where intraocular pressure equals the contact force required to flatten, divided by the area of contact on an infinitely thin-walled sphere. One disadvantage of GAT is the high operator skill requirement. IOP is frequently checked by an ophthalmic technician or nurse and devices such as Ocular Response Analyzer (ORA) have shown to be easier to operate than GAT due to automation. Furthermore, an unskilled practitioner can cause harm to a patient during performance of GAT by potentially causing a corneal abrasion. Numerous other techniques have been developed, such as Tonopen, Ocular Blood Flow tonograph (OBF), Non-Contact Tonometer (NCT), and Transpalpebral Tonometer, due to the complicated technical aspects of GAT. However, GAT remains to be the most accurate IOP check technique across ophthalmology practices, as the interobserver reliability is lower for other techniques. While GAT is the gold standard for IOP measurement it also requires a high skill of operation, thus appropriate training is critical. Present day training requires a courageous volunteer to act as a patient. Physical models acting as artificial globes have been developed for training but require materials that may not be easily accessible and have associated costs.

Methods: A website was created using HTML and Javascript ES6, tested on Google Chrome version 103.0, hosted on GitHub. The code is publicly available at https://github.com/ryerrabelli/TonometrySimulation.

Results: We developed an online application which mimics the steps of GAT and is free to use for trainees at gatism.com.Trainees can now train on our model before seeing patients, which may ultimately improve outcomes. To our knowledge, this is the first time ever an online simulation of Goldmann Applanation Tonometry has been developed. This will allow individuals to train and learn the mechanics of GAT via An Easy-To-Use online application. We hope such technology will improve the skills of trainees, hasten the time to reach expertise, and minimize potential patient complications.

Audience Take Away:

- Modalities and techniques for measuring IOP.
- Gold standard modality - Goldmann Applications Tonometry (GAT) for measuring IOP.
- Current standards of training GAT.
- Development of our novel GAT training simulator, its use, benefits, and limitations.
- Future directions for our novel GAT training simulator.

Biography:

Ashkhan Hojati is a 4th year medical student at Carle Illinois College of Medicine at University of Illinois Urbana-Champaign. He graduated in 2016 with a BS in Biomedical Engineering from VCU and received his MS in Physiology & Biophysics at VCU Medical Center in 2019. He has held multiple research positions at VCU Medical center and has published and presented on a variety of topics including molecular psychiatry, medical device design, and pharmaceuticals.

Participants List

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