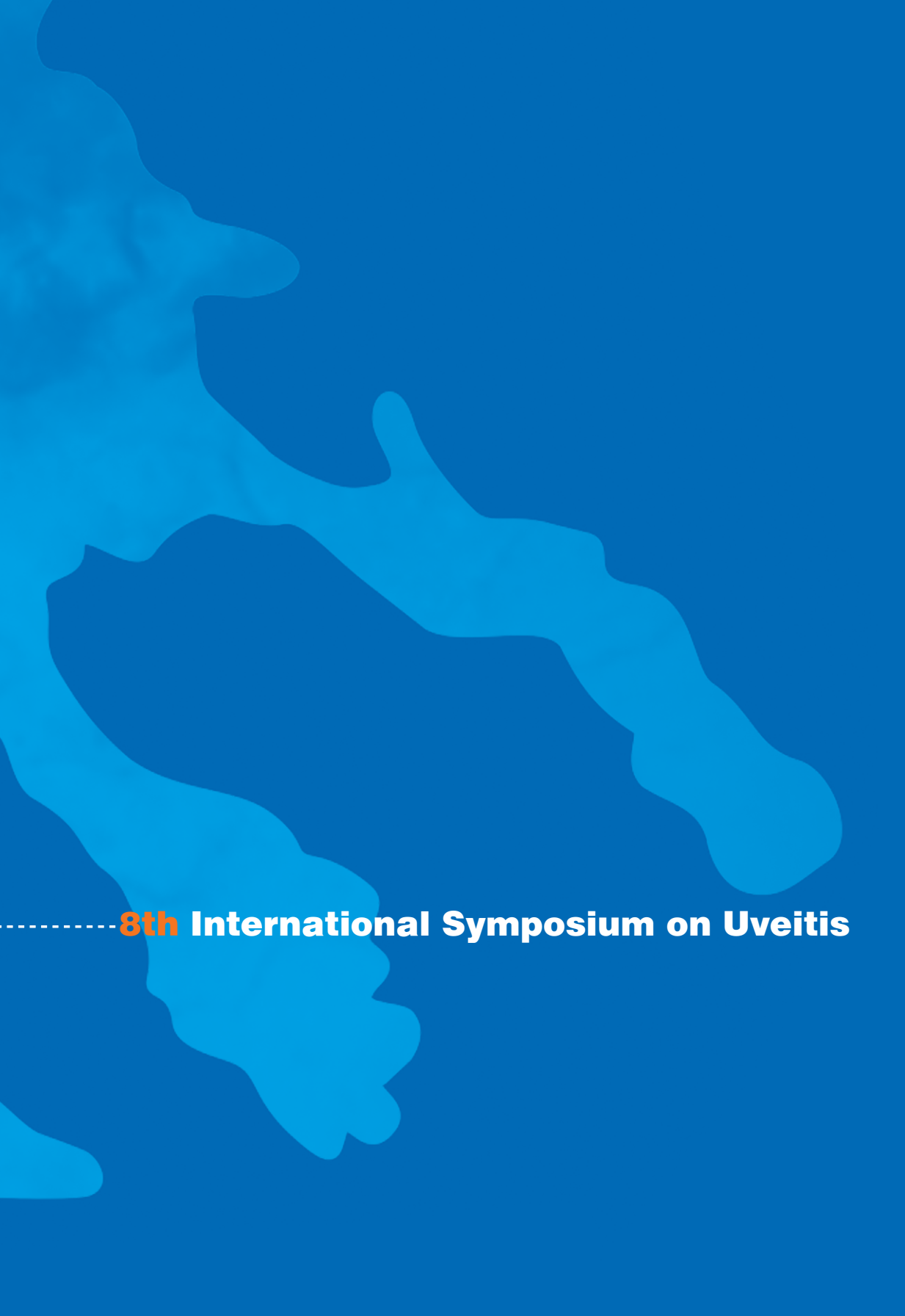
8th International Symposium on Uveitis

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8th International Symposium on Uveitis

Dear Colleagues

In the name of the **International Uveitis Study Group**, it is our great pleasure to invite you to the **8th International Symposium on Uveitis.** For the first time this Meeting will take place in **Greece, in Sani Resort.** The meeting will be in **October 2012** from **Friday 19th to Monday 22nd.** Uveitis has always been one of the most challenging diagnoses in ophthalmology. Interactive cooperation with other fields of medicine is increasingly important. The program of the Symposium will reflect this. We have again tried to include the most innovative and provocative topics from the field of uveitis e.g. uveitis in children, infectious uveitis, epidemiology, diagnostics, surgery, OCT and various aspects of treatment. Compared to the last meeting 4 years ago, even more new drugs are under study, which seem to be more potent and less toxic compared to other immunosuppressive drugs. International groups are working extensively on guidelines and recommendations, necessary for optimal studies. The meeting will present an update of this global work. Models of experimental uveitis and new ideas of mechanisms like autoinflammation are becoming more and more relevant for uveitis. The hope is that the Symposium will succeed by being scientifically and clinically relevant, as well as becoming an occasion for all of us to get together in an atmosphere of congeniality and friendship. For this occasion, we have planned an exciting social program with a visit at a winery (for IUSG-members only) and a music party at the Ancient Theater of the Sani Hill. Most of the other international ocular inflammation groups, like the American Uveitis Study Group, the International Ocular Inflammation Society, the SPEIO, and the SOIE will join the meeting with their own symposia. We are looking forward to seeing you in October 2012 in Sani Resort in Greece.

Manfred Zierhut
President of the IUSG

Sofia Androudi
Meeting Organizer

Dear Colleagues,

The IUSG organises on a regular base, every 4 years, an International Symposium on Uveitis. After the Constance Symposium four years ago, the 8th ISU will again be organised in Europe. We will have the precious opportunity to update our knowledge and practice of uveitis in a country that is the cradle of one among the great civilizations. Our colleague Sofia Androudi is conveying us to the idyllic surroundings of Sani Beach, Kassandra peninsula in Halkidiki in the North of Greece, not far from Mount Athos. As president of SOIE, I would like to thank her, in the name of our society, to have taken upon her the organisation of such an important and emblematic event. Knowing the legendary hospitality of the Greek people we can already anticipate that this 8th ISU will leave its mark in the world of uveitis and participants will not regret having been part of the event..

The Society of Ophthalmo-immunoimfectiology in Europe (SOIE), supports this event and immediatelly responded positively to the invitation that has been extended to our society. We are glad to take an active part in this meeting. It is obvious that our different societies should be considered as complementary, all working for the same aim, improve patient care, patient management and patient well-being by promoting knowledge and good practice of uveitis at large.

The SOIE, formally founded in 2005, after meetings in Monaco (2006), in Cracow, Poland (2007), in Capadoccia, Turkey (2008), the Oasis of Tozeur, Tunisia (2009) and Bad Blumau in Austria (2010), continued its activities principally devoted to basic teaching of uveitis. From 2010 to 2012, SOIE contributed to the program of the famous "White Nights Congress" in St.-Petersburg, Russia, regarding the field of uveitis. In 2011 it responded to an invitation of the Lithuanian Society of Ophthalmology and organised a uveitis course within the annual meeting of this society. In 2013 SOIE will for the first time engage in extra-European activities by helping shape the International Uveitis meeting to be held in Costa Rica, Central America. In an effort to unit forces in the field of uveitis, SOIE also joined many other societies in the Federation of Ocular Inflammation Societies that was at the base of the Ocular Inflammation Meeting held under the auspices of IOIS in Goa, India in November 2011.

Increasingly such collaborative attitudes between our societies will bring its positive effects aiming at creating a strong, collaborative and conscientious group for the defence of the small albeit important field of uveitis.

For the 8th IUS symposium, the SOIE was asked to contribute a symposium to promote, once more, the objective measurement method of laser flare photometry for intra-ocular inflammation. With the organizers we think that universal adoption of this methodology will make uveitis more precise and scientific and hence more respectful and also more respected.

In the name of the SOIE, I would like to welcome all the participants to the 8th International Symposium on Uveitis organised by the IUSG. Please come numerous to freshup your knowledge in uveitis in a symposium that promises to be unavoidable and memorable, taking advantage of the magnificent scenery of Halkidiki.

See you all in Sani Beach.

Carl P. Herbort, MD PD
President SOIE
Inflammatory & Retinal Eye Diseases
Centre for Ophthalmic Specialised Care (COS), Lausanne, Switzerland &
University of Lausanne, Lausanne, Switzerland

Greetings from President of IOIS and AUS

International uveitis study group from its inception over four decades has been instrumental in organizing symposia on the international stage which are attended by world renowned ophthalmologists with deep commitment in enhancing the field of intraocular inflammation/uveitis. Unlike several international symposia, The IUSG symposia are unique by virtue of holding the meetings in a single hall and avoiding distractions of simultaneous sessions related to ocular inflammation. This approach created lovely discussions and debate by the international leaders along with participants in addressing controversies in the diagnosis and treatment of uveitis entities. The IUSG international symposia being held once every four years has advanced diagnostic acumen of the participants and provided novel approaches to management of recalcitrant uveitis and related disorders. Accentuating the scientific aspects of the symposia, the meetings were held at unique sites to facilitate interaction of participants formally during the meeting and informally at social settings. I am delighted to know that the current international symposium will be held at a unique beach resort in Greece, Sani beach and such venue will assure enhanced interaction of the participants with the leaders in the field of ocular inflammation and to develop multinational collaborative research studies. The outstanding scientific program organized with cutting edge and timely clinical details on the diagnosis and management of uveitis under the leadership of Professor Manfred Zierhut, president of IUSG and active participation of world leaders in the field of uveitis will provide a new window in improving the current treatment modalities and diagnostic approaches in uveitis field. Knowing expertise of professor Zierhut in organizing such symposia and the hosted by Dr. Sofia Androudi would ensure outstanding and scientifically excellent symposia combined with social and cultural activities of Greece. I am certain that there will be excellent participation and presentations by members of International Ocular Inflammation Society and American Uveitis Society. As the president of these two organizations it gives me great pleasure in extending greetings of our societies and best wishes to the organizers of the International symposium, members of IUSG and all participants of the symposium.

Narsing A. Rao MD
President of the International Ocular Inflammation Society and American Uveitis Society

I am grateful to Manfred Zierhut, President of the IUSG, and to Sofia Androudi, Meeting Organizer, for the invitation to SPEIO (Sociedad Panamericana de Enfermedades Inflamatorias Oculares, in particular to Rubens Belfort and I, as president of SPEIO) to organize and to participate in the 8th International Symposium on Uveitis in a world class resort in Sani Beach, Greece. We have planned an excellent symposium on Infectious Uveitis where updates on diagnostics, toxoplasmosis, HIV, syphilis, rubella and Fuchs uveitis will be presented. Our members look forward to what promises to be an outstanding and memorable meeting. We hope to renew and establish new collaborations and friendships in a wonderfully collegial environment.

Careen Y. Lowder M.D., Ph.D

Behçet's disease is often called "Silk Road Disease", and it is frequently seen in Asian, Eurasian, Middle Eastern and Mediterranean countries. However, the exact cause of this biased geographic distribution in the world is still unknown. In addition, various clinical features, diagnosis, differential diagnosis, treatment and management of ocular lesions still bear difficult problems to be solved.

The "International Ocular Behçet's Disease Study Group (IOBDSG) has been recently established with the aim of studying various features of uveitis and intraocular inflammation associated with Behçet's disease. The first workshop organized by the IOBDSG was held at the IOIS Meeting in Goa, November 14th 2011 where international uveitis experts with a special interest in ocular Behçet's disease discussed the epidemiology and diagnosis of Behçet's disease.

Fortunately, recent development in the treatment of ocular lesions in this disease by biologic agents seems to drastically change the visual prognosis and maintain better quality of vision. In this Symposium, we would like to mainly focus on the important theme, "How to differentiate Behçet's disease from other types of uveitis". We have many experts on Behçet's disease from various parts of the world in this Symposium. We hope to have very good lectures and active discussion on this difficult disease, ocular lesions of Behçet's disease.

Shigeaki Ohno
Sapporo, Japan

Ilknur Tugal-Tutkun
Istanbul, Turkey

8th IUSG - UVEITIS AWARD WINNERS

LUX Leadership in Uveitis Award
Andrew Dick

Andrew qualified in medicine (MBBS) also with a degree in Biochemistry (BSc (Hons)) from the University of London, and during his medical education he spent an MRC sponsored year as a research associate in Biochemistry with Professor Coleman in Yale. His medical education culminated with the Golding Medal and LLewellyn Scholarship for the top performance in the year at Medical School. Following his internship he entered resident training in internal medicine and qualified with MRCP. After which he entered ophthalmology residency and finally a lecturership with Professor John Forrester in Aberdeen Scotland to further his science training and obtain his postgraduate degree, MD. He was awarded a MRC Post Doctoral Travelling Fellowship to work with Jon Sedgwick at the Centenary Institute of Cancer Medicine and Cell Biology in Sydney Australia. On his return he became a tenured Senior Lecturer at University of Aberdeen until his successful move to University of Bristol in 2000 as Chair and Professor of Ophthalmology. His continued scientific success has led to the esteemed award of Fellowship of Academy of Medical Sciences for exceptional contribution to the advancement of medical science and Alcon Research Institute Award in 2011 for outstanding contributions in the field of vision research. His work continues to be acknowledged internationally by invited and named lectures. These include: Transatlantic Visiting Professor at UCSF in 2005, Biennial Sir Duke Elder Lecture from Royal College of Ophthalmologists, UK in 2007, Frontiers in research Lecture, Bascom Palmer Eye Institute, USA 2008, NHG Overseas Expert, Singapore 2008, plenary lecture at RANZCO in 2009 and European Ophthalmic Research Lecture at EVER, in 2011. Overall he has written 2 text books, one with John Forrester and Colleagues - which still remains the best seller in the field (The Eye: Basic Science in Practice), the other being Practical Manual of Intraocular inflammation and over 18 chapter contributions and over 200 peer reviewed publications spanning basic to clinical science, with over 100 publications in the last 10 years. His extracurricular duties include: Section chair for Immunology for EVER, Past-Chair of IM section for ARVO, chair of uveitis working group for International Classification of disease with W.H.O., committee representation on European Immune-mediated inflammatory diseases workshop, steering committee member for global Standardised Uveitis Nomenclature working group, editorial board member of 5 international peer reviewed journals, including most recently Progress in Retinal and Eye Research. In the past he was co-editor of British Journal of Ophthalmology with Professor Creig Hoyt. His also contributes nationally (in UK) with his work with the Royal Colleges of Ophthalmologists and Royal College of Physicians, as well as Academy of Medical Sciences, committee of Medical Research Society and National Institute for Health Research, UK for the promotion of training, science and scholarship. Most recently he leads the Inflammation and Immunotherapeutics theme for the NIHR-Biomedical Research Centre award to Moorfields Eye Hospital and UCL, London.

IUSG Eye Fund Gold Medal:
Jim Rosenbaum

James T. Rosenbaum is the chief of rheumatology at the Oregon Health & Science University in Portland where he holds the Edward E Rosenbaum Professorship in Inflammation Research. Concurrently he is Chief of Ophthalmology at the Devers Eye Institute for Legacy Hospitals in Portland where he holds the Richard Chenoweth Chair. He is a clinician scientist who has written more than 400 original articles or invited chapters including first authored papers in Nature, Science, JAMA, New England Journal of Medicine, and the Annals of Internal Medicine. He is arguably best known for his description of endotoxin induced uveitis in rats. His honors include the Discovery Award from the Medical Research Foundation of Oregon, the Friedenwald Award from ARVO, and the Cless Award from the University of Illinois, Chicago for the outstanding lecture at ARVO.

The T.F. Schlaegel Jr- G.R. O'Connor Medal:
Narcing A. Rao, M.D.

Dr. Rao is Professor of Ophthalmology and first chair holder of Stieger Vision Research Endowed chair at the University of Southern California, Doheny Eye Institute. He was awarded medical degree from Osmania University, Hyderabad, India and completed residencies in pathology and ophthalmology at the Georgetown University, and a fellowship at the Armed Forces Institute of Pathology, Washington, D.C.
Dr. Rao's research endowers focus on clinical and experimental uveitis and related ophthalmic inflammatory diseases and such work is supported by grants from National Institute of health continuously since 1985 and Research to Prevent Blindness. He has published over 440 peer reviewed articles on ophthalmic diseases in the United States, three books and the American Registry of Pathology-AFIP fascicle on Tumors of the Eye and Ocular Adnexa.
He served as president of International Uveitis Study Group, American Ophthalmic Pathology society, International Ophthalmic Pathologists society and currently he is the president of American Uveitis society and the International Ocular Inflammation Society. He is recipient of several awards including Lorenz Zimmerman medal from American Academy of Ophthalmology, Bietti medal from World Ophthalmology Congress and medals from International Ocular Inflammation Society and International Uveitis Study Group.

LUX Leadership in Uveitis Award lecture:

Translational and Experimental Medicine in Bristol strengthened through collaboration

Andrew Dick

Given the infrastructure we have established in UK through the National Institute of Health Research Biomedical Research award we are now in a position to move forward on both research, education and ultimately improved delivery of care. The principle remit is to gain traction on our experimental medicine base in the laboratory and clinic; in particular refining target groups for treatment via phenotyping patients including genetic, cellular and imaging technologies and pulling through the laboratory science into practice. Our aims, for example are to create in vivo immunophenotyping imaging, gene therapy platforms and proof of concept for immunomodulation. None of this can be undertaken without equal partnership with colleagues globally and with industry.

IUSG Eye Foundation Gold Medal Lecture:

Does the Microbiome Cause Uveitis?

James Rosenbaum

The mechanism by which HLA B27 affects susceptibility to acute anterior uveitis is unknown. We tested the hypothesis that the microbiome, the commensal microbial ecosystem that is universally present in vertebrates, is affected by the expression of HLA B27, since the microbiome plays a major role in the pathogenesis in many immune-mediated diseases including diabetes, obesity, inflammatory bowel disease, demyelinating disease, asthma, arthritis, and fatty liver. We characterized the cecal microbiota of rats that express HLA B27 and beta 2 microglobulin through a technique of broad amplification and mass sequencing known as Biome Representational In Situ Karyotyping (BRISK). We found multiple differences between B27+ rats and littermate controls, including an elevation in Bacteroides vulgatus . This organism is known to be colitogenic in B27+ rats. We also found a reduction in Akkermansia muciniphila, an organism that reportedly protects against bowel inflammation. Differences were confirmed independently through amplification and sequencing of bacterial ribosomal genes. We cannot conclude that these changes are uveitogenic, but the shaping of the microbiome by HLA antigens could contribute to the mechanism by which B27 predisposes to disease.

The T.F. Schlaegel Jr- G.R. O'Connor medal lecture:

Multifocal Serpiginoid Choroiditis (Serpiginous-like choroiditis; multifocal serpiginous-like choroiditis)

Narsing A. Rao

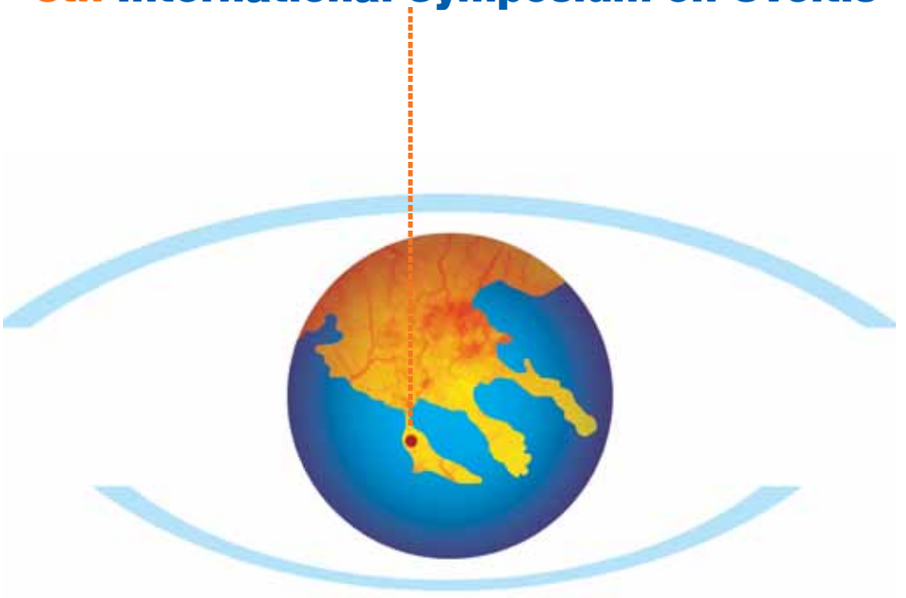
Recently there has been reemergence of interest in etiologic diagnosis and management of serpiginous choroiditis with differing approaches in management of this recalcitrant posterior uveitis. To distinguish classical serpiginous choroiditis of unknown cause from infectious choroiditis simulating this entity, various terms have been used beginning with serpiginous-like choroiditis, multifocal serpiginous-like choroiditis and multifocal serpiginoid choroiditis. The later term was introduced during the second international ocular tuberculosis workshop held in Goa, India, Nov 2011 to clarify differing features of classic serpiginous choroiditis from tuberculosis serpiginous-like choroiditis. The multifocal serpiginoid choroiditis is characterized by distribution of multiple choroidal lesions of varying stages with irregular margins simulating serpiginous pattern and they are vividly displayed by fundus autofluorescence imaging. These multifocal lesions are seen predominantly in the posterior choroid. Although initially the multifocal serpiginoid choroiditis was believed be of tuberculous etiology, the fundus changes are not unique to intraocular mycobacterium tuberculosis. Such morphologic changes are seen in herpetic infection, confirmed by PCR and clinical response to antiviral agents. Moreover such fundus changes are also of unknown etiology without evidence for underlying tuberculous or the viral infection as reveled by chorioretinal biopsy supplemented by immunohistochemistry and qPCR studies.

Various clinical studies, current imaging techniques, histopathological analysis of chorio-retinal biopsy and PCR studies support that the choroidal inflammation of varying causes can manifest with similar fundus changes. Thus, it may be ideal to consider etiologic approach in diagnosis and treatment rather than depending on morphologic features of choroiditis in management of certain choroidal inflammatory diseases including serpiginous and the mimicking choroidal inflammations.

PROGRAM

SCENTIFIC PROGRAM SUMMARY
& SCENTIFIC PROGRAM

8th International Symposium on Uveitis



Scientific Program Summary

	Thursday 18.10.2012	Friday 19.10.2012	Saturday 20.10.2012	Sunday 21.10.2012	Monday 22.10.2012
08.00		Diagnosis of Uveitis: Update and Problems supported by Abbott	Cystoid Macula Edema supported by ALLERGAN	Surgery and Uveitis	Therapeutic Approaches in Uveitis supported by Santen
08.15					
08.30					
08.45					
09.00	Patient Interest Group				
09.15					
09.30					
09.45		Immunopatho-genesis of Uveitis supported by NOVARTIS	JIA associated Uveitis	Secondary Glaucoma	Corticosteroids and beyond supported by Bausch & Lomb
10.00					
10.15					
10.30					
10.45					
11.00					
11.15		Opening Ceremony	Laser flare supported by Kowa	Poster Session I	Poster Session II
11.30					
11.45					
12.00					
12.15					
12.30					
12.45					
13.00			Uveitis-Award supported by ALLERGAN	Controversies in Uveitis	OCT & Imaging
13.15					
13.30					
13.45					
14.00					
14.15		Viral Disorders and Uveitis supported by Théa	Infectious Uveitis in 2012	Behçet's Disease	
14.30					
14.45					Free Papers, 2
15.00					
15.15					
15.30					
15.45					
16.00		Epidemiology of Uveitis	Immunology of AMD	Autoinflam-mation versus Autoimmunity supported by Servier	Free Papers, 3
16.15					
16.30					
16.45					
17.00					
17.15					
17.30			IUSG-Business-Meeting		
17.45		Free Papers, 1		Update about Guidelines and Recommenda-tions supported by LuxBio	
18.00					
18.15					
18.30					
18.45					
	19.00 - Welcome Reception Ammos Restaurant		20.00 - Sani Hill Party Pool Area (Sani Beach Hotel) supported by EyeGate	19.00 - Winery Visit and Dinner (IUSG member only)	

Thursday, 18th October 2012

09.00 ⇩ **17.00** **Patient Interest Group**
Phillipos Meeting Room
Sani Beach Hotel

19.00 **Welcome Reception**
Ammos Beach Restaurant

Friday, 19th October 2012

08.00 ⇩ **09.30** **1st Scientific Session**
IOIS-Symposium

SUPPORTED BY Abbott A Promise for Life

Diagnosis of Uveitis: Update and Problems

Chairmen: **Narsing Rao** (Los Angeles, CA, USA)
Kalpana Babu (Bangalore, India)

1 **Kalpana Babu** (Bangalore, India) (15 minutes)
Tuberculous Uveitis: Global perspective on Role of Interferon- γ Release Assay and its Pitfalls

2 **Justus Garweg** (Bern, Switzerland) (15 minutes)
Viral Anterior Uveitis: Detection of the Agent or Antibody Response in Aqueous Humor

3 **John Heckenlively** (Ann Arbor, MI, USA) (15 minutes)
Autoimmune Retinopathy: Supporting Diagnostic Investigations

4 **Daniel V. Santos** (Belo Horizonte, Brazil) (15 minutes)
Masquerade Syndromes: Approach in Supporting the Diagnosis

5 **Narsing Rao** (Los Angeles, CA, USA) (15 minutes)
Posterior Uveitis: Role of Autofluorescence in the Diagnosis

Discussion (15 minutes)

09.30 ⇩ **09.45** Coffee break

09.45 ⇩ **11.00** **2nd Scientific Session**

SUPPORTED BY NOVARTIS

Immunopathogenesis of Uveitis

Chairmen: **Rachel Caspi** (Bethesda, MD, USA)
Manabu Mochizuki (Tokyo, Japan)

6 **Aize Kijlstra** (Maastricht, Netherlands) (15 minutes)
Inflammatory Cytokines in Clinical and Experimental Uveitis

7 **Manabu Mochizuki** (Tokyo, Japan) (15 minutes)
Role of Regulatory T Cells in Uveitis

8 **Gerhild Wildner** (Munich, Germany) (15 minutes)
Cellular Mechanisms in Monophasic vs Chronic Relapsing Uveitis

9 **Rachel Caspi** (Bethesda, MD, USA) (15 minutes)
Commensal Microbiota Trigger “Spontaneous” Autoimmune Uveitis

Discussion (15 minutes)

11.00 ⇩ **11.15** Coffee break

11.15 ⇩ 12.30

Welcome and Opening Address

Sofia Androudi (Larissa, Greece) (4 min)

Opening Addresses of the Presidents of the Participating Ocular Inflammation Societies:

Manfred Zierhut (Tuebingen, Germany)	**IUSG**	(4 min)
Narsing Rao (Los Angeles, CA, USA)	**AUS, IOIS**	(4 min)
Carl P. Herbort (Lausanne, Switzerland)	**SOIE**	(4 min)
Careen Lowder (Cleveland, OH, USA)	**SPEIO**	(4 min)
Ilknur Tugal-Tutkun (Istanbul, Turkey)		
Shigeaki Ohno (Sapporo, Japan)	**IOBDSG**	(4 min)
Quan Nguyen (Baltimore, MD, USA)	**FOIS**	(4 min)

Opening Address of the Uveitis Patient Interest Group (4 min)
Phil Hibbert (Vidlin, UK)

T.F Schlaegel, Jr.-G. R. O'Connor Medal

Introduction
K. Matti Saari (Turku, Finland)

Narsing Rao (Los Angeles, CA, USA) (20 min)
Multifocal Serpiginoid Choroiditis

Presentation of the Medal
K. Matti Saari (Turku, Finland)
Philip I. Murray (Birmingham, UK)

12.30 ⇩ 13.20

Uveitis-Awards of the Patient Interest Groups

2nd Experimental Award
Hyun-Mee Oh, Cheng-Rong Yu, Yong Jun Lee, Chi-Chao Chan, Arvydas Maminishkis , Charles E. Egwuagu
Autoreactive Memory CD4+ T Lymphocytes That Mediate Chronic Uveitis Reside in the Bone Marrow through STAT3-Dependent Mechanisms

2nd Clinical Award
Careen Lowder, Rubens Belfort, Sue Lightman, C. Stephen Foster, Michael R. Robinson, Rhett M. Schiffman, Xiao-Yan Li, Harry Cui, Scott M. Whitcup
Dexamethasone Intravitreal Implant for Noninfectious Intermediate or Posterior Uveitis

1st Experimental Award
Yan Ke, Deming Sun, Guomin Jiang, Henry J. Kaplan, Hui Shao
IL-22-Induced Regulatory CD11b+ APCs Suppress Experimental Autoimmune Uveitis

1st Clinical Award
Barbara Wensing, Lia M. Relvas, Laure E. Caspers, Natasa Vidovic Valentincic, Spela Stunf, Jolanda D. F. de Groot-Mijnes, Aniki Rothova
Comparison of Rubella Virus- and Herpes Virus-Associated Anterior Uveitis: Clinical Manifestations and Visual Prognosis

13.20 ⇩ 14.15

Lunch break at the Exhibition Area

14.15 ⇩ **15.30** **3rd Scientific Session**

SUPPORTED BY Théa Driving Innovation

Virus Disorders and Uveitis

Chairmen: **Soon Phaik Chee** (Singapore, Singapore)
Bahram Bodaghi (Paris, France)

10 **Akira Kobayashi** (Kanazawa, Japan) (12 minutes)
Confocal Microscopy in the Evaluation of Viral Anterior Uveitis

11 **Philip Murray** (Birmingham, UK) (12 minutes)
Virus Induced Anterior Uveitis and Glaucoma

12 **Soon Phaik Chee** (Singapore, Singapore) (12 minutes)
CMV Induced Anterior Uveitis

13 **Bahram Bodaghi** (Paris, France) (12 minutes)
Severity Markers in Patients with Viral Retinitis.

14 **Sunil Srivastava** (Cleveland, OH, USA) (12 minutes)
Genetics of Viral Induced Uveitis and Retinitis

Discussion (15 minutes)

15.30 ⇩ **15.45** Coffee break

15.45 ⇩ **17.15** **4th Scientific Session**
AUS-Symposium

Epidemiology of Uveitis

Chairmen: **John Kempen** (Philadelphia, PA, USA)
Nisha Acharya (San Francisco, CA, USA)

15 **Nisha Acharya** (San Francisco, CA, USA) (15 minutes)
Population Risk of Uveitis

16 **Jennifer Thorne** (Baltimore, MD, USA) (15 minutes)
Safety and Outcomes of Immunosuppressives

17 **John Kempen** (Philadelphia, PA, USA) (15 minutes)
Methodological Issues in Ocular Inflammatory Disease Clinical Trials

18 **Sivakumar Rathinam** (Madurai, India) (15 minutes)
Methotrexate versus Mycophenolate mofetil:
Results of a Randomized Clinical Trial

19 **Jyoti Biswas** (Chennai, India) (15 minutes)
Epidemiology and Clinical Features of Tubercular Uveitis and Sarcoid Uveitis

Discussion (15 minutes)

17.15 ⇩ **17.30** Coffee break

17.30 ⇩ 18.30

5th Scientific Session

Free Papers 1

Chairmen: **Jean-Paul Dernouchamps** (Brussels, Belgium)
Nobuyoshi Kitaichi (Sapporo. Japan)

Bar Asaf
Causes of visual loss in patients with uveitis
(Free paper # 1)

Yamaki Kunihiko
Inflammatory changes of chronic stage of VKH disease
(Free paper # 2)

Baxter Sally
Risk of choroidal neovascularization in patients with uveitis
(Free paper # 3)

De Groot-Mijnes Jolanda
Laboratory diagnosis of infectious uveitis at a tertiary referral center
(Free paper # 4)

Miserocchi Elisabetta
Voclosporin: Efficacy and Safety for Noninfectious Uveitis Involving the Posterior Segment
(Free paper # 5)

Sudharshan Sridharan
Cataract surgery in patients with HIV/AIDS
(Free paper # 6)

Carsten Heinz
Assessment of glaucomatous optic disc damage in patients with secondary uveitic glaucoma
(Free paper # 7)

Saturday, 20th October 2012

08.00 ⇩ 09.30

6th Scientific Session
IOIS-Symposium

SUPPORTED BY ALLERGAN

Macular Edema (ME)

Chairmen: **Aniki Rothova** (Utrecht, The Netherlands)
Hank Kaplan ((Louisville, KY, USA))

20 **Jennifer Thorne** (Baltimore, MD, USA) (15 minutes)
Pathogenesis of Inflammatory Macular Edema

21 **Annette Ossewaarde** (Utrecht, The Netherlands) (12 minutes)
High Risk and Monitoring for Macular Edema

22 **Aniki Rothova** (Utrecht, The Netherlands) (12 minutes)
Visual Impact of Inflammatory Macular Edema

23 **Joke de Boer** (Utrecht, The Netherlands) (12 minutes)
Inflammatory Macular Edema in Children

24 **Peter McCluskey** (Sydney, Australia) (12 minutes)
Medical Treatment Strategies for Uveitic Macular Edema

25 **Hank Kaplan** (Louisville, KY, USA) (12 minutes)
Surgical Therapy of Medically Non-responsive CME in Uveitis

Discussion (15 minutes)

09.30 ⇩ 09.45 Coffee break

09.45 ⇩ **11.00** — **7th Scientific Session**

SUPPORTED BY Théa

JIA-Associated Uveitis

Chairmen: **Justine Smith** (Portland, OR, USA)
Arnd Heiligenhaus (Muenster, Germany)

26 **Bas Vastert** (Utrecht, The Netherlands) (15 minutes)
Pathophysiology of JIA

27 **Justine Smith** (Portland, OR, USA) (15 minutes)
Pathophysiology of JIA-Associated Uveitis

28 **Debra Goldstein** (Chicago, IL, USA) (12 minutes)
Visual Outcomes of JIA Uveitis in a USA Cohort

29 **Arnd Heiligenhaus** (Muenster, Germany) (12 minutes)
Outcome measures in JIA-Associated Uveitis

30 **Andrew Dick** (Bristol, UK) (12 minutes)
SYCAMORE Study

31 **Elisabetta Miserocchi** (Milan, Italy) (12 minutes)
New Monoclonal Antibodies for JIA-Associated Uveitis

Discussion (12 minutes)

11.00 ⇩ **11.15** — Coffee break

11.15 ⇩ **12.15** — **8th Scientific Session**
SOIE Symposium

SUPPORTED BY Kowa

Laser Flare Photometry (LFP)

Chairmen: **Carl Herbort** (Lausanne, Switzerland)
Moncef Khairallah (Monastir, Tunisia)

32 **Carl P Herbort** (Lausanne, Switzerland) (20 minutes)
History, Principles and Applications

33 **Ilknur Tugal-Tutkun** (Istanbul, Turkey) (10 minutes)
Laser Flare Photometry and Behçet's Uveitis

34 **Bahram Bodaghi** (Paris, France) (10 minutes)
Laser Flare Photometry and Pediatric Uveitis

35 **Moncef Khairallah** (Monastir, Tunisia) (10 minutes)
Laser Flare Photometry and Ocular Surgery

Discussion (10 minutes)

12.15 ⇩ **13.00** — Lunch break

13.00
⇩
14.00

9th Scientific Session

SUPPORTED BY ALLERGAN

Uveitis Award Ceremony

IUSG Eye Fund Gold Medal

Introduction
Jean-Paul Dernouchamps (Brussels, Belgium)
Khalid Tabbara (Riyadh, Saudi Arabia)

Does the microbiome cause uveitis?
Jim Rosenbaum (Portland, OR, USA)

Presentation of the Medal
Jean-Paul Dernouchamps (Brussels, Belgium)
Khalid Tabbara (Riyadh, Saudi Arabia)

LUX Leadership in Uveitis Award

Introduction
Eddy Anglade (New Jersey, NY, USA)

Translational and Experimental Medicine in Bristol strengthened through collaboration
Andrew Dick (Bristol, UK)

Presentation of the Award
Eddy Anglade (New Jersey, NY, USA)

Uveitis-Awards of the Patient Interest Groups

3rd Clinical Award
Vishali Gupta, Reema Bansal, Amod Gupta
Continuous Progression of Tubercular Serpiginous-like Chroiditis after Initiating Antituberculosis Treatment

14.00
⇩
14.15

Coffee break

14.15
⇩
15.30

10th Scientific Session
SPEIO Symposium

Infectious Uveitis in 2012

Chairmen: **Careen Lowder** (Cleveland, OH, USA)
Emilio Dodds (Buenos Aires, Argentina)

36 **Emilio Dodds** (Buenos Aires, Argentina) (12 minutes)
Update on Diagnostics

37 **Emmett Cunningham** (Stanford, CA, USA) (12 minutes)
Ocular Toxoplasmosis

38 **Cristina Muccioli** (São Paulo, Brazil) (12 minutes)
HIV in 2012

39 **Careen Lowder** (Cleveland, OH, USA) (12 minutes)
Syphilis

40 **Laure Caspers** (Brussels, Belgium) (12 minutes)
Rubeola Virus and Fuchs' Heterochromic Uveitis

Discussion (15 minutes)

15.30
⇩
15.45

Lunch break

15.45 ⇩ 17.00 **11th Scientific Session**

Immunology of Age Related Macula Degeneration (AMD)

Chairmen: **Chi-Chao Chan** (Bethesda, MD, USA)
Andrew Dick (Bristol, UK)

41 **Andrew Dick** (Bristol, UK) (15 minutes)
Role of Macrophage in AMD

42 **Heping Xu** (Belfast, UK) (15 minutes)
Parainflammation and the Role of RAGE in AMD

43 **Chi-Chao Chan** (Bethesda, MD, USA) (15 minutes)
AMD Molecular Signatures and Pathology

44 **Scott Robbie** (London, UK) (15 minutes)
Gene Therapy for AMD - Targets and Approaches?

Discussion (12 minutes)

17.00 ⇩ 17.15 Coffee break

17.15 ⇩ 19.30 **IUSG-Business-Meeting**

20.00 **Sani Hill Party**

SPONSORED BY EyeGate

POOL AREA (Sani Beach Hotel)
featuring **TRIO BALKANO**

Sunday, 21st October 2012

08.00 ⇩ 09.30 **13th Scientific Session**

Surgery and Uveitis

Chairmen: **Janet Davis** (Miami, FL, USA)
Sofia Androudi (Larissa, Greece)

45 **Sofia Androudi** (Larissa, Greece) (12 minutes)
PC-IOL for Uveitis

46 **Albert Vitale** (Salt Lake City, UT, USA) (12 minutes)
Combined PPV and Phaco-IOL for Uveitis

47 **Janet Davis** (Miami, FL, USA) (12 minutes)
PPV – Pars plana Lensectomy

48 **Periklis Brazitikos** (Thessaloniki, Greece) (12 minutes)
Advanced Surgical Techniques applicable to Uveitis

49 **Matthias Becker** (Zürich, Switzerland) (12 minutes)
Pre- and postoperative Treatment

50 **Thomas Albini** (Miami, FL, USA) (12 minutes)
Chorioretinal Biopsy

Panel Discussion (18 minutes)

09.30 ⇩ 09.45 Coffee break

09.45 ⇩ **11.00** **14th Scientific Session**

Secondary Glaucoma

Chairmen: **Philippe Kestelyn** (Ghent, Belgium)
Nicholas Jones (Manchester, UK)

51 **Carsten Heinz** (Münster, Germany) (15 minutes)
Uveitic Glaucoma: Overview

52 **Abbot F. Clark** (Ft. Worth, TX, USA) (15 minutes)
Corticosteroid Glaucoma: Recent Insights

53 **Nicholas Jones** (Manchester, UK) (15 minutes)
Glaucoma in Childhood Uveitis

54 **Philippe Kestelyn** (Ghent, Belgium) (15 minutes)
Glaucoma Surgery in Uveitis

Discussion (15 minutes)

11.00 ⇩ **11.15** Coffee break

11.15 ⇩ **12.15** **15th Scientific Session**

Poster Session I

Chairmen: **Paola Pivetti-Pezzi** (Rome, Italy)
Matti Saari (Tampere, Finland)

Shoughy Samir
Systemic diseases associated with intermediate uveitis
(Poster # 7)

Mahendradas Padmamalini
The clinical features and outcome of patients with infectious scleritis in a tertiary eye care center in South India
(Poster # 26)

Ganesh Sudha
Paediatric Uveitis in India
(Poster # 27)

Sudharshan Sridharan
Clinical profile and outcome in patients with HIV/AIDS with Immune recovery uveitis
(Poster # 57)

Rupesh Agrawal
Proteomic Analysis of Aqueous Humor in Patients with Cytomegalovirus Retinitis
(Poster # 9)

Riemens Anjo
Association of intraocular and testicular lymphoma
(Poster # 41)

Mahendradas Padmamalini
Long-term follow-up of Chikungunya Retinitis
(Poster # 75)

Esen Fehim
Double-organ bias in randomized controlled trials of uveitis
(Poster # 51)

Annamalai Radha
An analysis of the outcome of cataract surgery in lens induced uveitis with traumatic cataract
(Poster # 5)

12.15
⇩
13.00 Lunch break

13.00
⇩
14.00 **16th Scientific Session**

Controversies

Chairmen: **Philip Murray** (Birmingham, UK)
Narsing Rao (Los Angeles, CA, USA)

Pro	Con	
Massimo Accorinti (Rome, Italy)	**Philip Murray** (Birmingham, UK)	(20 minutes)
Should All Macular Edema be Treated?		
Douglas Jabs (New York, NY, USA)	**Elizabeth Graham** (London, UK)	(20 minutes)
Should All Patients with Birdshot be Treated?		
Manfred Zierhut (Tuebingen, Germany)	**Narsing Rao** (Los Angeles, CA, USA)	(20 minutes)
TB: Does it Induce Serpiginous and Serpiginous-Like Chorioretinitis?		

14.00
⇩
14.15 Coffee break

14.15 ⇩ **15.30** — **17th Scientific Session**

International Ocular Behçet's Disease Study Group (IOBDSG) Symposium

How to Differentiate Behçet's Disease from other Types of Uveitis

Chairmen: **Shigeaki Ohno** (Sapporo, Japan)
Ilknur Tugal-Tutkun (Istanbul, Turkey)

55 — **Shigeaki Ohno** (Sapporo, Japan) (12 minutes)
Epidemiology and Genetics

56 — **Ilknur Tugal-Tutkun** (Istanbul, Turkey) (12 minutes)
Differential Diagnosis of Behçet's Disease

57 — **SimonTaylor** (London UK) (12 minutes)
Use of TNF-Alpha Blocking Agents in Behçet's Disease

58 — **Christoph Deuter** (Tübingen, Germany) (12 minutes)
Use of Interferon-Alpha in Behçet's Disease

59 — **Ahmet Gul** (Istanbul, Turkey) (12 minutes)
Unmet Medical Needs in Behçet's Disease

Discussion (15 minutes)

15.30 ⇩ **15.45** — Lunch break

15.45 ⇩ **17.15** — **18th Scientific Session**

Autoinflammation vs. Autoimmunity

Chairmen: **James Rosenbaum** (Portland, OR, USA)
Manfred Zierhut (Tübingen, Germany)

60 — **Manfred Zierhut** (Tübingen, Germany) (18 minutes)
Concept of Autoinflammation

61 — **Holly Rosenzweig** (Portland, OR, USA) (18 minutes)
Understanding the NLRs and Uveitis

62 — **Ahmet Gul** (Istanbul, Turkey) (18 minutes)
Behçet's Syndrome: Autoinflammatory Features

63 — **James Rosenbaum** (Portland, OR, USA) (18 minutes)
Ankylosing Spondylitis: Autoimmune or Autoinflammatory?

Discussion (18 minutes)

17.15 ⇩ **17.30** — Coffee break

17.30
⇩
18.45

19th Scientific Session

SUPPORTED BY LuxBio SCIENCES

Update about Guidelines and Recommendations

Chairmen: **Douglas Jabs** (New York, NY, USA)
Susan Lightman (London, UK)

64 **Ralph Levinson** (Los Angeles, CA, USA) (12 minutes)
Update: Nomenclature, Diagnostic Criteria and Guidelines

65 **Douglas Jabs** (New York, NY, USA) (12 minutes)
JIA Uveitis – Can We Already Formulate Management Guidelines?

66 **Janet Davis** (Miami, FL, USA) (12 minutes)
The Continuing Problem: Grading Vitreous Haze

67 **Kenichi Namba** (Sapporo, Japan) (12 minutes)
New Scoring System of Ocular Lesions in Behçet's Disease

68 **John Kempen** (Philadelphia, PA, USA) (12 minutes)
Immunosuppressive Therapy in Uveitis: When and How

Discussion (15 minutes)

19.00

Winery visit & tasting at the Gerovassileiou domain http://www.gerovassiliou.gr followed by dinner

IUSG Members' only
Buses will depart 19:00 from the Sani Beach Reception

Monday, 22nd October 2012

08.00
⇩
09.30

20th Scientific Session
FOIS Symposium

SUPPORTED BY Santen

Therapeutic Approaches in Uveitis

Chairmen: **Robert Nussenblatt** (Bethesda, MD, USA)
Quan Dong Nguyen (Baltimore, MD, USA)

69 **Khalid Tabbara** (Riyadh, Saudi Arabia) (12 minutes)
TNF-alpha Blocking Agents in Uveitis

70 **Quan Dong Nguyen** (Baltimore, MD, USA) (12 minutes)
Intravitreal Immunosuppressives

71 **Robert Nussenblatt** (Bethesda, MD, USA) (12 minutes)
Oral Tolerance Revisited

72 **Manfred Zierhut** (Tübingen, Germany) (12 minutes)
Treatment of Intraocular Lymphoma

73 **Amod Gupta** (Chandigarh, India) (12 minutes)
Pharmacotherapy of Uveitis in Emergent Countries

74 **Nida Sen** (Bethesda, MD, USA) (12 minutes)
Pharmacogenetics and Ocular Inflammation

Discussion (18 minutes)

09.30
⇩
09.45

Coffee break

09.45 ⇩ **11.00**

21st Scientific Session

SUPPORTED BY Bausch & Lomb

Corticosteroids and Beyond

Chairmen: **Emmett Cunningham** (Stanford, CA, USA)
Denis Wakefield (Sydney, Autralia)

75 **Martin Van Hagen** (Rotterdam, The Netherlands) (12 minutes)
Glucocorticosteroids in Uveitis

76 **Denis Wakefield** (Sydney, Australia) (12 minutes)
Avoiding Toxicity from Systemic Corticosteroids

77 **Susan Lightman** (London, UK) (12 minutes)
Sustained Release Intraocular Corticosteroids for Uveitis

78 **Andrew Dick** (Bristol, UK) (12 minutes)
Corticosteroid-Resistance in Clinical Practice

79 **Piergiorgio Neri** (Ancona, Italy) (12 minutes)
Use of Non-Steroidal Anti-Inflammatory Drugs in Scleritis and Uveitis

80 **Emmett Cunningham** (Stanford, CA, USA) (15 minutes)
Panel Discussion – The Use of Corticosteroids in Special Situations

Discussion (15 minutes)

11.00 ⇩ **11.15**

Coffee break

11.15 ⇩ **12.15**

22nd Scientific Session

Poster Session II

Chairmen: **Petja Vassileva** (Sofia, Bulgaria)
Edoardo Baglivo (Geneva, Switzerland)

Nobuyoshi Kitaichi
Amelioration of endotoxin-induced uveitis treated with an IkappaB kinase beta inhibitor
(Poster # 30)

Stylianides Amira
Subclinical retinal vasculitis identified in patients with systemic small vessel vasculitis
(Poster # 52)

Ness Thomas
Serum factors in screening ocular sarcoidosis and monitoring disease activity
(Poster # 84)

Amer Radgonde
Spectral-Domain Optical Coherence Tomography Features of Inflammatory Choroidal Neovascular Membrane
(Poster # 90)

Cikatricis Peter
OCT changes in chronic uveitis
(Poster # 55)

Shree Kurup
Corticosteroid Usage in the LUMINATE Uveitis Clinical Trials– Implications for Management of Noninfectious Uveitis Involving the Intermediate or Posterior Ocular Segment
(Poster # 20)

Friederike Mackensen
Final Results of an Investigator initiated, multicenter randomised controlled trial of the efficacy of Adalimumab in active uveitis refractoty to standard treatment (ADUR)
(Poster # 21)

Waduthantri Samanthila
Intra-cameral level of ganciclovir following topical application of 0.15% ganciclovir gel for Cytomegalovirus (CMV) anterior segment infection
(Poster # 31)

Sobolewska Bianka
Long-term Oral Therapy with Ganciclovir in Patients with Posner-Schlossman Syndrome
(Poster # 56)

Becker Matthias
Interferon-a is superior to methotrexate in the treatment of intermediate uveitis with associated macular edema: Results of a randomized controlled clinical trial
(Poster # 95)

Naor Joel
Pharmacokinetics and Tolerability of Intravitreal Sirolimus
(Poster # 53)

12.15
⇩
13.00 Coffee break

13.00
⇩
14.30 **23rd Scientific Session**

OCT and Imaging

Chairmen: **Marc DeSmet** (Lausanne, Switzerland)
Vishali Gupta (Chandigarh, India)

81 **Jean Deschenes** (Montreal, Canada) (12 minutes)
UBM and Ocular Hypotony

82 **Mirjam van Velthoven** (Amsterdam, The Netherlands) (12 minutes)
OCT: Interpretative Pearls and Pitfalls

83 **Nikos Markomichelakis** (Athens, Greece) (12 minutes)
Uveitic Macular Edema: OCT Classification

84 **Vishali Gupta** (Chandigarh, India) (12 minutes)
Multimodal Imaging in Uveitis

85 **Marc DeSmet** (Lausanne, Switzerland) (12 minutes)
What OCT Can Offer in the Future

Discussion (15 minutes)

14.30
⇩
14.45 Lunch break

14.45
⇩
16.00

25th Scientific Session

Free Papers 2

Chairmen: **Chris Kalogeropoulos** (Ioannina, Greece)
Padmamalini Mahendradas (Bangalore, India)

Kalogeropoulos Chris
Mycobacterium Tuberculosis: A quite common causative agent of infectious origin uveitis and retinal vasculitis
(Free paper # 8)

Pichi Francesco
Spectral domain-optical coherence tomography findings in acute syphilitic posterior placoid chorioretinopathy
(Free paper # 9)

Agarwal Aniruddha
Spectral Domain Optical Coherence Tomography changes following intravitreal dexamethasone implant, Ozurdex ® in patients with uveitic cystoid macular edema
(Free paper # 10)

Jangwon Heo
Characterization of macular lesions in punctate inner choroidopathy with spectral domain optical coherence tomography
(Free paper # 11)

Kempen John H
Visual improvement in uveitis cases with vision loss attributed to macular edema
(Free paper # 12)

16.00
⇩
16.15

Coffee break

16.15
⇩
18.45

26th Scientific Session

Free Papers 3

Chairmen: **Shree Kurup** (Winston Salem, NC, USA)
Cristobal Couto (Buenos Aires, Argentina)

Smith Justine R
Lymphocyte Migration Across Human Retinal Vascular Endothelium: Implications for Autoimmune Posterior Uveitis
(Free paper # 13)

Artornsombudh Pichaporn
Factors predictive of remission of new-onset anterior uveitis
(Free paper # 14)

Agarwal Aniruddha
Spectrum of Fuchs' Uveitis Syndrome in North Indian population
(Free paper # 15)

Denisova Ekaterina
In vivo confocal microscopy in the assessment of the activity of endogenous uveitis in children
(Free paper #16)

Kramer Michal
Fundus autofluorescence imaging of chorioretinal inflammatory diseases
(Free paper # 17)

Kalinina Ayuso Viera
Intraocular biomarker identification in uveitis associated with Juvenile Idiopathic Arthritis
(Free paper # 18)

Agarwal Aniruddha
Intraoperative use of intravitreal dexamethasone implant (Ozurdex (R)) controls post cataract surgery inflammatory diabetic macular edema
(Free paper # 19)

Zannin Maria Elisabetta
Abatacept as first line biological treatment for severe Juvenile Idiopathic Arthritis-related uveitis. A multicenter study
(Free paper # 20)

Zannin Maria Elisabetta
Anti-TNF agents for JIA-related refractory uveitis: four years follow-up data from the ORCHIDEA Database
(Free paper # 21)

End of Session

SYMPOSIA ABSTRACTS

1. Tuberculous Uveitis: Global Perspective on Role of Interferon- γ Release Assay and its Pitfalls

Kalpana Babu
Prabha Eye Clinic & Research Centre; Vittala International Institute of Ophthalmology, Bangalore, India

In the last 10 years, there has been significant advances in mycobacterial genomics and research and have led to the development of 2 new blood tests for latent tuberculosis:the enzyme-linked immunospot assay (ELISpot) (TSPOT.TB, Oxford Immunotec, Oxford, UK) and the enzyme-linked immunosorbent assay (ELISA) (QuantiFERON-TB Gold, Cellestis, Carnegie, Australia). These tests are collectively known as interferon gamma release assays (IGRAs) and they are believed to detect latent tuberculosis infection (LTBI) by measuring interferon (IFN)-gamma release in response to antigens present in Mycobacterium tuberculosis which are not seen in bacille Calmette-Guerin (BCG) vaccine and most nontuberculous mycobacteria. The strengths and weakness of this test will be discussed in this presentation. The peer reviewed literature available will be discussed and the results of a questionnaire circulated among the Indian users of this test will be shared.

2. Viral Anterior Uveitis: Detection of the Agent or Antibody Response in Aqueous Humor

Justus G. Garweg
Swiss Eye Institute and University of Bern, Bern, Switzerland

Purpose: Virally induced anterior uveitis, accounting for more than 10 % of cases, is the most common form of infectious anterior uveitis. A distinction between the possible infectious sources is relevant for therapy and prognosis, but frequently not possible basing only on history and clinical grounds only. In these cases, a laboratory confirmation of the clinical diagnosis is emerging.
Methods: A Medline search was conducted using the search terms “anterior uveitis”, “virus” and “diagnostic”. After exclusion of reviews and studies including less than ten cases, the papers were assessed for their diagnostic yield with focus on the viruses of the herpes family (HSV-1, HSV-2, VZV, CMV, EBV, HHV6-8), Rubella and Parechovirus including ELISA, PCR and immunoblot testing from paired samples of aqueous humour and serum. The outcomes were compared to own results.
Results: Based on intraocular antibody synthesis and PCR, herpes vriuses represent the majority of viral anterior uveitis instances. Cytomagalovirus- and Rubella-associated anterior uveitis have obviously been underestimated in their role, whereas the clinical relevance of Parechovirus and other forms of more recently described viral anterior uveitis cases has as yet to be determined.
Conclusions: Basing on published evidence and personal experience, a systematic diagnosis of the infectious agent in presumed viral uveitis is suitable for all cases without a clear clinical diagnosis or a poor response to therapy. If access to a qualified laboratory is lacking, a parallel sample of serum and aqueous humour might be collected and be referred to one of the international reference laboratories before the clinical situation is developing unfavourably.

3. Autoimmune Retinopathy: Supporting Diagnostic Investigations

John R Heckenlively, M.D.
Kellogg Eye Center, University of Michigan
Ann Arbor, Michigan, USA.

Autoimmune retinopathy (AIR) patients have a sudden onset of photopsias and scotomata that typically leads to severe visual disability and occasionally blindness. Patients often are misdiagnosed as having retinitis pigmentosa (RP), because many clinical features of AIR mimic aspects of RP. Differences to RP are that AIR patients do not have a chronic onset, and they seldom report a history of night blindness prior to their sudden onset of photopsia and blindspots. AIR patients do not report a family history of RP, but other family members with autoimmune disorders are common. The vast majority of AIR patients have no pigment deposits in the retina, though may exhibit optic nervehead pallor and retinal vascular attenuation.
It is possible to distinguish multiple clinical forms of autoimmune retinopathy. These include: 1) Cancer- associated retinopathy, 2) Melanoma-associated retinopathy, 3) paraneoplastic autoimmune retinopathy (often benign turmors), 4) non-neoplastic autoimmune retinopathy, 5) Acute zonal occult outer retinopathy (AZOOR). CAR and MAR constitutes about 10-15% in my series of about 350 patients. More than 10% of AIR patients have a co-existing autoimmune disorder.
Anti-retinal antibodies (ARAs) may play a secondary role: 1) They are commonly associated with cystoid macular spaces (CME) in panretinal degenerations, 2)exacerbations of birdshot chorioretinopathy, 3)occasional retinal dystrophy patients who have faster than normal progression of their disease, 4) occasional patients with intermittent uveitis. There are almost no blood tests (biomarkers) available to specifically diagnose the disease in the clinical setting, with the rare occurrence if anti-recoverin antibody is detected on an immunoblot (also α-enolase, transducing-α, aldolase-C, anti-RPE perireduxin-3
Since there are no treatments for typical RP patients, who are told that “nothing can be done,” AIR patients seldom receive treatment early when the disease seems to respond the best to immunosuppression. While normal controls’ sera may have trace amounts of anti-retinal antibodies, AIR patients typically have more intense and noticeably increased (4-6) immunoreactive bands on Western blot testing with human retinal proteins. (ELISAs are not generally possible from lack of identity of the antibodies). We have found anti-retinal antibodies (ARAs) are common to all known autoimmune retinal disorders
Alternate diagnostic lab procedures are not common in the clinical setting, but are available in academic departments and include: 1) indirect immunohistology staining of normal fresh retina with patient sera looking for ARAs, 2) Cell sorting patient’s white blood cells looking for increased IGF1 tagged fibrocytes. Once we have specific markers and HLA types specific for AIR and perhaps subtypes such as AZOOR, it will be easier to diagnose this currently difficult group of patients.

4. Masquerade syndromes: Approach in Supporting the Diagnosis

Daniel V. Vasconcelos-Santos
Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

Masquerade syndromes remain a diagnostic challenge and since they may be associated with life-threatening neoplastic disorders, their prompt recognition is of utmost importance.
This presentation will review the role of noninvansive and invasive investigations in aiding the diagnosis of these conditions, with the illustration of cases with clinicopathological correlation.
Imaging modalities helping to better delineate supportive ocular and extraocular changes will be shown. Cytological/biochemical/molecular assessment of ocular fluids will also be reviewed, focusing on the importance of proper processing/interpretation. Tissue biopsy will also be emphasized, as despite invasiveness, it allies precise histopathological characterization coupled with biochemical and molecular analyses.
The diagnostic approach to masquerade syndromes involves combination of imaging modalities with judicious sampling of ocular fluid and/or tissue.

5. Posterior Uveitis: Role of Autofluorescence in the Diagnosis and Management

Narsing A.Rao, MD
Doheny Eye Institute, Keck School of Medicine
University of Southern California

The examination of fundus by autofluorescence could help in supporting diagnosis and management of various posterior and pan uveitis entities and the examination is based on excitation of the RPE and retina with a wave length of light and recording the emitted spectrum of brightness intensities.

There are several approaches in recording the autofluorescence which include, blue light imaging; near infrared and multi-wave length scanning laser ophthalmoscope systems and others. In our current study of posterior and or pan uveitis, we primarily used the blue light autofluorescence system.
There is little doubt on the loss of autofluorescence at the sites of RPE degeneration which are usually associated with loss of photoreceptors. However, in posterior or pan uveitis, the mechanism of marked hyper autofluorescence is not clear. A possible mechanism of the enhanced autofluorescence could be from photoreceptor oxidative damage (lipid peroxidation, 22:6 hydroperxide) and defective phagocytosis /digestion of the oxidized outer segments.
In the current study patients with chronic Vogt-Koyanagi-Harada disease, multifocal choroiditis, serpiginous choroiditis, infectious multifocal serpiginoid choroiditis, autoimmune retinopathy, Birdshot choroiditis, Sarcoidosis and other uveitis entities underwent the autofluorescence imaging. The choroidal inflammatory lesions revealed various grades of hypo, iso and hyper autofluorescence and mixed patterns of such fluorescence changes at the advancing edges of the choroiditis. Such imaging changes were helpful in a. highlighting various patterns in retinal and choroidal damages in posterior uveitis entities, b. differential diagnosis of posterior uveitis, c. early detection of progression/recurrences of the uveitis and d. early interventions in the management of uveitis.

6. Inflammatory Cytokines in Clinical and Experimental Uveitis
Aize Kijlstra
University Eye Clinic Maastricht, Maastricht, The Netherlands

Cytokines play an important role in the pathogenesis of uveitis. Cytokines encompass a large group of small proteins with hormone like features. Their role in uveitis has been studied by the injection of certain cytokines into the eyes of experimental animals, by following the levels of cytokines in the eye during experimental uveitis and by observing the outcome of uveitis in animals in which cytokine genes have been knocked out or where animals have been pretreated with blocking antibodies or drugs directed against certain cytokines.
In humans the role of cytokines in uveitis has been studied by testing ocular fluid samples for the presence of certain cytokines, but also by investigating cytokine expression in various lymphocyte subpopulations obtained from peripheral blood. Recently, therapeutic trials whereby cytokines are blocked by the administration of monoclonal antibodies against certain cytokines have shown great promise in the management of uveitis patients. An example is the anti-TNF treatment, but trials whereby the action of other cytokines are blocked are currently ongoing.
Recent attention is focussed on the role of cytokine production control by so called micro RNA's. Aberrant expression of one of these micro RNA's, miR-155, has been reported in human autoimmune disorders such as rheumatoid arthritis and systemic lupus erythematosus. We recently showed that miR-155 negatively regulates the inflammatory cytokine production by DCs in the TLR/IL-1 signalling cascade. A significantly decreased expression of miR-155 was found in PBMC and monocyte derived DCs (mo-DCs) of Behçet patients with active uveitis but not in patients with VKH syndrome. These findings and those from other groups using experimental uveitis models suggest that miR-155 may be a promising target in the treatment of uveitis.

7. Role of Regulatory T cells in Uveitis
Manabu Mochizuki, Sunao Sugita
Department of Ophthalmology & Visual Science
Tokyo Medical and Dental University

Recent advances of molecular immunology highlight a unique subset of T cells, regulatory T (Treg) cells. Treg cells are CD4+CD25+Foxp3+ T cells which have a capacity to down-regulate immune response and inflammatory reactions.
We focused on the capacity of ocular resident cells located at the blood ocular barrier, such as iris pigment epithelial cells (IPE), retinal pigment epithelial cells (RPE), corneal endothelial cells (CE), to induce Treg. Our studies using murine cells showed that these ocular resident cells are capable to induce Treg cells, thereby contributing to the immune privilege of the eye. RPE-induced Treg cells can suppress murine experimental autoimmune uveitis. Not only murine cells, human RPE can also induce Treg cells and suppress T cell activation. The RPE-induced human Treg cells are a candidate of a new immunotherapy in uveitis.
The role of Treg cells in uveitis was also demonstrated in the therapeutic effects of anti-TNFα, infliximab, in Behcet disease. Infliximab, but not cyclosporine nor colchicine, was able to induce CD4+Foxp3+ Treg cells in patients with Behcet disease. In addition, all patients with good uveitis control by infliximab had high levels of Treg cells (9.5-21.2%), while much lower Treg cells (2.6-6.1%) were recorded in the patients with poor uveitis control even on infliximab therapy, the capacity of infliximab to induce Treg cells contributes the therapeutic effects of the agent on uveitis.
These data thus indicate a possible therapeutic strategy by Treg cells in the therapy of uveitis.

8. Cellular Mechanisms in Monophasic vs. Chronic Relapsing Uveitis
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The course of experimental autoimmune uveitis (EAU) in Lewis rats can be monophasic or relapsing, depending on the antigen peptide used for immunization. Retinal S-Antigen peptide PDSAg induces monophasic, IRBP peptide R14 relapsing disease. Adoptive transfer of T cell lines specific for these peptides results in similar courses of disease. We thus have investigated the cytokine profiles and Foxp3 expression of in-traocular T cells obtained during the course of EAU, induced by immunization with PDSAg or R14 in CFA. Intraocular cells were collected at various time points during ocular inflammation and stained ex vivo for TCRαβ and intraocular expression of IL-17, IFN-γ, IL-10 and Foxp3.
We detected intraocular populations coexpressing IFN-γ, IL-17 and/or IL-10 with dif-ferent distributions and dynamics during the course of the two types of disease. In PDSAg-induced, monophasic EAU intraocular T cells coexpressing IFN-γ and IL-17 increased from onset via peak to resolution of EAU, while IL-17+ and IFN-γ+/IL-17+ populations decreased and IFN-γ+ cells increased in R14-induced, relapsing disease. During monophasic EAU cells coexpressing IFN-γ or Il-17 with IL10 increased, while the respective populations remained stable or decreased in relapsing uveitis. Foxp3+ cells were found significantly increased during the remission of PDSAg-induced, mo-nophasic EAU, suggesting a regulatory role of IL-10+ and Foxp3+ cells in monophasic disease.

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9. Commensal Microbiota Trigger 'Spontaneous' Autoimmune Uveitis
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Microbial triggers in human autoimmune uveitis have been suspected, but never proven. We investigated this in the model of experimental autoimmune uveitis (EAU) in mice, which serves as a model for autoimmune uveitis in humans. To elicit uveitis experimentally, retina-specific Th1 and Th17 cells must be generated in the periphery by active immunization, because retinal antigens are not available outside the eye to prime T cells. Surprisingly, EAU developed spontaneously in R161H mice, which express a transgenic Vα17Vβ1 T cell receptor (TCR) specific to the retinal antigen IRBP.
We hypothesized that commensal microbiota may provide an activation trigger and treated R161H mice with a broad-spectrum antibiotic cocktail starting before birth. Antibiotic-treated mice had a drastically reduced gut flora. They developed a strongly attenuated uveitis and had significantly fewer IL-17-secreting CD4+ T cells in the gut lamina propria (LP). Notably, conventionally reared R161H mice

had an expanded population of IL-17-producing T cells in the gut LP compared to their wild type littermates with a polyclonal T cell repertoire, and many of these cells expressed an IRBP-specific TCR. Furthermore, expanded numbers of IL-17-producing cells in the gut were present in R161H mice bred onto an RBP-/-/RAG2-/- double deficient background. Thus, IRBP-specific T cells "see" an activation signal in the gut, which does not come from IRBP.
Thus, commensal microflora appears to activate circulating retina-specific T cells to cause 'spontaneous' uveitis through a mechanism that may involve signaling through the R161H TCR. Our findings may help to explain the postulated connection in humans between microbial triggers and onset of uveitis, and possibly other autoimmune diseases, in humans.

10. Confocal Microscopy in the Evaluation of Viral Anterior Uveitis
Akira Kobayashi MD, PhD
Department of Ophthalmology, Kanazawa University Hospital, Japan

In this symposium, I will focus on in vivo confocal microscopy (IVCM) of viral anterior uveitis caused by HSV, VZV, CMV and Rubella virus. IVCM enabled more detailed morphological examination of various types of keratic precipitates compared to slit-lamp biomicroscopy. Is it possible to differential diagnose between infectious and noninfectious uveitis by IVCM? Are there any characteristic IVCM sign of each viral anterior uveitis? Our recent progress of IVCM findings of CMV anterior uveitis/corneal endotheliits will also be presented.

11. Virus Induced Anterior Uveitis and Glaucoma
Philip I. Murray
University of Birmingham and Birmingham and Midland Eye Centre, Birmingham, UK

Raised intraocular pressure (IOP) is a characteristic feature of herpesviral induced anterior uveitis. Commonly this is associated with herpes simplex virus type 1 and varicella zoster virus, but can also occur with cytomegalovirus. The mechanism causing the raised IOP is not known but thought to be a result of a trabeculitis. The IOP is normally elevated at the time of active episodes of inflammation and treatment is aimed at resolving the acute inflammatory episode and normally this is with potent topical steroid in conjunction with standard topical (+/- iv or oral) medical IOP lowering agents. As the uveitis comes under control the IOP usually returns to normal and the IOP lowering agents can be discontinued. Treatment is then aimed at preventing a recurrence of the uveitis.
In some cases the IOP may be persistently elevated between attacks of acute inflammation and this, as well as repeated spikes of IOP during acute inflammatory episodes, may lead to the development of glaucomatous optic neuropathy. The mechanism for the IOP not settling when the eye is free of inflammation may be due to permanent trabecular damage but other mechanisms should not be overlooked, such as a steroid induced rise in IOP. Gonioscopy must be undertaken and regular visual field assessments are necessary. Medical treatment to lower the IOP will be required on a long-term basis and failure to reduce the IOP to an appropriate target level or the development of or increasing visual field loss will require the addition of further medical agents. If appropriate IOP control still cannot be achieved then surgery should be considered. Trabeculectomy with mitomycin C or insertion of a drainage device are the most frequent surgical procedures undertaken.
Recently there has been increasing evidence that rubella may be responsible for Fuchs' Heterochromic Cyclitis (FHC). Approximately 10-15% of FHC patients develop raised IOP and in some this can be difficult to control. The mechanism for the IOP rise is unknown; the angle is open and some fine radially running new blood vessels can often be seen. A steroid induced component can be excluded, as topical steroids are not normally given for this condition. Medical treatment is the mainstay but it is not uncommon for drainage surgery to be required.

12. CMV Induced Anterior Uveitis
Soon-Phaik Chee
Singapore National Eye Centre
National University of Singapore
Singapore Eye Research Institute

Cytomegalovirus (CMV) has been recognized to cause anterior uveitis in immunocompetent patient. This may manifest as an acute recurrent anterior uveitis with ocular hypertension (Posner Schlossman syndrome [PSS]), or chronic anterior uveitis that is often associated with ocular hypertension. The diagnosis is made by a positive polymerase chain reaction of the aqueous for CMV.
Keratic precipitates seen in the acute and chronic uveitis differ in size, shape and distribution, but stromal iris atrophy and the absence of posterior synechiae are common to both. CMV positive chronic anterior uveitis eyes are more likely to occur in males, >57years at diagnosis, and those with nodular corneal endothelial lesions than CMV negative eyes. Retinitis does not develop.
CMV uveitis responds systemic, topical, intravitreal injection and/or or intravitreal ganciclovir implant in about 75% of eyes. However, recurrence occurs in three quarters of eyes. Ganciclovir gel gives a 2/3 response rate with lower recurrence rates than other forms of anti-viral therapy. For safety and cost considerations, ganciclovir gel may be the preferred therapeutic option for CMV anterior uveitis.

13. Severity Markers in Patients with Viral Retinitis
Bahram Bodaghi1, MD, PhD; Phuc LeHoang1, MD, PhD; Flore Rozenberg2, MD, PhD
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2- Dept of Virology, Cochin Hospital, Paris, France

Despite appropriate medical management, viral retinitis remains a challenging issue with a high risk of severe complications and major visual loss. Therefore, it is important to determine severity markers in order to improve the visual outcome of the patients. Controlled studies are not available and our experience is based on the review of clinical series with its limitations. The immune status of the host is the first marker to consider. Progressive outer retinal necrosis syndrome is a rare and usually bilateral condition, mainly observed in immunosuppressed patients. Diagnostic delay must be as short as possible and in the face of severe retinal necrosis, corticosteroids must be avoided until an infection is excluded. The viral agent is another important factor. VZV is associated with the highest rate of complications. It generally occurs in the elderly. Ocular fluids analysis allows viral confirmation in a few days and directs the therapeutic strategy. It may be repeated regularly in severe cases, to monitor the viral load during the follow-up. Treatment remains controversial but also a determinant factor. Oral antivirals may be proposed in mild cases with a close follow-up. However, intravenous administration should be associated with intravitreal injections in patients with severe viral retinitis. Prompt diagnosis of viral retinitis and aggressive antiviral therapy are not sufficient to avoid visual loss, which seems to be directly associated with an optic neuropathy. Optic atrophy is observed in patients with extensive areas of necrosis (usually 3 to 4 quadrants) and vasculitis. Diagnostic delay, immune status, viral subtype, extent of retinal necrosis and adapted antiviral therapy are the main factors to consider in predicting the visual outcome in patients with viral retinitis.

14. Genetic Analysis of the TLR Pathway in Patients with Acute Retinal Necrosis
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Cole Eye Instiute, Cleveland Clinic Foundation, Cleveland, OH USA

Purpose: Acute retinal necrosis (ARN) and progressive outer retinal necrosis (PORN) are severe retinal infections caused by viruses in the herpes simplex family. Herpes simplex encephalitis has been reported to occur in some patients with ARN/PORN either simultaneously or subsequently to

their retinal infection. The toll like receptors (TLR) play an important role in the natural immunity of humans especially in the defense to viral infections. Specifically, TLR3 deficiency has been described as a possible mechanism for herpes simplex encephalitis. Given the possible common mechanism of infection in patients with encephalitis and acute retinal necrosis, we sought to analyze patients with ARN for mutations in genes in the TLR pathway.
Methods: 20 patients with acute retinal necrosis were identified. 14 of the 20 patients were PCR positive for herpes infection and of these, 7 also had a history of herpes associated encephalitis. Direct genomic sequencing of the entire coding region of TRL3 and UNC93B1 was performed. To date, a partial sequence analysis of STAT1 and NEMO has been performed. In silico analysis of identified sequence variants were evaluated using the PolyPhen-2 and PMut algorithms.
Results: Two isocoding changes (F459 and F851) and one missense change (L412F) were identified in TLR3. All three changes have been previously identified and L412F has been reported to impair function of the receptor. Five isocoding changes (A407, T484, R519, R525 and G590) and 10 missense changes (V499L, A506V, A508T, G516H, Y539D, Y539G, R540G, S547V, E555D and H556L) were identified in UNC93B1. Six of the 10 missense changes were identified in normal controls and the minor allele frequencies in our patients was not significantly different. Y539G, R540G and S547V were not found in normal controls and are predicted to be pathogenic by computational methods. Q516H was also not found in normal controls; however, this variant is predicted to be benign. To date, no sequence changes have been identified in STAT1 and NEMO.
Conclusions: We report one sequence variant in TLR3 and three sequence variants in UNC93B1 in patients with ARN that may impair function of the respective protein. Further experiments are ongoing to determine whether these confer susceptibility towards viral infection and subsequent disease. We are also proceeding with an evaluation of the remaining exons in STAT1 and NEMO.

15. Population Risk of Uveitis
Nisha Acharya
F.I. Proctor Foundation
University of California, San Francisco

There are limited population-based studies exploring the epidemiology of uveitis. Studies have found that the incidence rate of uveitis ranges from 11 to 111 cases per 100,000 person-years, with variations in different geographic locales. Risk factors have been identified, including gender and age. Anterior uveitis has been found to be the most common anatomic location of inflammation. This talk will compare results from around the world and explore potential reasons for the different findings.

16. Safety and Outcomes of Immunosuppressives
Jennifer E. Thorne, MD, PhD
Departments of Ophthalmology and Epidemiology, The Johns Hopkins Medical Institutions, Baltimore, Maryland, USA

Immunosuppressive drug therapy has gained increasing popularity as corticosteroid-sparing treatment for vision-threatening ocular inflammatory disease and for cases in which systemic corticosteroid therapy is contraindicated. The purpose of this talk is to summarize the reported treatment-related outcomes and side effect profiles of the immunosuppressive drugs, which particular focus on the data from the Systemic Immunosuppressive Therapy for Eye Disease (SITE) Cohort Study.

17. Methodological Issues in Ocular Inflammatory Disease Clinical Trials
John H. Kempen1,2,3
The Scheie Eye Institute1, Center for Preventive Ophthalmology and Biostatistics, Department of Ophthalmology2, and the Center for Clinical Epidemiology and Biostatistics, Department of Biostatistics and Epidemiology3, The Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania.

Purpose: To describe challenges and problems in recent and ongoing clinical trials in the field of uveitis.
Methods: Analytic review.
Results: Randomized controlled clinical trials are the “gold standard” approach to evaluating alternative treatments for a given clinical condition such as non-infectious uveitis, and therefore are required prior to licensing of drugs for specific indications by regulatory authorities. In general, relative results from a trial should be generalizable to a population, even though the entire population may not be eligible for a study, unless the population enrolled is very non-representative of the reference population of interest. As in other legal processes, precedent plays an important role in regulatory agencies’ approach to drug licensing studies.
The uveitis field has struggled with regard to clinical trials, at first because of limited interest in studying treatments for a less-common disease, and subsequently because of methodological difficulties in developing robust, generalizable and practicable designs. Trials in which visual acuity is the primary outcome may require very long follow-up periods and large sample sizes in order to show differences between treatment groups, particularly when slow-acting immunosuppressive drugs are the treatment of interest. Trials evaluating effects of therapies on anterior chamber cell grade often (needlessly) exclude cases which have received any anti-inflammatory therapy prior to enrollment, because earlier phase studies had done so, and often use outdated grading systems because they were used in previous studies which resulted in FDA approval of a drug. Trials evaluating effects of therapies on inflammation involving the posterior segment now typically measure effects on vitreous haze, which requires extremely high levels of inflammation that are encountered infrequently in order to detect improvements reliably when the established scale is used. As a result, the large majority of patients are excluded from study, and it is difficult to design a robust experiment while ensuring the safety of participating subjects.
Conclusions: Better clinical trial designs are needed in order to: 1) ensure clinical trial results are in fact generalizable to the population of interest; 2) ensure the safety of patients participating in trials while retaining a robust trial methodology; and 3) decrease barriers to entry for new drugs by making clinical trial execution more feasible so as to more rapidly bring effective drugs to market while distinguishing ineffective from effective drugs. Potential approaches to these issues will be reviewed.

18. Methotrexate vs. Mycophenolate Mofetil: Results of a Randomized Clinical Trial
Sivakumar Rathinam1, Manohar Babu1, Radhika Thundikandy1, Anuradha Kanakath1, Natalie Nardone2, Travis Porco2, Elizabeth Esterberg2, Nisha Acharya2

1. Aravind Eye Care System, Madurai
2. F.I. Proctor Foundation, University of California, San Francisco

Purpose: To determine the comparative relative efficacy and tolerability of two commonly used immunomodulatory agents, methotrexate and mycophenolate mofetil, for initial corticosteroid-sparing treatment of non-infectious intermediate, posterior and panuveitis requiring chronic therapy.
Methods: A randomized observer-masked clinical trial was conducted at the Aravind Eye Care System with two sites, Madurai and Coimbatore. All patients were treated with an oral prednisone taper, and received either methotrexate or mycophenolate mofetil. Eighty patients were enrolled and were followed until 6 months. The primary outcome was defined by controlled inflammation (≤0.5+ anterior chamber cells, vitreous cells, vitreous haze and no active retinal/choroidal lesions) and ≤ 10 mg a day of prednisone and ≤ 2 times a day of prednisolone acetate at 5 and 6 months. Patients were considered a treatment failure if they had to stop treatment due to tolerability or safety concerns.
Results: Sixty-eight patients completed the trial. Age, sex, uveitis diagnosis and laterality were balanced between treatment groups. The most common anatomic location of inflammation was posterior/panuveitis. Treatment success by study arm will be reported at the meeting.

Conclusions: This trial provides information which may aid uveitis specialists in deciding which immunomodulatory therapy, methotrexate or mycophenolate mofetil, should be tried first when corticosteroid-sparing therapy is required.

19. Epidemiology and Clinical Features of Tubercular Uveitis and Sarcoid Uveitis

Dr. Jyotirmay Biswas
Sankara Nethralaya

Epidemiology and clinical features of Tubercular uveitis
2 billion or 1/3 of world's population are infected with mycobacterium tuberculosis (TB). 10% of these are likely to develop the disease at some point in their lives. 22 countries have been identified as contributing 80% of world's burden.
Variable incidence of ocular TB is 1.4% (study sample of 10,524 patients in Boston with pulmonary TB) and 18% (study sample 100 patients in spain). Tuberculosis in India is endemic. 2 million people develop TB every year. Every 4th patient of TB in the world is an Indian. Ocular morbidity in active systemic tuberculosis was found to be 1.39% in India. Most common was healed focal choroiditis. Ocular signs predictive of tubercular uveitis consists of broad-based posterior synechiae, retinal vasculitis with or without choroiditis and serpiginous-like choroiditis. Tubercular uveitis have protean manifestations and pose diagnostic challenges.

Epidemiology and clinical features of Sarcoid uveitis
Sarcoidosis is a multisystemic granulomatous inflammation with protean manifestations. There is striking difference in different population. In Japan this is as low as 3.7:100,000 compared to Finland where it is as high as 28.2:100 000. Women are affected in 41% in India to 71% in Greece. In the United States the lifetime risk of sarcoidosis for those of Afro-Caribbean origin is nearly 3 times that for Caucasians. About 30-60% of patients with sarcoidosis develop ophthalmic changes. Seven ocular signs were accepted in the 1st international workshop on Ocular sarcoidosis in Tokyo in 2006.

These are
1) Mutton-fat or granulomatous keratic precipitates and iris nodules.
2) Trabecular meshwork nodules and /or tent-shaped peripheral anterior synechiae.
3) Snowball/string of pearls vitreous opacities.
4) Multiple peripheral chorioretinal lesions (active and/or atrophic)
5) Nodular and/or segmental periphlebitis and/or retinal macroaneurysm in an inflamed eye.
6) Optic disc nodules/granuloma or solitary choroidal nodule.
7) Bilaterality.

20. Pathogenesis of Inflammatory Macular Edema

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Macular edema is a common structural ocular complication associated with a variety of uveitic conditions, often resulting in visual impairment. A review of the published literature over the last 10 years was undertaken. Articles pertaining to the epidemiology, pathogenesis and risk factors for the development of uveitic macular edema were selected and analyzed. Type of uveitis, duration of uveitic disease, history of ocular surgery, active intraocular inflammation and smoking status appeared to be significant risk factors for the development of macular edema. In some uveitic conditions, use of immunosuppressive drug therapy reduced the risk of developing macular edema. Macular edema remains a challenging and sight-threatening complication of uveitis.

21. High Risk and Monitoring for Macular Edema

Annette Ossewaarde-van Norel
University Medical Center Utrecht

The complication of macular edema (ME) regularly occurs in Birdshot uveitis, Behcet's disease, ocular sarcoidosis, acute retinal necrosis and juvenile rheumatoid arthritis. Treatment of ME in an early stage is recommended, even if the visual acuity is still good. Fluorescein angiography is used to diagnose the type of uveitis and to document the activity by grading signs of vasculitis, optic disc leakage and ME. Optical Coherence Tomography is a good choice to follow-up ME. Frequently discrepancies exist between fluorescein angiographic leakage and retinal thickening on OCT. Examples will be discussed in the presentation.
After the introduction of different SD-OCT devices, it appeared that many devices used their own definition of the outer retinal border. Thus values for retinal thickness will vary between devices. In studies and especially in multicenter studies, the same type of device should be used, because results are not easily standardized.
The integrity of the reflection line of the external limiting membrane and the IS/OS-line determines the visual prognosis. A review of the current knowledge about the imaging of these reflection lines will be presented.
Frequently a retinal flattening by formation of an epiretinal membrane, is observed, e.g. in ocular sarcoidosis. The epiretinal membrane causes retinal thickening and macular leakage on a fluorescein angiogram. On OCT an epiretinal membrane is observed in a much earlier stage than by funduscopy, but the clinical significance of this early finding needs to be investigated.
Finally, application of the combination of imaging of ME and functional testing, such as microperimetry, will be discussed.

22. Visual Impact of Inflammatory Macular Edema

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Introduction: Macular edema (ME) is a principal complication of uveitis and determines the visual outcome in the majority of chronic cases. ME develops in about one third of patients with uveitis and was reported to be responsible for 50% of bilateral visual loss and 40% of unilateral visual loss in this condition.
Results: The published data suggest that that visual quality of life is substantially decreased by the presence of ME and therefore its early recognition and treatment are required, especially in those who carry a high risk of visual loss. The incidence of CME varies according to specific uveitic entities and is further influenced by age, smoking and possibly by concurrent vascular disease. Of importance is also the presence of vitritis and development of epiretinal membranes as well as prior cataract surgery. In those with uveitic ME, the duration of uveitis, increasing age and poor baseline vision form risk factors for poor visual outcome. In addition, macular thickening on OCT, especially measuring of remaining retinal integrity, was found to be associated with visual performance while the impact of cysts was less clear. The specific entities characterized by visual loss due to CME include sarcoidosis, Behcets's disease and birdshot chorioretinopathy. Inflammatory ME shows a beneficial response to treatment, especially in early phases, when the structural changes did not yet develop. The presence of intact photoreceptor layer on OCT predicts the possibility of potential improvement.
Conclusions: Inflammatory ME represents at first as a reversible complication of uveitis. Its systematic detection and early treatment help in prevention of permanent structural changes and atrophy of macular area.

23.Inflammatory Macular Edema in Children

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Cystoid macular edema (CME) as a complication of uveits in children differs in various ways from CME in adults. For instance, there are anatomical differences between children and adults, like the vitreous retina adherence which is more is prominent in children than in adults. In children with intermediate uveitis, CME is a common complication (20-55%). In these patients, development of cystoid macular oedema is associated with papillitis (adjusted HR=3.4; p=0.02) and snowbanking (adjusted HR=3.3; p=0.03) at presentation. In general, treatment of CME in children is comparable to that in adults and it responds well to periocular or systemic steroids, eventually in combination with immunosuppressive drugs or acetazolamide. The effect of treatment with biologicals (adalimumab and retuximab) on CME in individual patients will be demonstrated. Surgical management of CME in children is challenging due to the intensive vitreous/retina adherence but it might be considered in cases with vitreoretinal traction.

24. Medical Treatment Strategies for Uveitic Macular Edema

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Macular oedema is the commonest inflammatory mediated threat to vision in patients with uveitis. In many patients macular oedema develops during an episode of active uveitis and resolves with appropriate treatment of the inflammation. In some patients macular oedema persists after resolution of the clinical signs of uveitis or develops while the eye is quiet. Such patients often require aggressive treatment to control the macular oedema
This talk will discuss current medical treatment options in patients with persistent macular oedema and will include local therapies such as: currently available corticosteroid options, intra-vitreal methotrexate & intra-vitreal anti-VEGF therapy. Systemic therapy including corticosteroids and IMT, interferon α therapy, and acetazolamide will also be discussed.

25. Surgical Therapy of Medically Non-responsive CME in Uveitis

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Evans Professor of Ophthalmology
Chair, Department of Ophthalmology & Visual Sciences
Director, KY Lions Eye Center
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The major cause of visual loss in uveitis, regardless of etiology, is cystoid macular edema (CME). In most patients CME will resolve with control of inflammation through corticosteroid therapy administered either topically, periocularly, intravitreally and/or systemically. In patients who are intolerant or non-responsive to corticosteroids the use of “corticosteroid-sparing” agents (e.g. cytotoxic or biologic drugs) may be useful. However, a subset of patients will have decreased vision secondary to CME regardless of the medical regimen employed. The role of an adherent posterior hyaloid gliosis of the ILM over the macula in the persistence of CME in these cases has only recently been appreciated. The importance of OCT imaging in the diagnosis of vitreo-macular traction and the therapeutic benefit of surgical removal of the posterior hyaloid and/or ILM in persistent CME associated with uveitis will be demonstrated.

26. Pathophysiology of JIA

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Juvenile idiopathic arthritis is a heterogeneous group of diseases, characterised by arthritis of unknown origin with onset before age of 16 years. The most important extra-articular manifestation of JIA is uveitis, which is intriguingly more common in the less severe subtypes concerning joint disease. Pivotal studies in the past 5 years have led to substantial progress in understanding the pathophysiological mechanisms underlying its manifestations. Gene expression profiling studies have identified different immune mechanisms in distinct subtypes of the disease. These studies can also help to redefine disease classification criteria. Immunological studies in non-systemic JIA indicate that synovial inflammation is the consequence of a disturbed balance between proinflammatory effector cells (such as T-helper-17 cells), and anti-inflammatory regulatory cells (such as FOXP3-positive regulatory T cells). Moreover, specific soluble biomarkers (such as the S100 proteins) can guide individual treatment. Altogether, these new developments in genetics and immunology are instrumental to better define, classify, and treat patients with juvenile idiopathic arthritis. This will have impact on the understanding and treatment of associated uveitis as well.

27. Pathophysiology of Juvenile Idiopathic Arthritis (JIA)-Associated Uveitis

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Despite the substantial morbidity of the uveitis associated with oligoarticular JIA, very little is known of the pathogenesis of the ocular inflammation. Recent reports of associations with HLA suggest a genetic component in the etiology of the uveitis. Immunohistochemical examination of the inflamed eye provides strong evidence that the uveal inflammation is mediated by B lymphocytes (Parikh JG et al, Ophthalmology, 2008). Gene expression profiling of synovial fluid from inflamed joints of patients with oligoarticular JIA suggests roles for CD8+ T lymphocytes and M1 macrophages in the pathogenesis of the disease (Hunter PJ et al, Arthritis Rheum, 2010). Anti-nuclear antibodies correlate with the development of uveitis in patients with oligoarticular JIA. The antigenic target of these antibodies remains uncertain, but histones are candidates that have generated much discussion.

28. Visual Outcomes of JIA Uveitis in a USA Cohort

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JIA uveitis is an important cause of visual morbidity in the pediatric age group. One series of 527 pediatric uveitis patients from 3 tertiary care centers in the United States published in 2009 included 102 patients with JIA 1. In this series, visual loss was frequent, and CME and hypotony were the most visually significant complications. Although JIA uveitis was much less common in Hispanic than non-Hispanic children (12.3% versus 24.1%, P = 0.0004), Hispanic ethnicity was associated with worse visual acuity at baseline and at all follow-up times points.
The SITE study of JIA uveitis looked at incidence of and risk factors for visual acuity loss and ocular complications in patients with JIA-associated uveitis 2. This series included 327 patients from 5 US tertiary uveitis clinics. At presentation, 40% of eyes had a VA of ≤ 20/50 and 24% had a VA of ≤ 20/200. Posterior synechiae, active uveitis, and prior intraocular surgery were statistically significantly associated with decreased acuity, both at presentation and during follow-up. Increasing uveitis activity was associated with increased risk of vision loss and use of immunosuppressive drugs was associated with reduced risk of vision loss.

1. JA Smith, F Mackensen, N Sen, J. Friedlin, AS Watkins, H Tessler, D Pyatetsky, R Nussenblatt1, JT Rosenbaum, G Reed, JR Smith, DA Goldstein. Epidemiology and course of disease in childhood uveitis. Ophthalmology. 2009;116:1544-1551

2. AC Gregory II, JH Kempen, E Daniel, RO Kaçmaz, CS Foster, DA Jabs, GA Levy-Clarke, RB Nussenblatt, JT Rosenbaum, EB Suhler, JE Thorne, for the Systemic Immunosuppressive Therapy for Eye Diseases (SITE) Cohort Study Research Group. Ophthalmology. In press

29. Outcome Measures in Juvenile Idiopathic Arthritis-Associated Uveitis

Arnd Heiligenhaus, Ivan Foeldvari, Clive Edelsten, and Justine R. Smith for the Multinational Interdisciplinary Working Group for Uveitis in Childhood

Juvenile idiopathic arthritis (JIA) is the most common extraocular disease associated with pediatric uveitis. Observations published worldwide about the outcomes of JIA-associated uveitis are diverse. The broad variety of outcome measures utilized make comparison of disease course, risk for structural complications, levels of impairment in visual function and responses to treatment difficult. Since specific outcome measures have not been established for JIA-associated uveitis, a group of ophthalmologists and pediatric rheumatologists gathered to consider this issue. Recommendations of the SUN Working Group were reviewed with special consideration of their applicability for reporting clinical outcomes in JIA-associated uveitis studies.
Outcome measures, and items indicating activity, damage and impact were proposed for JIA-associated uveitis. They should aid in standardization and comparison of future RCTs of treatments for this disease. The proposed measures will be verified in a prospective validation study.

30. Sycamore Study

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Juvenile Idiopathic Arthritis (JIA) is the most common rheumatic disease in children. Approximately a quarter of patients with JIA will develop uveitis within a seven years of developing arthritis. This may result without therapy significant morbidity and visual impairment. Whilst methotrexate (MTX) is well established as the first line of disease modification in the management of JIA there has neither been a RCT of MTX or steroid regimens in JIA-associated uveitis and some children remain refractory to MTX therapy.
Sycamore (A Randomised Controlled Trial of the Clinical Effectiveness, SafetY and Cost Effectiveness of Adalimumab in Combination with MethOtRExate for the
Treatment of Juvenile Idiopathic Arthritis Associated Uveitis), wishes to address this by providing evidence for effectiveness of TNF blockade in the treatment of JIA-associated uveitis. We will report on trial rationale and progress to date.

31. New Monoclonal Antibodies for JIA-Associated Uveitis

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Juvenile idiopathic arthritis (JIA) is the most common systemic disorder associated with uveitis in childhood, accounting for approximately 75% of all pediatric anterior uveitis cases.Long-term ocular complications of uveitis such as cataract, band keratopathy, posterior synechia, glaucoma and maculopathy can lead to severe visual impairment in about 38% of patients. Visual outcome in long-term follow-up of patients suffering from JIA-associated uveitis have been described as poor, with one third of patients developing substantial visual impairment and 10% becoming blind. Aggressive immunomodulatory therapy is often introduced to improve the visual prognosis and reduce corticosteroid induced adverse events. With the advent of biologic agents, tumor necrosis factor α (TNFα) antagonists have been successfully used and have changed and markedly improved the treatment options for JIA. The most commonly employed biologics for JIA associated uveitis TNFα antagonists. However, a subset of patients fails to respond to TNFα blockers or to other biologics and is unable to tolerate these therapies and may benefit from switching to another agent of this class or to a different biologic drug. Several new biologics such as golimumab, certolizumab pegol, anti CD 20 rituximab, tocilizumab and other anti-interleukins have been introduced in the field of rheumatology and then applied for ocular inflammatory disease such as JIA associated uveitis. Side effects from the new biologic agents include infusion reaction, increased risk of infection (in particular tuberculosis), autoimmune induced reactions such as lupus and psoriasis, and risk of exacerbation of multiple sclerosis. Some concerns also exist regarding the risk of secondary malignancies.

32. Laser Flare Photometry (LFP), the Gold Standard to Measure Intra-ocular Inflammation and a Significant but Neglected Progress in Uveitis

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Investigational techniques that have become available in the recent past, including, among others, optical coherence tomography (OCT), indocyanine green angiography (ICGA), ultrasound biomicroscopy (UBM) as well as fundus autofluorescence (FAF) have improved substantially the quality of the appraisal of uveitis, allowing to assess and follow inflammatory lesions in all ocular compartments.
Beside these devices giving detailed morphological information on inflammatory changes of most intraocular structures, technology became available, with the development of laser flare photometry, that for the first time, allowed quantification of the exact level of intraocular inflammation. Up to this point, uveitis specialists were technologically limited to measure intraocular inflammation. Indeed slit lamp evaluation of flare gave only qualitative appreciation of intraocular inflammation with high inter-observer and intra observer discrepancies. In contrast to this subjective measurement method with a scale from 0 to 4+, an objective, observer-independent , highly sensitive method has become available with a scale from 2-1000, the unit being photoncounts per miliscond (ph/ms). By analogy, the gain of precision obtained by LFP over slit lamp evaluation of intra-ocular inflammation could be compared to the superiority of Goldman applanation tonometry over pressure estimation using finger evaluation of scleral rigidity in glaucoma practice. These recent developments but especially LFP contributed to make of uveitis a precise clinical science having nothing to envy to other fields like glaucoma. The enigma is however why a substantial part of the uveitis intelligentsia is refractory to the implementation of this new validated technology, nostalgically clinging to the old methodology and depriving themselves of information that is sometimes crucial for the patient management. It is probably for this reason that the ISU organizers asked us, once again, to take upon us to organize a symposium on laser flare photometry.

33. Laser Flare Photometry and Behçet's Uveitis

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Behçet uveitis is characterized by a relapsing and remitting course. The severity of uveitis attacks and evolution of inflammatory lesions show individual variability. While signs of active inflammation during attacks are assessed clinically, fluorescein angiography is the gold standard to assess persistent retinal vascular inflammation during remission periods. Laser flare photometry is a useful objective method in the quantitative assessment of intraocular inflammation in patients with Behçet uveitis. Anterior chamber flare value measured by laser photometry is an objective marker of overall inflammatory activity in the eye. This method is especially useful in monitoring persistent retinal vascular leakage in patients in clinical remission and thus may reduce the need for fluorescein angiography.

34. Laser Flare Photometry and Pediatric Uveitis

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Assessment of ocular inflammation in pediatric uveitis is a major and challenging issue. Evaluation of anterior chamber flare and cells is widely used to determine the severity of uveitis and monitor therapeutic interventions. Different studies have shown the limitations of slit-lamp examination in severe cases of chronic inflammation such as juvenile idiopathic arthritis-associated uveitis. Recent data have shown that chronic blood aqueous barrier rupture leads to severe complications and poor visual outcome if not aggressively treated. Laser flare photometry remains an interesting tool to evaluate the level of AC flare and monitor its alteration during time. Measurement is noninvasive, accurate, and reproducible and does not depend on the operator. It may be difficult to perform in very young children or in the face of band keratopathy, extensive posterior synechiae and severe cataract. Otherwise, it is the most accurate tool to monitor inflammation variability during the course of uveitis or after initiation of therapy. More interestingly, it seems that the level of decrease of flare values is correlated with the risk of complications and the final visual outcome. Long-term use of topical corticosteroids may induce secondary glaucoma. Their dosage is precisely adapted to the level of ocular inflammation, based on consecutive flare measurements. Other types of pediatric uveitis with anterior segment involvement may also be monitored with LFP. Currently, this technology is mainly used for research purposes, especially tertiary eye care centers performing clinical trials in JIA-uveitis. However, it should be considered as a valuable tool to monitor mild and severe cases of pediatric uveitis. Further controlled studies have to validate LFP as a prognostic factor in pediatric uveitis.

35. Laser Flare Photometry and Ocular Surgery

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Surgical trauma results in the disruption of blood-aqueous barrier. The degree of this disruption can accurately be evaluated with laser flare photometry (LFP) after various surgical procedures in different ocular conditions.
Anterior chamber flare alterations have been largely studied after cataract surgery, with different techniques and equipments. The efficacy of pharmacologic agents (anti-inflammatory medications), with various routes of administration, in the control of postoperative inflammation, has been assessed with LFP. Besides, a relationship between the development of cystoid macular edema after cataract surgery and flare values has been proved.
LFP has also been used in the assessment of blood-aqueous barrier breakdown after other surgical procedures, including retinal detachment surgery, glaucoma surgery, and intravitreal injections. Recent data show that higher preoperative flare values in eyes with retinal detachment are associated with an increased risk of proliferative vitreoretinopathy and surgical failure.

36. Update on Diagnostics

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It is always important to find out what is the cause of uveitis for the implications on treatment and prognosis. The diagnosis of uveitis is commonly based on clinical findings but laboratory testing, ancillary studies and response to therapy are other means to reach a correct diagnosis. When the diagnosis is not reached after this first steps are completed, especially when there is no fundus view due to media opacities, a diagnostic vitrectomy can be performed to rule out the diagnosis. This surgical procedure itself can clear the media and allow a direct visualization of the fundus; this is the simplest way to reach the diagnosis after diagnostic vitrectomy. The second way to make a diagnosis is to analyze vitreous specimens by means of PCR, cytology, antibodies or cultures. The third way would be to analyze retinal/choroidal tissue by means of pathology. All these three steps of diagnosis associated with diagnostic vitrectomy will be discussed.

37. Ocular Toxoplasmosis

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Toxoplasmosis is the most common cause of infectious posterior uveitis. This overview will summarize 10 commonly held misconceptions regarding the epidemiology, diagnosis, clinical course, and treatment of ocular toxoplasmosis.

38. HIV in 2012

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According to UNAIDS estimates, there are now 33.4 million people living with HIV, including 2.1 million children. Around half of all people who become infected with HIV do so before they are 25 and are killed by AIDS before they are 35. The vast majority of people with HIV and AIDS live in lower and middle–income countries. But HIV today is a threat to men, women and children on all continents around the world.
THE INTRODUCTION OF HIGHLY ACTIVE ANTIRETROVIRAL therapy (HAART) in 1996 changed the clinical picture of human immunodeficiency virus (HIV)-associated disease with a marked decrease in mortality and morbidity as well as the incidence of opportunistic infections, most notably cytomegalovirus retinitis. Medicine started to progressively change the natural history, increasing survival and improving quality of life.
Hospitalization decreased from 50 up to 80% and ocular complications decreased from 50 to 70 %. However, HIV-infected patients in the era before as well as after HAART have experienced loss of visual function even in the absence of infectious retinitis.
Clinical aspects as well as the most important changes in ocular HIV related manifestations will be presented and discussed.

39. Syphilis

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Syphilis is a sexually transmitted disease caused by the spirochete Treponema pallidum. It is often called “the great imitator” because so many of the signs and symptoms are indistinguishable from other diseases. It causes significant complications if untreated and facilitates the transmission of HIV infection.
Centers for Disease Control Surveillance
The rate of primary and secondary syphilis reported in the USA declined 89.7% during 1990-2000. In 2000, the rate was the lowest since reporting began in 1941. The rate increased annually 2001-2009 before decreasing in 2010. Overall increase in rates was observed primarily among men (from 3/100,000 in 2001 to 7.9 cases in 2010). The rates among women increased from 0.8 cases in 2004 to 1.5 cases in 2008, then declined to 1.1 in 2010. The increase in cases was seen among younger men and MSM (men having sex with both men and women) from 7% in 2000 to 64% in 2004. In 2010,

67% of syphilis cases in the USA were among MSM. The total number of cases of syphilis reported to the CDC was 45,834 during 2009-2010. The rate of primary and secondary syphilis in the USA in 2010 was 4.5 cases per 100,000, 2.2% lower than the rate in 2009 (4.6 cases).
Diagnosis
Incubation period ranges from 3 to 90 days (mean, 21 days). The syphilitic chancre is usually a single painless ulcer with raised and indurated borders. Constitutional symptoms are usually absent. Serologic tests are classified as treponemal and nontreponemal – treponemal tests results stay positive for life regardless of treatment and include the fluorescent treponemal antibody absorption test, the microhemagglutinin assay and the T. pallidum immobilization test. Non treponemal tests are rapid plasmin reagin and the Venereal Disease Research Laboratory test – both correlate with disease activity. All patients with syphilis regardless of stage should be tested for HIV according to CDC recommendations.
Ocular manifestations
-Secondary syphilis develops between 6 weeks to 2 years following infection and anterior uveitis is the most common ocular manifestation. Iridocyclitis symptoms occur soon after the secondary stage
-Marked inflammation of vitreous and AC often with posterior synechiae and mutton fat KP (50%)
Latent syphilis has no overt clinical manifestations but patients may have stigmata of prior ocular inflammation such as posterior synechiae or corneal ghost vessels.
Eye signs of tertiary syphilis can be the sole manifestation of the disease. Anterior uveitis is the most common finding occurring in up to 5% of patients with symptomatic late syphilis. Scleritis, retinal vasculitis and other ocular and periocular inflammation can occur.
-Progression to neurosyphilis is uncommon but it is much more rapid in HIV infected patients. In HIV infected patients, syphilis may progress from primary to tertiary over the course of several months to years rather than decades.
Retinal Presentations
-Punctate inner retinitis
-Posterior placoid chorioretinitis (PPC)– outer retina, RPE, and choroid affected
-Necrotizing retinitis
-Treatment
Secondary syphilis – Benzathine PCN G, 2.4 million U IM x1 dose
Late latent syphilis - Benzathine PCN G, 2.4 million U IM weekly for 3 weeks
Neurosyphilis – Aqueous PCN G, 18-24 U IV daily for 10-14 days
REFERENCES
1. Wickremasinghe S, et al. Syphilitic punctate inner retinitis in immunocompetent gay men. Ophthalmology. 2009 Jun;116(6):1195-200. Epub 2009 Apr 19.
2. Gass JD, et al. Acute syphilitic posterior placoid chorioretinitis. Ophthalmology. 1990 Oct;97(10):1288-97.
3. Dodds EM, Lowder CY, et al. Simultaneous syphilitic necrotizing retinitis and placoid chorioretinitis in acquired immune deficiency syndrome. Retina. 1995;15(4):354-6.
4. Syphilitic uveitis: a review of clinical manifestations and treatment outcomes of syphilitic uveitis in human immunodeficiency virus-positive and negative patients. Amaratunge BC, Camuglia JE, Hall AJ., Clin Experiment Ophthalmol. 2010 Jan;38(1):68-74. Review.
5. Centers for Disease Control and Prevention. Primary and secondary syphilis, www.cdc.gov/std/syphilis/STDFact revised November 17, 2011.

40. Rubeola Virus and Fuch's Heterochromic Uveitis

Laure Caspers
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Purpose: To evaluate the clinical characteristics and visual prognosis of patients with Fuch's heterochromic uveitis (FHU) with intraocular fluid analysis positive for Rubella virus (RV),
Design: Retrospective, observational study.
Methods: Clinical records of 57 patients with anterior uveitis and positive Polymerase Chain Reaction (PCR) and/or Goldmann-Witmer coefficients (GW) + for RV in the aqueous humor (AH) were evaluated including demographic constitution, ophthalmological characteristics and visual prognosis.
Results: GW was + in 100 % and PCR + in 12% of patients. Uveitis was characterized by young age at onset (mean: 35 yo), chronic course (96%), vitritis (88 %), unilateral involvement (86%), low cellular reaction in AH < 2 (86%) , keratic precipitates (typically diffuse and stellate) (84%) and was typically associated with cataract at presentation (47%). Heterochromia was present in 23% and Iris atrophy in 20% of patients. IOP above 30mm Hg was documented in 25% and glaucoma developed in 22% of patients. Retinal scarring was seen in 22% of patients . Visual prognosis was favorable.
Conclusion: In this series of FHU with RV demonstrated by PCR and/or GW the most frequent signs (>80%) were unilaterality, chronic course, vitritis, keratic precipitates Heterochromia, retinal scaring and glaucoma were less frequent (<25%).

41. Role of Macrophage in AMD

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While the retina and choroid are endowed with resident myeloid cell populations, what governs resting homeostasis or moreover changes during chronic tissue stress and ageing remains ill defined. Macrophages are responsive and adapt to the environmental and cytokines cues they receive.
This presentation will cover aspects of macrophage biology during inflammation and degeneration that opens understanding of behaviour that may extrapolate to our understanding of processes in AMD.
For example, tissue control of macrophage function during steady state and during inflammation and wound healing (laser induced CNV) will be discussed in light of triggers for myeloid activation, contribution to VEGF production and angiogenesis and role in redressing inflammation and restoring homeostasis.

42. Para-Inflammation and the Role of RAGE in Age-Related Macular Degeneration

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Para-inflammation is an immune response to chronic noxious stimuli at a low magnitude that lies between the basal homeostatic state and overt inflammation. The physiological role is to maintain tissue homeostasis and functionality. The ageing retina, particularly the macula, suffers from chronic oxidative insults. In response to age-mediated oxidative insults, a para-inflammatory response characterized by mild microglial activation and incomplete complement activation is initiated. When para-inflammation is dysregulated, either as a result of increased insults or immune cell malfunction, age-related retinal degeneration may occur.
The receptor for advanced glycation end products (RAGE) is a pattern-recognition receptor (PRR) that binds many ligands, including advanced glycaction end products (AGEs), S100B, β-amyloid and high-mobility group protein B 1(HMGB1). With age, these ligands accumulate in many organs including the eye. RAGE is highly expressed by RPE cells. The role of RAGE pathway in retinal para-inflammation and age-related macular degeneration will be discussed.

43. AMD Molecular Signatures and Pathology

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The pathology of age-related macular degeneration (AMD) is characterized mainly by degeneration of photoreceptors, retinal pigment epithelia (RPE) and Bruch's membrane. AMD molecular signatures reveal genetic footprints of aging, neurodegeneration, apoptosis, inflammation, oxidative stress, lipid metabolism and angiogenesis. The aging retina naturally accumulates hard drusen in the periphery, lipofuscin in the RPE, switches from M1 to M2 macrophages, and is policed by microglia and retinal para-inflammation. When retinal homeostasis breaks down, the maculae shows imbalance of macrophage polarization, accumulation and migration of microglia, elevated expression of pro-inflammatory cytokines/chemokines (e.g., IL-17) as well as growth factors (e.g., VEGF), acceleration of oxidative stress and abnormal lipid metabolism, all leading to neuroretinal and RPE degeneration, chorioretinal neovascularization and resulting in geography atrophy or neovascular AMD. Genetic background and ocular microenvironment can also critically influence AMD molecular pathology.

44. Gene Therapy for AMD - Targets and Approaches

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The eye is a particularly suitable target for viral vector-mediated gene therapy because of its unique anatomy and physiology. In recent years adeno-associated viral vectors have been used to treat a form of severe early onset retinal dystrophy and for the first time it has been possible to demonstrate an improvement in vision using this technology.
The potential for gene therapy to modify the progression of more complex diseases such as age-related macular degeneration (AMD) remains unfulfilled. This is partly because of the paucity of animal models for AMD and, until relatively recently, a very limited understanding of its pathoaetiology.
The advent of anti-vascular endothelial growth factor therapies for choroidal neovascularisation has revolutionised the management of this form of the disease. However, it has also increased the burden on healthcare systems and comes at the cost of multiple intravitreal injections for patients. These factors combined with the good short-to-medium term safety profile of adeno-associated viral vectors have triggered renewed interest in the use of gene therapy for CNV.
This presentation introduces basic concepts of viral vector gene therapy, potential targets and therapeutic strategies in AMD and the trials currently examining its use in CNV.

45. PC-IOL for Uveitis

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The decision of whether to implant an intraocular lens (IOL) in all uveitic eyes remains controversial. There is concern that the inflammation associated with IOL implantation would add to an already seriously compromised and inflamed eye. It has been shown that IOLs trigger a number of reactions, such as a foreign body inflammatory response and stimulation of the coagulation cascade. The activation of complement system occurs through classic and alternative pathways. IOLs, especially those with prolene haptics in contact with metabolically active tissues, activate the alternative pathway. Materials such as hydrogel do not cause any significant complement activation.
Sulcus or anterior chamber implantation are relatively contraindicated as the prolonged contact with uveal tissue may provoke/exacerbate inflammation. Several recent studies have suggested that the implantation of an IOL in the capsular bag does not increase the risk of postoperative inflammation in selected cases provided that proper anti-inflammatory treatment is instituted. However, cellular and pigment deposits on the IOL surface or synechiae between the anterior capsule and the iris may develop. These lesions are often caused by a chronic latent inflammation, which may originate with the uveitis itself or be induced by the lens material.
Pigment dispersion and deposition on the IOL surface seem to be multifactorial, related to surgical trauma, age of patient, and pre-existing ocular pathology unrelated to IOL biocompatibility.
The proper IOL selection, including its material, design, overall diameter, and configuration, is another challenge for surgeons. Surface-modified IOLs such as the heparin-coated models have been introduced and recommended for patients with uveitis as they decrease the number and severity of deposits on the surface of the IOL. Silicone lenses have induced a greater inflammatory reaction in non-uveitic patients compared with other IOL materials (PMMA, hydrogel, heparin-modified), with a higher incidence of early posterior capsule opacification, anterior chamber inflammation, and closure of the capsulorhexis. Acrylic foldable lenses had a statistically significantly lower inflammatory reaction than silicone lenses within the first month after surgery, although at later visits the differences were no longer significant. Foldable acrylic lenses showed lower inflammation than heparin surface-modified lenses in the first week after surgery, the differences disappearing later. Both acrylic and heparin surface-modified IOLs showed the lowest incidence of relapses, while the highest was for silicone IOLs, although the differences were not significant.
Foreign-body giant cells are a sign of a prolonged inflammation. They are formed by the fusion of epithelioid cells and usually appear 1 to 3 months after cataract surgery. Membranes consisting of multiple foreign-body giant cells can reduce visual acuity, which is treated by polishing the anterior IOL surface with an Nd:YAG or by topical therapy.

46. Combined Phacoemulsification and Pars Plana Vitrectomy (PPV) in the Management of Uveitic Cataract.

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A variety of surgical approaches have been employed in the management of uveitic cataracts including; pars plana lensectomy (PPL), extracapsular cataract extraction (phacoemulsification) with or without intraocular lens implantation, in combination with pars plana vitrectomy (PPL), especially in the presence of significant vitreous opacificatin or underlying vitreoretinal pathology. With the advent of small incision cataract surgery and parallel developments in instrumentation in vitreoretinal surgery, combined phacoemulsificatioin and PPV in uveitis eyes with significant cataract and concomitant posterior segment involvement has become increasingly employed and offers several practical and theoretical advantages to a staged surgical approach with improved visual outcomes. These considerations, together with a review of the available literature, the indications for a combined approach, the preoperative and intraoperative management, complications, and visual results thereof will be presented.

47. Pars Plana Lensectomy and Vitrectomy in the Management of Uveitic Cataract: A 20-Year Comparison of Techniques and Outcomes

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Purpose: Describe two cohorts of uveitis patients undergoing pars plana lensectomy and vitrectomy (PPL-PPV) from 1992-2001 and from 2006-2012.
Methods: Surgical logs were reviewed to identify patients who underwent PPL-PPV prior to the common use of immunosuppressants and intraoperative intravitreal triamcinolone (Group A), and those

who were operated more recently when more aggressive local and systemic therapy had become routine (Group B).
Results: There were 29 patients and 38 eyes in Group A and 18 patients and 24 eyes in Group B. Mean age in Group A was 23 ± 29.6 years (median 14 years) vs. 11 ± 4.2 years (median 10.6 years) in Group B. All but one eye in each group underwent synechiolysis for posterior synechiae. Five patients in Group A vs. two patients in GroupB had persistent post-operative hypotony. JRA iridocyclitis was present in 6 patients in the earlier cohort (20.6%) and 9 patients (50%) in the later. One of 38 eyes (2.6%) in Group A and 14 of 24 eyes (58.3%) Group B had mature cataracts. Average follow-up in the early group was 2.9 ± 2.5 years with last recorded median vision of 20/80 (range 20/20 to LP). In the later Group B, median vision was 20/30 in operated right eyes and 20/20 in operated left eyes after a mean follow-up time of 2.3 ± 1.6 years. Five of 29 patients (17.2%) in Group A and all but 3 patients in Group B were treated with systemic immunosuppression and received intravitreal triamcinolone acetonide (100% of the 15 patients with non-infectious uveitis).
Conclusions: Secular trends in case selection, medical management, and visual outcomes were observed between the earlier and later cohorts. PPL-PPV remains a viable technique for cataract extraction in uveitis, particularly in children with JRA, that can result in good vision with contact lens rehabilitation.

48. Advanced Surgical Techniques Applicable to Uveitis

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Pars-plana vitrectomy (PPV) has been a natural accompaniment to pharmacotherapy in the treatment of ocular inflammatory diseases as it offers a surgical means to clear vitreous opacities and repair structural complications. For PPV itself, technology and technique have been important lines of development, but for ocular inflammatory diseases, the evolution of vitrectomy has mainly involved a search for clear indications for surgery and an assessment of outcomes. Posterior segment involvement very often coexists secondary to uveitis, either because of direct involvement by the disease or secondary to inflammation sequelae. As already had reported in literature PPV led to a decrease in the activity of uveitis and a reduction in both recurrences and dependence on immunosuppressive or anti-inflammatory medication.
Early series also documented the usefulness of vitrectomy for obtaining diagnostic specimens, the indications and results of which have now been documented in multiple case series. Developments in instrumentation and vitrectomy equipment have led to increased sophistication in PPV and expanded its role both as a diagnostic as well as a therapeutic procedure. Recently, the evolution of sutureless 25-G vitrectomy system, has led to minimization of the surgically induced trauma from peritomy and sclerotomy sites, therefore hastening postoperative recovery.
With the advent of transconjunctival sutureless vitrectomy, the use of 25-gauge instrumentation and vitrectomy systems has been applied to numerous clinical problems, including rhegmatogenous retinal detachment repairment, epiretinal membrane removal, and macular hole surgery. A systematic evaluation of the peer-reviewed literature, recovered a single article reporting on combined sutureless PPV and phacoemulsification in uveitic eyes with cataract and posterior segment pathology, but no studies or case series reporting the outcome of sutureless 25-gauge PPV in uveitic eyes.
Our results demonstrate with respect to the safety and efficacy of transconjunctival sutureless 25-gauge PPV system on 14 patients (15 eyes) with uveitis who underwent PPV for posterior segment involvement secondary to uveitis that sutureless 25-gauge surgical technique is a safe and efficacious approach in selected uveitis cases. BCVA improved in almost all cases (14/15). Only one eye resulted in phthisis due to retinal detachment secondary to toxocara granuloma. In our study, cases with Adamantiades - Beçhet's disease (5/15 cases) and sarcoidosis (3/15 cases), tend to present a lower incidence and a less severe uveitis flare compared to the fellow eyes; removal of the vitreous opacities, however, may or may not help control the uveitis, but it certainly does not eliminate the need for control. PPV in an important confounding factor in observational series clearing the ocular media that report good results from surgical therapy, because vitreous haze is one of the signs used to grade intraocular inflammation.
Developments in instrumentation and vitrectomy equipment have led to increased sophistication in PPV and expanded its role both as a diagnostic as well as a therapeutic procedure. The advantages of microincisional vitrectomy are numerous and include a more rapid visual recovery, less postoperative discomfort and minimal conjunctival scarring, making the technique ideal for glaucoma patients with filtering blebs or valves. The 25 gauge cutters have excellent fluidics and are extremely effective in shaving vitreous from mobile areas of detached retina with minimal risk of creating iatrogenic holes. The cutters are also superior in creating a posterior capsulectomy or in removing intact anterior lens capsule. Disadvantages are those inherent to smaller bore-sized instruments, which are less rigid and more flexible.
It is not clear whether vitreous inflammation is an epiphenomenon to the real events of intraocular inflammation or a self-perpetuating depot of immunologically active cells with an ill-defined antigenic load that is indeed part of the disease process. Intraocular antibody production and detection of infectious organisms in uveitic eyes without overt active infection support the concept of the vitreous as an active reservoir of disease. Analysis of vitreous specimens from uveitic eyes might help create hypotheses regarding its biologic activity.
Although the final role of vitrectomy in the management of patients with uveitis remains to be determined, our experience reveals that the 25 g surgical technique is a safe and efficacious approach in selected uveitis cases. Remissions and exacerbations can occur anytime in the postoperative period therefore careful attention to postoperative control of inflammation is still necessary.

49. Pre- and postoperative Treatment

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Perioperative medical therapy is a complex process that requires consideration of multiple factors. Decision making on pre- and postoperative treatment is mostly driven by concern over postoperative inflammatory relapse. In contrast, diagnostic interventions require sufficient inflammation since medical therapy can influence the diagnostic yield. Therefore, risk appraisal for surgically-induced inflammatory relapse is based on the type of disease (e.g. high vs. low risk disease for postoperative inflammatory activity; infectious vs. non-infectious; unilateral vs. bilateral). Decision making on pre- and postoperative medical therapy depends on the type of surgery (therapeutic / diagnostic), type of preoperative medical therapy (DMARD already installed vs. no therapy), amount of anti-inflammatory drugs needed preoperatively (e.g. prednisone threshold), past inflammatory activity (initial activity, frequency of past recurrences), lens status, necessity of an intraocular implant (IOL, drainage device), presence of CME/membranes/traction, concomitant glaucoma or corticosteroid-sensitivity, ischemia/neovascularization. Systemic/intraocular and topical corticosteroids still are the mainstay of perioperative anti-inflammatory treatment in non-infectious disorders and as an accompanying drug in selected anti-infectious regimens.

50. Chorioretinal Biopsy

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Some pathogens are difficult to culture and may require a retinal, choroidal, or chorioretinal biopsy, particularly if vitreous inflammation is minimal or absent. Indications for a chorioretinal biopsy include macula-threatening lesions unresponsive to therapy or clinical suspicion of a malignancy or infection that is not diagnosed by other less invasive methods.1 Chorioretinal biopsy may be performed either with an external approach or with a scleral flap1-4 or via an endoretinal technique.5-7 Both techniques include vitrectomy near the site of chorioretinal biopsy and demarcation around the area

of interest using diathermy (i.e. intraocular diathermy for endoretinal biopsy and scleral diathermy for external technique). Both techniques have been valuable in the diagnosis of intraocular lymphoma, as well as various infectious uveitides. Diagnoses ascertained from chorioretinal biopsies by means of light and electron microscopic studies, tissue culture, immunohistochemistry, and polymerase chain reaction include lymphoma, sarcoidosis, multifocal choroiditis, viral retinitis, toxoplasmosis retinochoroiditis and fungal, mycobacterial or bacterial endogenous endophthalmitis. Complications include progression of lens opacities, phthisis bulbi, and retinal detachment.

REFERENCES
1. Nussenblatt RB, Whitcup, SW: Uveitis: Fundamentals and Clinical Practice. 2004:49-53.
2. Peyman GA, Juarez CP, Raichand M: Full-thickness eye-wall biopsy: long-term results in 9 patients. Br J Ophthalmol 1981, 65(10):723-726.
3. Martin DF, Chan CC, de Smet MD, Palestine AG, Davis JL, Whitcup SM, Burnier MN, Jr., Nussenblatt RB: The role of chorioretinal biopsy in the management of posterior uveitis. Ophthalmology 1993, 100(5):705-714.
4. Cheung MK, Martin DF, Chan CC, Callanan DG, Cowan CL, Nussenblatt RB: Diagnosis of reactive lymphoid hyperplasia by chorioretinal biopsy. Am J Ophthalmol 1994, 118(4):457-462.
5. Cassoux N, Charlotte F, Rao NA, Bodaghi B, Merle-Beral H, Lehoang P: Endoretinal biopsy in establishing the diagnosis of uveitis: a clinicopathologic report of three cases. Ocul Immunol Inflamm 2005, 13(1):79-83.
6. Rutzen AR, Ortega-Larrocea G, Dugel PU, Chong LP, Lopez PF, Smith RE, Rao NA: Clinicopathologic study of retinal and choroidal biopsies in intraocular inflammation. Am J Ophthalmol 1995, 119(5):597-611.
7. Freeman WR, Henderly DE, Wan WL, Causey D, Trousdale M, Green RL, Rao NA: Prevalence, pathophysiology, and treatment of rhegmatogenous retinal detachment in treated cytomegalovirus retinitis. Am J Ophthalmol 1987, 103(4):527-536.

51. Uveitic Glaucoma - an Overview

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Uveitic glaucoma is a challenging and difficult to treat complication in many forms of uveitis. Incidence varies profoundly depending on study settings and study groups, e.g. with figures up to over 40% in JIA-associated anterior uveitis. The IOP levels during the acute phase of uveitis may help to differentiate between uveitis forms. In the majority of uveitis entities, the IOP is low during the acute phase, which may be due to reduced aqueous humor production and increased outflow. In other entities, IOP is elevated due to a swelling of the trabecular meshwork. The initial IOP increase is frequently noted after achieving remission. These clinical observations disclose relevant pathomechanisms of uveitic open angle glaucoma. In patients with sarcoidosis, granulomas were found in the trabecular meshwork. Electron microscopy studies of trabeculectomy specimens from uveitis patients revealed predominately an increase of ECM in the subendothelial region of Schlemm´s canal and a thickening of trabecular beams, while the commonly proposed accumulation of death cells and debris could not be found. Assessment of clinically important glaucoma parameters, as IOP, visual field testing and optic disc morphology can be difficult in uveitis patients. Corneal thickness is modified by corneal edema related to keratoprecipates, visual field testing is limited by any opacity in the optical axis (as to band keratopathy, cataract formation, and vitreous haze), and/or morphological abnormalities of the retina, and the glaucomatous changes of the optic nerve head might be disclosed by granulomas or disc edema. Local treatment strategies are generally the first approach to control IOP in uveitis patients. All available topical antiglaucomatous drugs can be used depending on individual and age-related restrictions. Recent studies have also shown that prostaglandins are also effective and safe without a higher risk for flares and macular edema. Unfortunately, approximately 60 % of children, and 40% of adults do require surgery during the uveitis course for control IOP.

52. Corticosteroid Glaucoma: Recent Insights

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Corticosteroid-induced ocular hypertension and the resulting iatrogenic open-angle glaucoma are serious ocular side effects associated with anti-inflammatory glucocorticoid (GC) therapy for a wide variety of diseases, including uveitis. Approximately 30-50% of individuals treated long term with GCs will develop ocular hypertension, which if untreated will lead to glaucomatous vision loss. Almost all primary open angle glaucoma (POAG) patients are steroid responders, and corticosteroids have been implicated in the pathogenesis of POAG. The GC mediated IOP elevation is due to impaired aqueous humor outflow in the trabecular meshwork (TM) and is associated with a number of GC-induced molecular, biochemical, cellular, and morphological changes in the TM. Increased deposition of extracellular matrix material, cytoskeletal reorganization, and altered cellular junctions in the TM have all been proposed as potential mechanisms responsible for GC-induced ocular hypertension. GC biological activity is mediated by the cytosolic glucocorticoid receptor (GR), which is a ligand activated transcriptional factor. There are 2 alternatively spliced isoforms of GR. GRα is the ligand binding biological receptor for GCs, while GRβ lacks the ligand binding domain and acts as a dominant negative regulator of GC activity. Recent studies have shown that the relative ratio of GRα and GRβ expression in cells determines responsiveness to GCs. TM cells from glaucoma patients have lower levels of GRβ, making these cells significantly more sensitive and responsive to GCs. There is considerable excitement that several new therapeutic approaches may address GC-induced ocular hypertension and glaucoma. (1) Ocular delivery of the ocular hypotensive cortisene anecortave acetate has been shown to lower IOP in steroid responsive sheep as well as in human steroid responders. (2) Selective gene therapy to the TM that delivers a matrix metalloproteinase (MMP1) driven by GC response elements in the promoter has been shown to inhibit GC-induced ocular hypertension in sheep. (3) Gene therapy selectively enhancing GRβ expression in the TM would make the TM more resistant to GCs. (4) Modulation of alternative splicing of GR in the TM that enhances GRβ expression would make the TM less sensitive to GCs and suppress the ocular hypertensive effect of GCs. (5) A better understanding of the molecular mechanisms mediating GC-induced ocular hypertension will also lead to potential new therapies for this serious side effect of GC therapy.

53. Glaucoma in Childhood Uveitis

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Secondary glaucoma in children with uveitis is challenging. Intraocular pressure rises more frequently and often more vigorously in children prescribed topical steroid. The uveitis associated with juvenile idiopathic arthritis commonly leads to glaucoma. Some glaucoma medications are inadvisable in children. Optic disc cupping may progress with frightening rapidity, but is capable of partial reversal. Treatment compliance is more difficult to achieve. Drainage surgery for glaucoma is typically associated with a higher failure rate than in adults with uveitis and the optimal surgical method (goniosurgery, cyclodestruction or drainage implant surgery) is a matter of dispute. This lecture will discuss the current state of knowledge on the aetiology and management of ocular hypertension and glaucoma in children with uveitis and will present the experience of the Manchester Uveitis Clinic in this area.

54. Glaucoma Surgery in Uveitis

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Secondary glaucoma in uveitis patients may result from various mechanisms and often, more than one factor will contribute to the raised IOP in a particular uveitis patient. The glaucoma surgeon dealing with uveitic glaucoma should always try to delineate the etiological mechanisms of the glaucoma as precisely as possible. Careful history taking,sound knowledge of the uveitis entities and detailed examination of the patient, especially gonioscopy, will be of great help to achieve this goal.
Broadly speaking, uveitis glaucomas can be divided in secondary angle-closure glaucoma and secondary open-angle glaucoma. Angle-closure glaucoma in uveitis patients may be due to 1) pupillary block secondary to posterior synechiae, 2) to peripheral anterior synechiae, or 3) to forward rotation of the ciliary body. Although laser peripheral iridotomy is the procedure of choice in pupillary block, very often in patients with active anterior inflammation a plug of fibrine will form and clog the small laser iridotomy. In those instances a surgical iridectomy is to be preferred.
Surgical options for uveitis patients with secondary open-angle glaucoma include filtering surgery (trabeculectomy and deep sclerectomy), drainage devices (valved or non-valved), and cyclodestruction (either with diode laser or with cryotherapy).
Trabeculectomy even with adjunctive anti-metabolites is not very successful in uveitis patients. Few data are available on the results of non-penetrating procedures for this indication. The relatively poor results of filtering surgery has led a number of surgeons to use drainage devices as their first choice in uveitic glaucoma. This tendency has been reinforced recently by large studies indicating that experienced surgeons achieve lower complications rates with drainage devices than previously accepted. Valved and non-valved implants have their specific indications e.g. non-valved implants should not be used in patients with a prior history of cyclodestruction. Cyclodestruction carries a significant risk of hypotony in uveitis patients and causes significant inflammation.

55. Epidemiology and Genetics of Behcet's disease

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Behcet's disease has been known to occur more frequently along the old Silk Route between the latitude 30 degrees and 45 degrees north. This is why we first named this disease as Silk Route Disease (Ohno S, et al: Arch Ophthalmol 100:1455-1458, 1982). The East end is Japan, and the West end is Morocco or Portugal. Although the exact environmental factors are still unknown, they may be primarily present in the Silk Route area, since there are no Behcet's patients among 1 million Japanese immigrants in USA, among 1.4 million Japanese Brazilians and 80,000 Japanese Peruvians.
In addition to exogenous environmental factors, endogenous genetic factors are also important for the development of Behcet's disease. 40 years ago, we already found a close association of this disease with HL-A5 (Ohno S, et al: Lancet 2:1383-1384, 1973). Our recent GWAS results in this disease revealed that four important genes; (1)HLA-B*51, (2)HLA-A*26, (3)IL23R-IL12RB2, and (4)IL10 were closely associated with the susceptibility to this disease.
These data partly explain why this disease occurs mainly between the Middle East countries and East Asian countries along the ancient Silk Road. In addition to present anti-TNFαtherapy, our data also suggest that we may be able to develop new treatment by suppressing IL23 and/or IL12, and enhancing IL10 activity in Behcet's disease.

56. Differential Diagnosis of Behcet´s Disease

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The diagnosis of Behçet disease is based on a combination of clinical findings. Ocular lesions defined in the current sets of diagnostic or classification criteria are nonspecific. It is important to recognize characteristic features of Behçet uveitis because there are patients with Behçet disease but other forms of uveitis by coincidence, and patients with typical ocular involvement but without systemic manifestations of the disease. The course of ocular Behçet disease is characterized by recurrent non-granulomatous uveitis attacks of variable severity. Transient nature of the acute inflammatory signs is the most important diagnostic clue. Transient retinal infiltrates and inferior peripheral pearl-like precipitates are the pathognomonic findings that help differentiating Behçet uveitis from other causes of panuveitis and retinal vasculitis.

57. Use of TNF-alpha Blocking Agents in Behçet's Disease

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Ocular involvement in Behçet disease is known to carry a poor visual prognosis, particularly when ischemic complications occur (1), but many patients still present with irreversible visual loss. However, the use of the newer so-called biological agents, which include the anti-TNF-α dugs and interferon, have been reported in small series of patients to lead to substantially better outcomes than conventional immunosuppression. We recently studied the patient characteristics and visual prognosis of patients with ocular involvement in Behçet's disease to see whether these have altered, particularly with the introduction of these new biological therapies (2). In our cohort of over 100 patients, 50% of affected eyes had visual loss and 21% severe visual loss at presentation, with only a third of this proving reversible with treatment. The commonest cause of irreversible visual loss was ischemic maculopathy secondary to branch retinal vein occlusion. Nevertheless, the prognosis for patients who do not present with irreversible ocular disease does seem to be improving: survival analysis of our cohort suggests that the risk of severe visual loss for these patients over 10 years is 13%, which is a significant improvement compared to earlier series, including one large series from 2004, in which 25% of patients suffered severe visual loss at 10 years (3-7). We analysed demographic and clinical potential risk factors for visual loss and severe visual loss in multivariate 'by person' and 'by eye' analyses, gaining similar results with each. Risk factors for severe visual loss at five and ten years included male sex, unilateral ocular disease involvement, left eye involvement and non-Caucasian race, as well as the non-use of biologic agents. Age, duration of disease and ocular ischemia at presentation were not associated with severe visual loss.
Interestingly, the modality of treatment had a major impact on visual outcome. It has previously been suggested that the use of azathioprine can protect against the development of second-eye disease (5-8). We did not find this to be the case and, in fact, found that patients treated with azathioprine were more likely to develop severe visual loss (odds ratios 1.28 at 5 years and 1.67 at 10 years), although neither of these findings reached statistical significance. Importantly, however, the use of anti-TNF-α drugs was associated with a statistically significant reduction in the rate of severe visual loss, the 28 patients treated with anti-TNF-α drugs having a greatly reduced risk of visual loss at 5 and 10 years (adjusted odds ratios 0.28 and 0.18 respectively). Taken together, these results suggest that adequate immunosuppression can reduce the risk of severe visual loss in patients with ocular Behcet disease, but that azathioprine is not effective enough to achieve this. None of our patients was treated with interferon, but these findings are in accordance with those published for anti-TNF-α and other of the biologic agents, including interferon (9,10).
REFERENCES
1. Evereklioglu, C. Current concepts in the etiology and treatment of Behcet disease. Surv Ophthalmol 50, 297-350, doi:10.1016/j.survophthal.2005.04.009 (2005).
2. Taylor, S. R. et al. Behçet Disease: Visual Prognosis and Factors Influencing the Development of Visual Loss. Am J Ophthalmol, doi:10.1016/j.ajo.2011.05.032 (2011).
3. Tugal-Tutkun, I., Onal, S., Altan-Yaycioglu, R., Huseyin Altunbas, H. & Urgancioglu, M. Uveitis in Behcet disease: an analysis of 880 patients. Am J Ophthalmol 138, 373-380, doi:10.1016/j.ajo.2004.03.022 (2004).
4. Benezra, D. & Cohen, E. Treatment and visual prognosis in Behcet's disease. Br J Ophthalmol 70, 589-592 (1986).

5. Yazici, H. & Barnes, C. G. Practical treatment recommendations for pharmacotherapy of Behcet's syndrome. Drugs 42, 796-804 (1991).
6. Boyd, S. R., Young, S. & Lightman, S. Immunopathology of the noninfectious posterior and intermediate uveitides. Surv Ophthalmol 46, 209-233, doi:S0039625701002752 [pii] (2001).
7. Nussenblatt, R. B. Uveitis in Behcet's disease. Int Rev Immunol 14, 67-79, doi:10.3109/08830189709116845 (1997).
8. Yazici, H. et al. A controlled trial of azathioprine in Behcet's syndrome. N Engl J Med 322, 281-285, doi:10.1056/NEJM199002013220501 (1990).
9. Deuter, C. M., Kotter, I., Gunaydin, I., Zierhut, M. & Stubiger, N. [Ocular involvement in Behcet's disease: first 5-year-results for visual development after treatment with interferon alfa-2a]. Ophthalmologe 101, 129-134, doi:10.1007/s00347-003-0927-7 (2004).
10. Tabbara, K. F. & Al-Hemidan, A. I. Infliximab effects compared to conventional therapy in the management of retinal vasculitis in Behcet disease. Am J Ophthalmol 146, 845-850 e841, doi:10.1016/j.ajo.2008.09.010 (2008).

58. Use of Interferon-alpha in Behçet´s Disease

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Since the mid-1980s, numerous case series and open studies reported about the favorable effects of interferon (IFN) alpha in the treatment of ocular involvement due to Behçet´s disease (BD). IFN alpha demonstrated very effective in the management of acute episodes of BD uveitis. More than 90% of patients responded to IFN alpha and got in remission, even if previous conventional immunosuppression had failed. Additionally, the reperfusion of occluded retinal vessels and the regression of retinal neovascularization could be observed under IFN alpha treatment. Recent studies were able to show that IFN alpha allows a substantial proportion of patients with BD uveitis to stay in remission, even after complete discontinuation of the drug. This led to a significant improvement of visual prognosis compared with conventional immunosuppressives like cyclosporine or azathioprine. Side effects are common with IFN alpha treatment. However, adequate handling of patients can help to minimize cases of intolerance and premature withdrawal of IFN alpha therapy. Due to its favorable effects, IFN alpha has been included in the EULAR recommendations for the treatment of BD equal to TNF-blocking agents.

59. Unmet Medical Needs in Behçet's Disease

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Behçet's disease (BD) is one of the leading causes of uveitis; and despite recent progresses on identification of genetic tendencies and possible triggers of inflammation, its pathogenic mechanisms are not clarified yet. Therefore, the management of BD is empiric, and there is no treatment aiming at the disease-specific pathways. Only limited number of randomized controlled trials was carried out in BD, and a beneficial effect was confirmed for a few drugs in the treatment of some of the disease manifestations.
Running a clinical trial has many obstacles in patients with BD. First, BD is a multi-system disorder with subsets of patients presenting with different sets of manifestations. Almost all trials have been conducted on a selected BD manifestation, such as oral ulcers or uveitis. Disease diversity may reflect different pathogenic mechanisms, and an effective treatment for a certain BD manifestation may not work for others. Second, the recurrence rates are quite variable, and it may be difficult to assess the efficacy of a drug in short-term trials. For some manifestations such as venous thrombosis or arterial aneurysms or parenchymal neurologic involvement, the event rate is very low, and number of flares cannot be used as an outcome measure to show drug efficacy. Disease severity may also show variability with a more severe course in males and in young patients.
Outcome measures are the most critical components of clinical trials, and there is no BD-specific outcome measure validated so far. A collaborative work on outcome measures is urgently needed to facilitate running trials for unmet needs of BD patients. A systematic review and recommendations for management of BD by the EULAR document that there is no evidence-based treatment for patients with resistant eye disease, vascular disease, and neurologic and gastrointestinal involvements. Also, when we take the rarity of these manifestations into account, it would be very difficult to run a clinical trial for especially neurologic and vascular subgroups of BD in the near future.
Orphan status of BD may offer some advantages and opportunities, and newer trial designs and outcome measures, developed only for orphan diseases, can provide some solutions for these patients. Therefore, a close collaboration both with regulatory authorities and industry will be necessary to answer real-life unmet needs in BD.

60. Concept of Autoinflammation

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Autoinflammation response is a variant of the innate immune system. It can be induced by various antigens which can be summarized as danger signals. After activation of special protein complexes intracellularly, an autoinflammatory cell response is characterized by an overproduction of the proinflammatory interleukin 1 beta. Hereditary factors seem to play a major, but not exclusive role.
The presentation will describe autoinflammation in uveitis. The role for hereditary disorders like the CAPS-syndromes, but also therapeutic ways against autoinflammatory syndromes, blocking Il-1 beta, will be presented.

61. Understanding the NLRs and Uveitis

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There is a most pressing need to define key mechanisms of uveitis, or intraocular inflammation, because it is a leading cause of blindness worldwide. Despite its prevalence, uveitis remains an enigmatic group of diseases that are often inadequately treated. An emerging hypothesis proposes that uveitis arises from complex genetic and environmental interactions, which would presumably be initiated by innate immunity. The innate immune system serves as a first line of defense against invading microbes. This rapid process is facilitated by pattern recognition receptors (PRRs) that have evolved to respond to microbial structures. Toll-like receptors (TLRs) and NOD-like receptors (NLRs) constitute two well-described PRR families. Investigation of responsiveness of PRRs within the eye may be important for our understanding of uveitis. Whilst TLRs have been an active area of research, very little work has focused on the extent to which NLRs might influence ocular inflammatory responses leading to uveitis. The NLR member, NOD2 (NLRC2 or CARD15) has been of particular interest to eye researchers because mutations in NOD2 are the genetic cause of Blau syndrome, an inherited disease that presents as a triad of granulomatous uveitis, arthritis, and dermatitis. Thus, mutation of this gene provides important insight into the genetics involved in the pathogenesis of organ-specific inflammation such as the eye. Despite the unequivocal connection between NOD2 and uveitis in humans, we know very little of its biological functions within the eye. Our prior work focused on innate immune properties of NOD2 in ocular inflammation and its related pathways in promotion of uveitis. In our endeavor to understand how NOD2 may participate in chronic T cell-mediated uveitis we explored its contribution in murine experimental autoimmune uveoretinitis (EAU), which was induced by

immunization with the retinal protein interphotoreceptor retinoid binding protein (IRBP). Our recent observations support a role for NOD2 in mitigation of EAU, such that gene-deletion of Nod2 in mice markedly exacerbates uveitis severity, and results in striking pathological features such as granuloma formation. The deleterious effects of NOD2 deficiency coincided with augmented IRBP-specific T cell production of IFNγ and diminished IL-17A production. These initial observations link NOD2 with orchestration of autoimmune T cells responses of the eye and suggest that a NOD2-dependent pathway of protection may exist. That NOD2 may either promote or temper inflammation highlights the complexity surrounding NOD2 and how it may lead to uveitis.

62. Behçet's Disease: Autoinflammatory Features

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Behçet's disease, a multifactorial systemic inflammatory disorder, is strongly associated with a Class I MHC antigen, HLA-B*51. Mechanism of action(s) of HLA-B*51 in Behçet's disease pathogenesis has not been clarified yet, but available data do not support an HLA-B*51-restricted CD8+ cytotoxic T cell mediated autoimmune reaction in the development of disease manifestations. On the other hand, inflammatory characteristics of Behçet's disease indicate an increased innate immune system activation, which results in recurrent self-limited exacerbations with a potential for tissue damage. Interestingly, most of the characteristic manifestations of Behçet's disease, such as oral aphthous ulcers, genital ulcers, skin lesions, uveitis and arthritis overlap with those of hereditary autoinflammatory disorders. The definition of autoinflammatory conditions has been evolved in the last decade, and several complex diseases with features of seemingly unprovoked episodes of inflammation and a relative dominance of innate immune system have been considered as part of this enlarging spectrum of conditions. Clinical and laboratory features of Behçet's disease supports its possible classification as an autoinflammatory disorder, and this approach may provide further insights for identification of new treatment targets for Behçet's disease, despite its very complex pathogenesis with HLA-B*51-related innate and adaptive immune system involvements and their interactions with the environment.

63. Ankylosing spondylitis: Autoimmune or Autoinflammatory?

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Ankylosing spondylitis (AS) is the most common systemic disease associated with uveitis in Europe and North America. Arguments that suggest that AS could be an autoimmune disease include the induction of arthritis, spondylitis, and uveitis in mice after immunization with aggrecan and the ability to transfer a rat model of AS with CD4 lymphocytes. Arguments that suggest that AS is a disease of the innate immune system and therefore autoinflammatory include the absence of autoantibodies in patients with AS; the clinical success derived by inhibiting tumor necrosis factor (a cytokine mostly associated with innate immunity); the role of bacteria in triggering reactive arthritis which overlaps with AS clinically; abnormalities in dendritic cell function in patients and rats with AS-like disease; and the contribution of genes such as CARD9 which is involved in pattern recognition receptor signaling. Arguably, AS is best conceptualized as a disease of both innate and adaptive immunity.

64. Update: Nomenclature, Diagnostic Criteria and Guidelines

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Diagnostic criteria have been developed for Vogt-Koyanagi-Harada disease, birdshot chorioretinopathy, tubulointerstitial nephritis and uveitis (TIN) syndrome and ocular inflammation secondary to sarcoidosis. There have also been systemic diagnostic criteria that include ocular disease such as Behcets disease. The SUN group has been developing a standardized nomenclature for uveitis. These efforts have generally been done by consensus of specialists.
There has been some but so far relatively limited validation of these criteria. Further all diagnostic criteria include a clause where often unspecified diseases must be excluded, for example infections in sarcoidosis, systemic inflammation such as sarcoidosis or systemic lupus erythematosis or infection in TINU and BCR, lymphoma in BCR. Therefore these are not strict algorithms and do not relieve the researcher or clinician of the burden of cognitive effort.
The value of these efforts has been to:
1. Standardize a vocabulary for research and for clinicians to communicate with each other
2. Guide thinking for heuristic purposes in teaching and in practice.

65. Juvenile Idiopathic Arthritis Associated Uveitis: can we Formulate Management Guidelines?

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Juvenile idiopathic arthritis associated chronic anterior uveitis is a chronic disease, typically lasting years to decades. Because the uveitis has an insidious onset and is asymptomatic, screening guidelines have been developed, which factor in the type of arthritis, ANA status, age of onset, and duration of arthritis. Treatment often is begun with topical corticosteroids, and data suggest that the incidence of cataracts is low with chronic doses 3X/day or less. Poorly responsive uveitis and uveitis which reactivates at doses of topical corticosteroids > 3X/day usually is treated with systemic methotrexate. If a second immunosuppressive agent is needed, cyclosporine or an anti-TNF agent is used. Available data suggest that remission after immunosuppressive drug therapy is most likely with 3+ years of immunosuppression and 2+ years of inactive disease.

66. The Continuing Problem: Grading Vitreous Haze

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Purpose: Discuss vitreous haze as an outcome marker for clinical trials in uveitis.
Methods: Two methods of grading vitreous haze were used to evaluate the one-year results of the Multicenter Uveitis Steroid Treatment Trial. Clinical grading according to the Nussenblatt scale was performed prospectively during the trial. Photographic grading was performed retrospectively using MUST fundus photographs from baseline and one-year visits. Haze results were correlated with prospectively collected data on vision, degree of inflammation, and quality of life.
Results: There were 95 RE and 99 LE with haze grading as well as baseline and 1-year acuity. Patients with any baseline severity of vitreous haze were included and more than 80% of patients had less than 2+ clinical vitreous haze at baseline. Two-step improvement in vitreous haze occurred in 33 eyes (17%) photographically and 26 (13%) clinically, (kappa = .338). Two-step improvement photographically correlated with + 12.7 (±13.5) ETDRS letters vs. +10.3 (±10.3) letters clinically (p=.17, not significant); however, raw changes in photographic grades correlated better than clinical grades with vision improvement (p=.026).

Conclusion: Change in vitreous haze assessed using a photographic grading scale correlates with the clinically meaningful outcome of vision. More eyes with a two-step improvement in haze were captured with the photographic grading scale than with the clinical scale. The current requirement for ≥ 2+ vitreous haze to enter Phase III interventional clinical trials in order to permit detection of two-step change suggests that alternatives to vitreous haze as an outcome measure should be sought.

67. Novel Scoring System of Ocular Lesions in Behçet's Disease

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Recurrent intraocular inflammation in Behçet's disease is intermittent and episodic. This is why it is called "inflammatory ocular attack". The severity is different in each attack, but we have had no good scoring scale of it. We, Ocular Behçet's Disease Research Group of Japan consisting of 8 major uveitis referral centers in Japan, recently established a novel scoring system, Behçet's disease ocular attack score 24 (BOS24). This system consists of a total of 24 points summing up 6 parameters of ocular inflammatory symptoms, including 1) anterior chamber cells, 2) vitreous opacities, 3) peripheral fundus lesions, 4) posterior pole lesions, 5) subfoveal lesions and 6) optic disc lesions.
Besides BOS24 indicating the severity of each ocular attack, we can also estimate the inflammatory activity during a given period of time by adding up BOS24 of every attack in certain period, such as BOS24-6M that is a summation of BOS24 in 6 months.
We examined to evaluate the efficacy of infliximab therapy in Behçet's disease using this BOS24 scoring system. The BOS24-6M before and after the infliximab therapy was 18.8±17.5 and 2.6±6.7 respectively. The average BOS24 score per attack before and after the infliximab therapy was 5.8±3.7 and 4.8±3.4 respectively.
These results indicate that application of new BOS24 system is quite useful, and infliximab therapy was shown to reduce not only frequencies of ocular attacks but also severity of each ocular attack in Behçet's disease.

68. Immunosuppressive Therapy in Uveitis: When and How

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Purpose: To describe when and how to use immunosuppressive therapy for patients with uveitis.
Methods: Tutorial.
Results: Expert panel guidelines suggest that the indications for immunosuppression for non-infectious uveitis include: 1) need for corticosteroid-sparing; 2) failure of corticosteroid therapy to control inflammation; and 3) diagnosis with a condition for which immunosuppression is generally necessary to obtain a good outcome. Because two of the three classes of indications involve failure of a tolerable corticosteroid regime to adequately control uveitis, a classic approach to uveitis therapy has been to use a "stepladder" approach, beginning with topical therapy, advancing to systemic or injected corticosteroids when necessary, and then immunosuppressive drugs when the previous approaches are inadequate. This paradigm, while not unreasonable, gives rise to the assumption that immunosuppressive drugs are both more effective and more risky than preceding approaches. However, it is now well-established that the most commonly used immunosuppressive approaches are in fact safer and less effective than corticosteroids, the latter especially in regard to having a long time-to-therapeutic effect. These realizations properly drive the clinician toward earlier use of immunosuppressive therapies, so as to gain their benefits as soon as possible while avoiding risks of long-term, high-dose corticosteroid therapies. For those immunosuppressive therapies likely to be safe in a patient's context, clinicians may be wise to start such therapy as soon as it becomes clear that the patient is reasonably likely to require immunosuppression, to avoid long durations of potentially toxic corticosteroid therapy while awaiting immunosuppressive therapy effects when immunosuppression is delayed until corticosteroid regimens are proven to have failed. In essence, this would rephrase the third indication for immunosuppressive therapy to be "a clinical scenario in which immunosuppression is reasonably likely to be needed to obtain a good outcome." Clinicians may also benefit from using mycophenolate preferentially, when feasible, given evidence suggesting that its time-to-effect is shorter than methotrexate. Regarding specific clinical scenarios, accumulating evidence suggests that clinicians should use Tumor Necrosis Factor (TNF) Inhibitors as second line therapy for juvenile idiopathic arthritis-associated uveitis, and that TNF Inhibitors or appropriate interferons likely should be used as soon as possible for Behçet Disease involving or likely to eventually involve the posterior segment.
Conclusions: In general, available data suggest a rationale for early use of immunosuppressive agents, as soon as it becomes reasonably likely such therapy eventually will be needed—as long as there is not some specific contraindication to such therapy. Emerging data suggest there will be a trend over time toward earlier use of "higher level" agents such as "biologics" for a gradually increasing pool of specific indications.

69. Tumor Necrosis Factor-a Blocking Agents in Uveitis

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The main purpose of this presentation is to elucidate the safety and efficacy of Tumor Necrosis Factor- a (TNF-a) blockers in ocular inflammatory disease. TNF-a plays a major role in the propagation of the inflammatory process in patients with uveitis. The level of TNF-a in certain patients with uveitis is found to be elevated in the serum and in the intraocular fluids. Recent recombinant protein products which fall under the term biologics consist of monoclonal antibodies and were introduced in the past few years as off-label treatment of ocular inflammatory disease. They have been used to modify or modulate the inflammatory process in patients with immune-mediated diseases such as rheumatoid arthritis, psoriasis, Crohn's disease, and juvenile idiopathic arthritis.
TNF-a blockers have been shown to be safe and effective therapy for vision-threatening non-infectious inflammatory ocular disorders. TNF-a blockers have been demonstrated to increase the number of regulatory T cells and may induce restoration of the immunologic homeostatis.
Etanercept has been shown to be less effective than the rest of the TNF-a blockers. The most extensive experience has been with the use of TNF-a blockers in patients with ocular Behcet's disease.
Infliximab has been used widely for the treatment of Behcet's disease. The main side effects of therapy include: loss of efficacy with time, reactivation of tuberculosis or hepatitis B, lymphoma, vasculitis, demyelinating disease, and aplastic anemia
Recent studies have shown that intravitreal injection of infliximab is safe and effective in patients with non-infectious immune-mediated uveitis.
Our therapeutic strategy for immune-mediated uveitis is evolving and new therapeutic modalities are emerging. Auto-immune insults initiate a complex chain of events at a cellular and molecular level leading to the destruction of visually important ocular structures. The newly-designed TNF-a blockers aimed at inhibiting TNF-a and modulating the insults preventing loss of vision.

70. Intravitreal Immunosuppressives

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SIROLIMUS

Sirolimus, also known as rapamycin, was isolated in the 1970's from Streptomyces hygroscopicus in soil samples from Easter Island. Sirolimus is an immunosuppressant that works through inhibition of the mammalian target of rapamycin (mTOR) by binding to the immunophilin FK protein 12 (FKBP-12), and thus interrupts the inflammatory cascade that leads to T-cell activation and proliferation. It also suppresses T-cell proliferation through the inhibition of IL-2, IL-4, and IL-15 employing Ca2+-dependent or Ca2+-independent pathways.

Owing to its unique mechanism of action and favorable side-effects profile, sirolimus has been increasingly proposed as an alternative immunosuppressant in organ transplantation, although its side effects with systemic administration are also recognized. Sirolimus is the active ingredient in two FDA-approved products, specifically Rapamune®, an immunosuppressive agent used in renal transplant patients, and CYPHER® Sirolimus-eluting Coronary Stent approved for improving coronary luminal diameter in patients with symptomatic ischemic disease. In order to allow higher target tissue levels and reduce systemic exposure, a proprietary local formulation of sirolimus was developed that, based on preclinical animal toxicity and pharmacokinetic studies, is amenable to both intraocular [Intravitreal (IVT)] and extraocular [Subconjunctival (SCJ)] injection. When administered by SCJ injection, a drug depot is formed that subsequently dissolves slowly and diffuses across sclera based on the physicochemical properties of sirolimus. Blood levels of sirolimus after SCJ administration peaks on day 0 to dose-dependent levels: 3.62 ng/ml for a dose of 440 μg and 9.32 ng/ml for a dose of 1320 μg. By day 7, sirolimus blood levels decrease to less than 3 ng/ml and subsequently, become minimally quantifiable, if at all, by day 14 and beyond. Following intravitreal administration, the formulation forms a non-dispersive depot in the vitreous and localizes in the inferior portion of the vitreous humor. The depot subsequently dissolves slowly and sirolimus diffuses through the vitreous humor to other ocular layers with the highest concentration in vitreous followed by retina and choroid and lowest concentration in sclera and blood with detectable ocular tissue levels extending for 60 days after single intravitreal administration. After intravitreal administration of 352 μg, sirolimus blood levels peaks to <2ng/mL by the second day and decreases subsequently over the following days with half-life of 8-9 days. It is also important to recognize that the lowest therapeutic levels of sirolimus in organ transplant and cardiac patients is 5-15ng/ml.

Based on the current knowledge of sirolimus and its potential anti-inflammatory effect, we have set forth to evaluate the potential role of locally administered sirolimus in non-infectious uveitis. The interim results of the SAVE (Sirolimus as a Therapeutic Approach for Non-Infectious UVEitis) studies will be discussed.

OTHER AGENTS

Several other immunomodulatory therapeutic agents, including cyclosporin and methotrexate, are being developed as locally delivered, sustained-release, pharmacologic agents. Details will be discussed if public information is available.

References

1.Gupta R, Murray PI. Chronic non-infectious uveitis in the elderly: Epidemiology, pathophysiology and management. Drugs and Aging 2006;23:535-58.
2.Napoli KL, Taylor PJ. From beach to bedside: history of the development of sirolimus. Ther Drug Monit 2001;23:559-86.
3.Sehgal SN. Rapamune (RAPA, rapamycin, sirolimus): mechanism of action immunosuppressive effect results from blockade of signal transduction and inhibition of cell cycle progression. Clin Biochem 1998;31:335-40.
4.Kahan BD. Sirolimus: a comprehensive review. Expert Opin Pharmacother 2001;2:1903-17.
5.Dugel PU, Blumenkranz MS, Haller JA, et al. A randomized, dose-escalation study of subconjunctival and intravitreal injections of sirolimus in patients with diabetic macular edema. Ophthalmology 2012;119:124-31.
6.Mudumba S, Takanaga H, Bezwada P, et al. Intravitreal Administration of Ocular Formulation of Sirolimus in Rabbits and Humans. Invest Ophthalmol Vis Sci 2012;53:3198-.
7.Nussenblatt RB, Palestine AG, Chan CC, Roberge F. Standardization of vitreal inflammatory activity in intermediate and posterior uveitis. Ophthalmology 1985;92:467-71.

71. Oral Tolerance Revisited

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Oral tolerance is defined as the lack of a systemic immune response following parenteral immunization with an Ag to an organism that had been previously exposed to (or been immunized with) the same Ag through the GI tract. (Lider 1989;Tsuji 2008) Research would suggest that ocular inflammatory disease (not only uveitis but AMD) is a systemic immunological disease with local expression. Systemic treatment, therefore, is warranted to down-regulate the inflammatory cycle. The gastrointestinal tract provides a large mucosal surface favorable for antigen instillation. A mechanism has evolved to distinguish between infective and inflammatory provoking pathogens/antigens and tolerable nutritional proteins reaching the peripheral immune system via the blood stream from the gut. Oral administration of antigens therefore can result in systemic tolerance. The oral administration of the retinal S-Antigen demonstrated that uveitis patients could be tapered off their usual immunosuppressive treatment while ingesting S-Antigen (Nussenblatt, 1997). Optiquel, a B27 peptide, has also down-regulated the immune response in uveitis patients (Thurau and Wildner, 2003). A current study is further investigating oral tolerance induction with Optiquel in uveitis patients at the NEI. A discussion of these studies and possible other studies will be presented.

72. Treatment of Intraocular Lymphoma

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Centre of Ophthalmology

Intraocular lymphoma is the ocular disorder with the highest mortality rate, because it is very often associated with lymphoma of the central nerve system (CNS). Besides the fact that diagnosis often takes years, there are no studies regarding the most effective treatment when no CNS involvement is detectable.

This presentation will describe the different ways of treatment, focusing on systemic treatment which also would affect diagnosed or imminent CNS involvement. In case of CNS involvement intravenous high dose Methotrexate (MTX) seems to be the most effective drug. Because 80% of primary intraocular lymphoma develop CNS disease this seems to be the best concept. The role of other drugs, but especially also of intravitreal application of MTX and Rituximab will be analyzed.

73. Pharmacotherapy of Uveitis in Emergent Countries

Amod Gupta and Reema Bansal
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To assess the availability and accessibility of commonly used drugs for treatment of infectious and non-infectious uveitis in emergent countries, we polled practicing uveitis experts in Asia, Middle-East, South America, and Australia. The questionnaire sought the practice pattern in common uveitic entities and the factors influencing their use viz: standard of care, easy availability, cost-effectiveness,

fewer side-effects, etc. as well as factors restricting their use (regulatory authority, non-availability of drug, cost, adverse effects, non-familiarity with the drug, non-standard of care therapy, etc.). Of the 31 experts contacted, 21 responded including India (6), Brazil (2), Turkey (2), Argentina (2), Hong Kong (1), Bangkok (1), Singapore (1), Indonesia (1), Tunisia (1), Taiwan (1), Costa Rica (1), Middle-East (1), and Australia (1).
In Toxoplasmic retinochoroiditis, pyramethamine (80.9%) and trimethoprim (76.2%) were the most favored because of easy availability besides being standard of care. Intravitreal Clindamycin was used by only 8 (38.1%) mainly because of few side-effects, easy availability and cost-effectiveness. Most of the respondents did not believe that it was the standard of care. In viral uveitis, all respondents used acyclovir (100%) and valciclovir (95.2%) being standard of care and easily available. In Fungal endogenous endophthalmitis, amphotericin B was used by all (standard of care and easy availability). Voriconazole was less preferred (76.2%) due to cost. In syphilitic uveitis, intravenous or intramuscular penicillin (71.4%) was preferred to ceftriaxone. In presumed tubercular uveitis, all used antitubercular therapy comprising of isoniazid, rifampicin, ethambutol, and pyrazinamide (standard of care treatment and easy availability). In Lyme's disease, doxycycline (61.9%) was the standard of care and easily available. Roxithromycin and cotrimoxazole were restricted mainly because of non-standard of care.
In Behcet's uveitis, cyclosporine (95.2%) and azathioprine (90.5%) were used being standard of care and easily available. Mycophenolate mofetil was restricted by most due to cost. In VKH disease, azathioprine (85.7%) and cyclosporine (76.2%) were used for immunosuppression being easily available and standard of care. Mycophenolate mofetil was not preferred by many (81.3%) mainly due to its cost. In sympathetic ophthalmia, azathioprine (90.5%) and cyclosporine (71.4%) were used being easily available and standard of care. Those who found the use of cyclosporine restricted (66.7%) attributed mainly to its cost. In JIA-associated uveitis, methotrexate (90.5%) and azathioprine (76.2%) were used being standard of care and easily available. Cyclophosphamide and chlorambucil (80.9% each) were restricted mainly due to adverse effects and non-standard of care. In JIA-associated uveitis refractory to immunosuppressive therapy, infliximab was used by some (52.4%), followed by adalimumab (28.6%). Most respondents found the use of infliximab (80.9%), adalimumab (85.7%) and etanercept (90.5%) restricted, mainly due to cost, non-availability and non-familiarity with drug. In acute anterior uveitis associated with spondyloarthropathies, most preferred methotrexate (85.7%), followed by azathioprine (61.9%) and salazopyrine (42.8%). Salazopyrine was restricted (42.8%) mainly because of non-availability and non-familiarity with the drug. In autoimmune uveitis refractory to conventional therapy, the use of biologic agents included infliximab (57.1%), adalimumab (33.3%), interferon-a (28.6%) and etanercept (19%). The use of biologic agents was restricted by most due to cost, non-availability and non-familiarity with drug. In HIV-infected patients with uveitis, zidovudine, lamivudine and efavirenz were preferred being easily available and standard of care. Systemic drugs in uveitis were prescribed mostly by the ophthalmologists themselves (95.2%), followed by internists (47.6%) and infectious disease expert (47.6%).

74. Pharmacogenetics and Ocular Inflammation
H. Nida Sen, MD, Robert Nussenblatt, MD, Chi Chao Chan, MD, Baoying Liu, PhD
National Eye Institute., National Institutes of Health, Bethesda, MD, USA

Pharmacogenetics is the study of the influence of genetic variation and their effects on drug efficacy or toxicity and is believed to be responsible for individual differences in response to therapy or adverse events. Genetic variations that influence drug responses include single nucleotide polymorphisms (SNPs), deletions, insertions, duplications, splice variants, copy number polymorphisms, or genetic mutations in genes encoding drug metabolizing enzymes, drug transporters, and drug targets. Historically pharmacogenetic studies focused on single gene-drug interactions which were inherited as high-penetrance monogenic trait such as Glucose-6-phosphate dehydrogenase (G6PD) deficiency. Today, it is believed that most pharmacogenetic disorders are oligogenic or multifactorial. To date, experience in the use of pharmacogenetics in the management of ocular inflammatory disease has been very limited. There are no pharmacogenetic studies in uveitis and very few in AMD. However, uveitis therapy shares strong similarities with other autoimmune diseases in which polymorphisms have been associated with treatment reponses to particular drugs such as glucocorticoids, methotrexate, azathioprine or anti-TNF agents. Similarly in AMD patients various polymorphisms in CFH, HTRA1 and VEGF have been associated with favorable treatment response to antioxidant or anti-VEGF treatment. Findings from these pharmacogenetic studies are relatively recent and have not yet translated into clinical practice. However, the application of pharmacogenomics in a clinical setting can become a reality in the future as our understanding of the disease process improves and newer technologies facilitate genetic screening, ultimately making personalized therapy possible.

75. Glucocorticosteroids in uveitis
Martin VanHagen
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Rotterdam, The Netherlands

Glucocorticoids (GC) play a key role in mediating a balanced inflammatory response. GC exert their effects via interaction with the glucocorticoid receptor (GR). After binding of its ligand, the GR-GC complex migrates to nucleus to induce ("transactivation") or to suppress ("transrepression") expression of target genes. The ultimate biological effects of GC depend on many factors, like pharmacology of a specific GC analogue and the glucocorticoid sensitivity of an individual. Apart from the therapeutic action of GC, severe side-effects are well-known in daily clinical practice. In this presentation the management and monitoring of GC therapy will be discussed from an internists point of view.

76. Avoiding Toxicity from Systemic Corticosteroids
Denis Wakefield
School of Medical Sciences
UNSW, Sydney, Australia

Systemic corticosteroids are the most potent and rapidly acting therapy for autoimmune and inflammatory diseases. They remain the mainstay of first-line therapy for severe ocular inflammatory diseases. Corticosteroids have the highest morbidity and mortality of any drug used in modern medicine. It is imperative that physicians adopt strategies to minimize the potential side effects of corticosteroids. Fortunately most of the side effects from steroid therapy are predictable and to a certain extent preventable. Therapeutic principals that can be adopted to help minimize the side effects of corticosteroids include: use the lowest effective dose for the shortest period of time, always consider alternative topical and local therapy, use steroid sparing drugs early in the course of treatment, and using a corticosteroid preparations with less systemic side effects. Prevention strategies include dietary intervention, encouraging exercise, careful monitoring of blood pressure, blood sugar levels and lipids as well as assessing baseline bone density and introducing therapy to minimize bone loss will help to reduce corticosteroid related toxicity.

77. Sustained Release Intraocular Corticosteroids for Uveitis
Sue Lightman
UCL/Instiute of Ophthalmology, Moorfields Eye Hospital and the Royal Surrey County Hospital, Guildford, UK

The longer acting steroids that can be used in the eye have major advantages over triamcinolone which has been the main intravitreal steroid available for use in uveitis, usually used for treating refractory macular edema. Its success showed that most refractory CME in uveitis is a drug delivery/concentration issue but its short duration of effect of up to 3 months was a major limiting factor. This talk will cover both Ozurdex and Retisert and the recent available data with both and also the Illuvian implant which has not yet been used in uveitics.

78. Corticosteroid Resistance in Clinical Practice

Andrew D Dick, Richard Lee, Robert B Nussenblatt, Lauren Schewitz-Bowers, Dave Copland, Lai Wei, Igal Gery
University of Bristol
Laboratory of Immunology, NEI

Steroid refractory disease is seen in a variety of conditions including uveitis. A major issue remains; how do we predict which patients remain relatively unresponsive to steroid therapy and why?
A conundrum to resolve is why this occurs and from which how may we then predict a 'prognostic' biomarker to then offer targeted treatments alone or that would overcome the steroid refractive responses we observe clinically.
We have shown that a subset of CD4 T cells remain refractory to treatment with glucocorticoids and from which we can observe with good prediction and sensitivity those patients that are clinically steroid refractory. Moreover, our understanding of the cellular control of such responses will be discussed alongside therapeutic options that may in the future increase patients responsiveness to steroid treatment.

79. Use of Non-steroidal Anti-Inflammatory Drugs in Scleritis and Uveitis

Piergiorgio Neri, BMedSc, MD, PhD
Ilir Arapi, MD
Vittorio Pirani, MD
Vittorio Capuano, MD
Cesare Mariotti, MD
Alfonso Giovannini, MD
The Eye Clinic, Polytechnic University of Marche, Ancona, Italy

Nonsteroidal anti-inflammatory agents (NSAIDs) are drugs characterized by 3 peculiarities: they provide analgesic, antipyretic, as well as anti-inflammatory effects. The term "nonsteroidal" distinguishes these drugs from steroidal ones, which have a similar anti-inflammatory action. The majority of NSAIDs acts as nonselective inhibitors of the enzyme cyclooxygenase (COX), by blocking both the cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2) enzymes. Biologically, COX catalyzes the pathway of prostaglandins and thromboxane from arachidonic acid, which derives from the cellular phospholipid bilayer by phospholipase A2. Prostaglandins represent pivotal mediators in the inflammatory process.
Regarding the way of administration, NSAIDs can be given both as eye drops and oral medications. Beside the known benefits in using NSAIDs, there are some issues regarding the tolerability and the long-term side effects secondary to their chronic use (ie: renal impairment).
The therapeutic use of topical NSAIDs is prevalently dedicated to: prevention of intraoperative miosis, control of post-surgical inflammation, prophylaxis and treatment of cystoid macular oedema (CMO), treatment of scleral inflammations, therapy of allergies and adjuvant treatment of uveitis. On the other hand, topical NSAIDs present a slight acidity in order to penetrate effectively in the anterior chamber. This chemical characteristic can lead to ocular surface irritation. Recently, pharmaceutical research has synthesized new molecules, which can pass through the cornea at physiological pH, consequently reducing the drug-induced irritation.
As regards of systemic NSAIDs, they represent the agent of choice for the treatment of idiopathic scleritis, while the therapy of scleritis associated with collagen vascular or connective tissue disease requires often more potent drugs in addition to NSAIDs.

80. UBM and Ocular Hypotony

Jean Deschênes, MD, FRCSC
McGill University, Canada

Ocular hypotony is a severe complication of chronic intraocular inflammation. A low intraocular pressure (IOP) of 5 mm Hg or less can induce corneal decompensation, cataract, maculopathy, and discomfort. Phthisis bulbi is often seen in eye with sustained IOP below 4 mm Hg.
Medical treatment is often sufficient in early inflammatory hypotony especially if there is a prominent inflammatory response. Some increase in IOP should be seen in 2–3 months in patient with minimal damage to the ciliary body and in the presence of ciliary processes.
Ultrasound biomicroscopy (UBM) can assess the anatomical changes associated with ocular hypotony like ciliochoroidal detachment; cyclodialysis cleft tractions or atrophy of the ciliary body, and decreased ciliary processes.
In cases of hypotonous uveitis persisting despite control of the inflammation the treatment depends on the anatomic changes of the ciliary body. Surgery could be done for a detached ciliary body or to remove a cyclitic membrane. However, when the hypotony is associated with decreased or absent ciliary processes the prognosis is very poor. In selected cases some vision and prevention of phthisis bulbi could be achieved with periodic pars-plana injections of viscoelastic.

81. OCT: Interpretative Pearls and Pitfalls

Mirjam van Velthoven
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Optical Coherence Tomography (OCT) has changed the possibilities in ophthalmic diagnostics enormously. OCT technology has evolved rapidly in the last decade, especially with the introduction of spectral domain OCT, making fast scanning of larger areas and three-dimensional viewing of the macular and optic nerve areas a real possibility. Especially in uveitis patients diagnostic imaging can be challenging. Poor visual acuity, disturbing media opacities or vitreous haze can still cause difficulties with regards to interpretation and reliability of OCT imaging. Technical and clinical difficulties as well as interpretative pearls in OCT imaging will be discussed.

82. Uveitic Macular Edema: OCT Classification

Nikos N. Markomichelakis
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Macular edema (ME) is the leading cause of decreased vision in patients with uveitis. Fluid from choroidal and retinal vessels leaks and accumulates in the central retina, resulting in the functional impairment of retinal cells, retinal vessels, retinal pigment epithelium and can lead to permanent visual loss.
ME may be detected by fundoscopy, but the method is subjective and highly depended on the observer's skill and experience. Patient cooperation, the degree of pupillary dilation and the amount of media opacity can influence the clinical exam and lead to a high false-negative diagnostic rate. Fluorescein angiography is also used to detect and confirm macular edema. However FA is invasive and certainly not without risk, Furthermore, the information that is provided is qualitative, and its interpretation is highly subjective. By contrast OCT is non-invasive, objective, quantitative, reproducibly method. Today there is strong evidence indicating that OCT is as effective at detecting macular edema as is FA, but is superior in demonstrating axial distribution of fluid.
Beyond the documentation, OCT contributes also to the classification of uveitic macular edema. Three patterns of inflammatory macular edema have been described: diffuse (DifME), cystoid macular edema (CME), and subretinal detachment (SRD). If these different patterns, represent different stages of ME is not clear. DifME may be caused by intracellular fluid accumulation in Müller cells and may be the first step in uveitic ME progression. CME may be caused by extracellular fluid accumulation in both inner and outer nuclear layers as well as in outer plexiform layer and may be focal or generalized. SRD develops and resolves late in the course of uveitic macular edema.
The pattern of OCT appears to have prognostic significance in regards to vision recovery. CME and SRD are associated with a good visual prognosis while DME is not.

ERM is another risk factor for poor visual prognosis. ERMs may be detected by fundoscopy, however this is not always possible. OCT increases significantly the detection sensitivity, and more importantly it can clarify the pathologic futures of ERM, such as the distortion of ILM architecture and the involvement of the foveal center, which are associated with poor visual acuity.

83. Multimodal Imaging in uveitis

Vishali Gupta, Reema Bansal, Amod Gupta
Post Graduate Institute of Medical Education and Research, Chandigarh, India.

Optical coherence tomography, fundus fluorescein angiography, indocyanine green angiography, infra-red and blue laser autofluorescence (FAF) are all important in detection, diagnosis and management of posterior uveitic entities. We studied Acute lesions of choroiditis in eight patients and followed up for 6 months. The acute lesions that were seen as yellowish active lesions on fundoscopy were diffusely hyperautofluorescent on fundus autofluorescent imaging and corresponded to hyperreflective areas on SD-OCT involving the retinal pigment epithelium (RPE), photoreceptor outer segment tips (POST), inner segment-outer segment (IS/OS) junction, external limiting membrane (ELM), and outer nuclear layer (ONL) with a minimal distortion of inner retinal layers. There was no backscattering from inner choroid. During healing, lesions became discrete with a hypoautofluorescent border and predominant hyperautofluorescence centrally.
The hyperreflective fuzzy areas on SD-OCT scans disappeared, and irregular, knobbly elevations of outer retinal layers appeared. The RPE, POST, IS/OS junction, and ELM could not be distinguished. The ONL appeared normal. The choroid showed an increased reflectance. As the lesions healed further over the next 3-6 months, they became predominantly hypoautofluorescent with loss of RPE, POST, IS/OS junction, and ELM in SD-OCT scan. Thus, the SD-OCT provided an insight into the ultrastructural changes in the outer retina during the course of acute SLC lesions. The changes on OCT correlated with abnormal FAF findings.

84. What OCT can offer in the future

Marc DeSmet
MD de Smet, MIOS - retina and inflammation, Lausanne, Switzerland

Optical coherence tomography is arguably one of the most important developments in diagnostic imaging of the last 15 years. It has greatly extended our understanding of retinal pathophysiology and simplified the follow-up of patients under therapy. A profusion of different devices have appeared, each proposing slightly different imaging features. At present there are no imaging standards in what is a fast evolving industry. The availability of cheap sweep sources, 1000nm range diodes will enhance both surface and axial resolution of OCT images in the coming years. Spectral interpretation of emitted signals will allow optophysiology - the evaluation of dynamic intra-retinal processes.
While these prospects are tantalizing, three challenges present to us now: 1- establishing a common set of definitions and understanding of existing structures, particularly in the outer retina, across platforms and pathologic states; 2- determining and establishing standard parameters which all manufacturers should accept thereby facilitating clinical research and case studies; 3- orient future research and development in imaging to meet our clinical needs rather than to produce technological wonders.

POSTERS

AND POSTERS WITH
ORAL PRESENTATIONS

P1. Akritidou Fani , Karafiloglou M. , Mpakas D. , Laxanas A. , Mposvelis D. , Antoniou V. , Roumpou E. , Fountoukidis D., Dimitriou Aik. , Karamanis D.
Ophthalmology Department, General Hospital of Kavala, Kavala
Cataract surgery in patients with Fuchs' heterochromic iridocyclitis

P2. Ozlem G Sahin
The World Eye Center, Ankara Turkey
Quadruple therapy for ocular toxoplasmosis

P3. Ozlem G Sahin
The World Eye Center, Ankara Turkey
Clinical Manifestations and Recurrence rates of Herpetic Keratitis, Scleritis, and Uveitis

P4. Lozano-López Virginia, Alemán-Valls Remedios, Rodríguez-Lozano Beatriz, Serrano-García Miguel Ángel
UVEITIS UNIT, Hospital Universitario de Canarias, Tenerife, Spain
Uveitis in Whipple's disease

***P5. Radha Annamalai,** V.Velayudham, N.Nagarathinam
Sri Ramachandra University
An analysis of the outcome of cataract surgery in lens induced uveitis with traumatic cataract

P6. Rupesh Agrawal, Petrina Tan, Owen K. Hee, Carol Y. Cheung, Tun Kuan Yeo, James Ng, Claire Han, Tock H. Lim, Tien Y. Wong, Stephen C. Teoh
1. National Healthcare Group Eye Institute, Tan Tock Seng Hospital, Singapore, Singapore;
2. Singapore Eye Research Institute, Singapore National Eye Centre, Singapore, Singapore;
3. Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore
Prospective Evaluation of Retinal Microvascular Parametric Changes in Patients with HIV

***P7. Samir S Shoughy,** Khalid F Tabbara
The Eye Center and The Eye Foundation for Research in Ophthalmology, Riyadh, Saudi Arabia
Systemic diseases associated with intermediate uveitis

P8. Samir S Shoughy, Khalid F. Tabbara
The Eye Center and the Eye Foundation for Research in Ophthalmology, Riyadh, Saudi Arabia
Correlation between aqueous protein level and clinical grading of flare and flaremetry

***P9. Rupesh Agrawal,** Jayant V. Iyer, John Connolly, Bijin Au, Tun Kuan Yeo, Stephen C. Teoh
1. National Healthcare Group Eye Institute, Tan Tock Seng Hospital, Singapore,
2. Singapore National Eye Centre, Singapore,
3. Immunology, Program in Translational Immunology, Singapore Immunology Network, A*Star, Singapore)
Proteomic Analysis of Aqueous Humor in Patients with Cytomegalovirus Retinitis

P10. Swapnil Parchand, Vishali Gupta, Amod Gupta, Aniruddha Aggarwal, M R Dogra, Ramandeep Singh,
Aman Sharma
Department of Ophthalmology, Advanced Eye Centre, Post Graduate Institute of Medical Education and Research, Chandigarh, India
'Dark spot' in Fibrinous Central Serous Chorioretinopathy masquerading Choroiditis

P11. Swapnil Parchand, Aniruddha Agarwal, Vishali Gupta, Amod Gupta, Aman Sharma
Department of Ophthalmology, Post Graduate Institute of Medical Education and Research (PGIMER), Sector 12, Chandigarh, India
Primary Intraocular Non Hodgkin's Lymphoma presenting as diffuse vasculitis

P12. George Moussa, **Philip I. Murray**
Academic Unit of Ophthalmology, School of Immunity and Infection, College of Medical and Dental Sciences, University of Birmingham, UK; Birmingham and Midland Eye Centre, Sandwell and West Birmingham Hospitals NHS Trust Birmingham, UK
Cross-sectional survey of treatment patterns in a tertiary referral uveitis clinic

P13. Radgonde Amer, Ran David
Department of Ophthalmology, Hadassah University Hospital, Jerusalem
Eculizumab-induced Resolution of Bilateral Serous Retinal Detachment in Atypical Hemolytic-Uremic Syndrome: A Case Report

P14. Al Kharousi Nadia, Upender K Wali
Department of Ophthalmology, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman
Infliximab as first line therapy in Behçets Uveitis

P15. Aslanis Stamatios, Skriapa-Manta Athanasia
Norrköping Eye Clinic, Sweden
Branch retinal artery occlusion as a presenting sign of ocular toxoplasmosis

P16. Dr Hamza, Dr Maris, **Karia Niral**
Southend Hospital Eye Department, England
CMV retinitis in healthy patients but receiving systemic immunosuppression for common conditions

P17. Tsierkezou L, Jones NP
The Manchester Royal Eye Hospital
The Manchester Uveitis Clinic: The First 3000 Patients

P18. Qingyun Zhou, Shengping Hou, Xiang Xiao, Bo Lei, Hongsong Yu, Gangxiang Yuan, Aize Kijlstra, Peizeng Yang
The First Affiliated Hospital of Chongqing Medical University, Chongqing Key Laboratory of Ophthalmology, and Chongqing Eye Institute, Chongqing, P. R. China
MicroRNA-146a and Ets-1 gene polymorphisms in ocular Behcet's disease and Vogt-Koyanagi-Harada syndrome

P19. Tanawade R, Troutbeck R, Ashworth J, Jones NP
The Manchester Royal Eye Hospital
Multifocal Paravascular Retinitis with Macular Infarction in Two Children

***P20. Shree Kurup** for the LUMINATE Investigator Group
Wake Forest University Winston Salem NC
Corticosteroid Usage in the LUMINATE Uveitis Clinical Trials– Implications for Management of Noninfectious Uveitis Involving the Intermediate or Posterior Ocular Segment

***P21. Mackensen F.1,** Becker M.D.2, Jakob E.1, Dobner B.C.1, Heinz C.3, Lorenz H.M.4, Heiligenhaus A.3, Max R.4
1. Univ.-Augenklinik, Interdisziplinäres Uveitiszentrum, Heidelberg, Germany
2. Augenklinik, Stadtspital Triemli, Zürich, Switzerland
3. St. Franziskus Hospital, Münster, Germany
4. Medizinische Klinik, Abt.V, Rheumatologie, Heidelberg, Germany

Final Results of an Investigator initiated, multicenter randomised controlled trial of the efficacy of Adalimumab in active uveitis refractoty to standard treatment (ADUR)

P22. Ali Yalçındağ*, Yeşim Gedik Oğuz**, F. Nilüfer Yalçındağ**, Aslıhan Uzun** (* Dışkapı Yıldırım Beyazıt Training and Research Hospital, Department of Clinical Biochemistry, Ankara, Turkey
** Ankara University, Faculty of Medicine, Department of Ophthalmology, Ankara, Turkey)
The relationship between serum levels of angiogenin, bFGF, VEGF and ocular involvement in patients with Behçet's disease

P23. F. Nilüfer Yalçındağ, Aslıhan Uzun (Ankara University Faculty of Medicine Department of Ophthalmology, Ankara, Turkey)
Anterior uveitis associated with laser epilation of eyebrows

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P39. Dong Min Cha (1,2), Tae Wan Kim (1,3), Jang Won Heo (1,2), Hyeong Gon Yu (1,2), Hum Chung (1,2)
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***P55. Peter Cikatricis,** Loukia Tsierkezou, Antonios T. Dimopoulos, Panagiota Stavrou
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F.I. Proctor Foundation, University of San Francisco, California, San Francisco General Hospital.
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P81. Melissa A. Lerman, MD, PhD,[1,2] Ebenezer Daniel, MBBS, MPH, PhD,[3] R. Oktay Kaçmaz, MD, MPH,[4,5] Peter Y. Chang, MD,[4] C. Stephen Foster, MD, [4,6] Douglas A. Jabs, MD, MBA,[7,8] Grace A. Levy-Clarke, MD,[9] Robert B. Nussenblatt, MD, MPH,[9] James T. Rosenbaum, MD,[10,11] Eric B. Suhler, MD, MPH,[10,12] Jennifer E. Thorne, MD, PhD,[8] Monte Mills, MD,[13] Marshall Joffe, MD, PhD,[2] Jon M. Burnham, MD, MSCE [1,2], Sean Hennessy, PharmD, PhD,[2] **John H. Kempen, MD, PhD[2,3].**
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P87. Michal Kramer (1,4) , Michal Schaap-Fogler (1), Ronit Friling, MD (3,4), Ethan Priel 5, Radgonde Amer (2,6)
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P88. I.Shandurkov, P.Vassileva
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P89. Robert W Kuijpers, Ronald de Haas, P. Martin van Hagen, George Verjans
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***P90. Radgonde Amer,** [1] Ethan Priel, [2] Michal Kramer [3]
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P91. John D. Sheppard, M.D. for the LX211-11 Investigator Group
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P94. Maidana Daniel Enrique, Garcia-Garcia O, Maidana D, Filloy A.
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***P95. Becker Matthias[1,3,5],** Jakob Eva[1,3], Springer Christina[1], Dobner Bianka[1,3], Wiehler Ute[1], Weimer Petra[1], Rohrschneider Klaus[1], Fiehn Christoph[4], Max Regina[2,3], Storch-Hagenlocher Brigitte[7], Mackensen Friederike[1,3]
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Interferon-α is superior to methotrexate in the treatment of intermediate uveitis with associated macular edema: Results of a randomized controlled clinical trial

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P98. Abhishek Payal, MBBS, MPH,[1,4] Maxwell Pistilli, MEd, MS,1 Jyotirmay Biswas, MBBS, MS,5,6 Sudha K Ganesh, MBBS,5,6 Vishali Gupta, MBBS,7 Sivakumar R. Rathinam, MBBS, PhD,8,9 Janet L. Davis, MD,10 and John H. Kempen, MD, PhD.1-3
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Interobserver agreement in live grading of vitreous haze using the NEI (6-step) and Davis (9-step) grading scales

P99. Hyun-Mee Oh, Cheng-Rong Yu, YongJun Lee, Chi-Chao Chan, Arvydas Maminishkis and Charles E. Egwuagu
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Autoreactive Memory CD4+T lymphocytes that mediate chronic uveitis reside in the bone marrow through STAT3-dependent mechanisms

ABSTRACTS
OF ORAL PRESENTATIONS

1. Causes of visual loss in patients with uveitis

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Purpose: To assess the causes of visual loss in patients with uveitis.
Design: Retrospective non-interventional pilot case series.
Methods: Retrospective case notes review of patients attending uveitis clinics from June 2008 to June 2010. Patients with a diagnosis of scleritis, GVHD, bacterial endophthalmitis and other ocular co-morbidity not related to uveitis and infective causes of uveitis, except for toxoplasmosis, were excluded. Demographic data, diagnoses and causes of visual loss were identified. The SUN classification scheme for uveitis was used in this study, with visual loss being defined as visual acuity (VA) worse than 20/40, and severe visual loss as VA 20/200 or worse.
Results: There were 1594 patients (2543 eyes), including 737 males and 857 females. The mean age was 47 years (range 3–95), and the mean follow-up was 6 years (range 0.5–45). Anterior uveitis (AU) was the most common type of uveitis, accounting for 41%. Of these, 67% were chronic. Intermediate uveitis (IU) was diagnosed in 26%, pan/posterior uveitis (PU) and retinal vasculitis in 26.5% and 6% respectively. In 75%, uveitis was bilateral. The mean age at diagnosis of AU was 42, 38 for IU, and 41 for PU. At presentation, 49% of patients had visual loss (BCVA<20/40) in at least one eye. This had reduced to 9% after one year. Irreversible visual loss has developed over time, reaching 31% at 10 years follow up and 60% if a longer follow up was recorded. In 55% of patients, visual loss was due to macular damage (active CME in 23% and macular damage from chronic CME in 32%). Glaucoma accounted for 13% of visual loss, but was the major complication in AU (28%). CME was the leading cause of visual loss in eyes with IU (42%), and chronic macular changes were the main cause in panu/posterior uveitis (37%). The prevalence of CME decreased with time, from 34% at 1 year to 15% at 10 years. Glaucoma increased with time, from 8% at one year to 29% at 10 years.
Conclusion: CME, whether acute or chronic with macular changes, was the most common cause of visual loss. Glaucoma accounted for 13% of visual loss. These findings are consistent with those found in other studies. Uveitis remains a sight threatening condition. Data from this pilot study has been used to guide a more in-depth study of the causes of visual loss in this population (NCT01613963).

2. Inflammatory changes of chronic stage of VKH disease

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Purpose: Convalescent stage of VKH disease is thought to be silent stage of the disease. However, recent studies show inflammatory changes in the posterior segment of the eye. We report inflammatory signs of the posterior segments with FA, ICG, SD- OCT, Deep penetrating OCT (swept source OCT) and adoptive optics fundus camera(AO).
Methods and patients: Pathologic changes of the convalescent stages of the VKH disease patients were examined with FA, ICG, SD-OCT, adoptive optic fundus camera and/or deep penetrating OCT (swept source OCT)
The patients were consulted our clinic and treated more than 6months. Twelve/20 patients had recurrence and/or prolonged inflammatory signs in anterior segments and/or posterior segments of the eye.
Results and conclusions: Twelve/20 patients had recurrence or prolonged disease course. All of the patients having these clinical courses showed multiple inflammatory lesions with FA or ICG. The inflammatory lesions were involved with RPE and retina with SD-OCT. The choroid was observed as very thin one layer in sunset fundus. Even such thin choroid also had thickness changes with inflammatory conditions. AO showed decreased number of cone cells around the focal inflammatory areas. Swept source OCT clearly showed inflammatory lesions in the choroid and these lesions might have active inflammation. By these examinations, convalescent stage or sunset glow fundus of the disease had some active inflammation in posterior segments. Retinal involvement also detected with AO. It is very important to start the treatment as soon as possible and to avoid developing to chronic stage or sunset glow fundus.

3. Risk of choroidal neovascularization in patients with uveitis

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PURPOSE: To evaluate the risk of and risk factors for choroidal neovascularization (CNV) among patients with uveitis.
METHODS: Retrospective cohort study of 8,868 patients at five academic ocular inflammation centers in the United States. Data were ascertained using standardized medical record review.
RESULTS: CNV was rare among patients with anterior (prevalence=0.06%) or intermediate (prevalence=0%) uveitis. Among 4,041 eyes of 2,307 patients with posterior or panuveitis, 81 (2.0%) had CNV at the time of presentation for tertiary uveitis care. CNV was more prevalent among patients with posterior uveitis as opposed to panuveitis, and with the specific uveitis syndromes multifocal choroiditis with panuveitis, multiple evanescent white dot syndrome, punctate inner choroidopathy, and serpiginous choroiditis. Among the 2,364 eyes free of CNV at the time of cohort entry followed over time for CNV incidence, the cumulative two-year incidence of CNV was 2.7% (95% CI, 1.8-3.5%). Time-updated ocular characteristics associated with incident CNV were currently active inflammation (adjusted hazard ratio [aHR] 2.13; 95% CI, 1.26-3.60%), diagnosis (at or before diagnosis of CNV) of preretinal neovascularization (aHR 3.05; 95% CI, 1.26-7.39), and especially prior diagnosis of CNV in the contralateral eye (aHR 6.56; 95% CI, 3.06-14.07). Posterior and panuveitis were associated with similar CNV incidence. Specific syndromes associated with higher risk of incident CNV during follow-up were Vogt-Koyanagi-Harada Syndrome (aHR 3.27; 95% CI, 1.47-7.24) and punctate inner choroidopathy (aHR 3.82; 95% CI, 1.22-11.90). Multifocal choroiditis with panuveitis also tended to have increased risk (aHR=2.15, 95% CI: 0.99 - 4.69), whereas a statistically significant increase in incidence with serpiginous retinochoroiditis was not observed (aHR=1.48, 95% CI: 0.49 - 4.48). Few cases of multiple evanescent white dot syndrome were available for incidence analysis. Systemic diagnosis with polyarteritis nodosum (aHR 8.85; 95% CI, 1.81-43.32) was also associated with increased CNV incidence. CNV was associated with worse visual acuity for both prevalent and incident cases; in the incidence analysis, the change in visual acuity from the pre-CNV visit to the first post-CNV visit was +0.185 logMAR units (95% CI, 0.079–0.291).
CONCLUSIONS: CNV is an uncommon complication of posterior and panuveitis and is rare in anterior and intermediate uveitis, but is associated with significant visual loss. Conditions affecting the outer retina/retinal pigment epithelium/choroid interface, current uveitis activity, preretinal neovascularization, and especially involvement of the contralateral eye tended to be associated with elevated risk of CNV

4. Laboratory diagnosis of infectious uveitis at a tertiary referral center

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Purpose: To analyse the yield of laboratory testing for the diagnosis of infectious uveitis and to determine the role of PCR and Goldmann-Witmer coefficient (GWC) analysis for the determination of intraocular antibody production.
Design: Retrospective cross-sectional study.
Method: The laboratory results from 3166 consecutive ocular fluid samples examined for intraocular infections by PCR and/or GWC at the Virology Department of the University Medical Center Utrecht from November 2001 until December 2011 were analysed.
Results: Of the 3166 ocular fluids 832 (26%) had a positive PCR and/or GWC result. The 832 ocular fluids were from 727 eyes and 710 patients. Of the 710 positive patients 62 (9%) were diagnosed with Cytomegalovirus, 130 (18%) with Herpes simplex virus, 149 (21%) with Varicella zoster virus, 141 (20%) with Rubella virus and 211 (30%) with Toxoplasma gondii. In addition, patients were identified with intraocular toxocariasis (n = 7), ocular syphilis (n = 3), human Parechovirus (n = 4), Parvovirus B19 (n = 2) and Epstein Barr virus (n = 2).
Simultaneous PCR and GWC analysis was performed on ocular fluids of 650 eyes. Of these 129 (20%) were positive for PCR alone, 153 (23%) were positive by both assays and 368 (57%) were positive for GWC alone, showing that, had only been analysed by PCR, 57% of laboratory diagnoses would have been missed. The contribution of the PCR and GWC assays to each of the types of infectious uveitis and the relationship between the laboratory outcome, clinical diagnosis and time of sampling will be presented.
Conclusion: Laboratory analysis and in particular GWC analysis of intraocular fluid can contribute considerably to the diagnosis of infectious uveitis.

5. Voclosporin: Efficacy and Safety for Noninfectious Uveitis Involving the Posterior Segment

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Objective: To provide an overview of the key findings of the LUMINATE clinical development program for noninfectious uveitis involving the posterior segment.
Method: Two trials, LX211-01 (active uveitis) and LX211-02 (clinically controlled, quiescent uveitis), were conducted for the treatment of noninfectious uveitis. All trials were dose-ranging, double-masked and controlled studies.
Study LX211-01 enrolled 218 patients with active uveitis. The co-primary efficacy endpoints were mean change from baseline in vitreous haze (VH) after 16 and 24 weeks of therapy or at time of rescue, if earlier.
Study LX211-02 enrolled 232 patients with clinically quiescent uveitis. The primary endpoint for this study was the proportion of patients who experienced an inflammatory exacerbation. Of note, patients who discontinued study participation for any reason prior to Week 26 were assessed as having experienced an inflammatory exacerbation. In both studies, concomitant immunosuppressive agents were discontinued prior to randomization.
Results: In Study LX211-01, the voclosporin 0.4 mg/kg group BID demonstrated statistically significant differences from placebo in the co-primary endpoints, Week 16 and Week 24 (p=0.008 at 16 weeks, p=0.027 at 24 weeks). Time to rescue therapy increased nearly 2-fold compared to control subjects. Substantial pharmacological activity was observed in patients with the highest grade of vitreous haze, for whom corticosteroids were medically inappropriate or were legally blind at baseline. In Study LX211-02, the primary endpoint was not met; however, voclosporin 0.4 mg/kg BID reduced the rate of recurrence of inflammatory exacerbations in patients with quiescent disease by up to 50% over a 26-week period.
Conclusion: In Study LX211-01, clinically meaningful reduction in vitreous haze
with strong statistical significance was observed. Analyses of important subpopulations, further demonstrate the effect of voclosporin on inflammation. In Study LX211-02, there was an up to 50% reduction vs. control in the recurrence of inflammation. Voclosporin safety is manageable with routine monitoring.

6. Cataract surgery in patients with HIV/AIDS

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Purpose: To assess clinical profile, post operative inflammation and visual outcome of cataract surgery in patients with Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS)
Methods: All patients with HIV/AIDS on Highly Active Anti Retroviral Therapy (HAART), who underwent cataract surgery, between 2001 and 2011 were included. Patients who underwent combined surgery along with cataract extraction such as vitrectomy, trabeculectomy were excluded from the study. Clinical features, pre and post operative visual and inflammatory status were analyzed in relation to CD4 counts, systemic status and immune recovery uveitis (IRU). Data was retrospectively analyzed using SPSS version 15 software.
Results: Forty patients (50 eyes) were included. Mean age was 44 (+11) years, 15 (30%) females and 35(70%) males. Median duration of HIV disease was 24 months (1- 133.8 months). Median duration of HAART was 36 months (1 – 10.5 years). Systemic tuberculosis was commonest association, seen in 22 patients. Group-A included patients with prior ocular opportunistic infection (OI) which were treated before surgery and was noted in 31(62%) eyes. Commonest prior OI was cytomegalovirus retinitis (CMVR) in 21 eyes (42%), while ocular toxoplasmosis was seen in 2 eyes (4%), and others 8 eyes (16%). Among these, 10 patients (20%) had a previous episode of IRU which was controlled before surgery. Group-B included 19 eyes (38%) without prior ocular OI. Posterior subcapsular cataract was seen in 16 eyes (32%), Nuclear sclerosis and Posterior subcapsular cataract in 29 eyes (58%) and total cataract in 4 eyes (8%). Mean CD4 counts at the time of surgery was 375 (+ 254) cells/cumm. Perioperative steroid cover in the form of systemic steroids was given in 12 (24%) patients. Phacoemulsification with foldable intraocular lens (IOL) implantation was done in 39 (78%) eyes and extracapsular cataract extraction with IOL implantation was done in 4 eyes (8%). Hydrophobic acrylic foldable single piece IOLs was implanted in 43 eyes, non acrylic IOLs in 7 eyes. Significant post operative inflammation was noted 8(25%) out of 32 eyes in Group A while it was seen in only 2 eyes(11%) out of 18 in Group B. Posterior capsular opacity (PCO) was noted in 40 eyes, although, YAG capsulotomy was required in only 1 eye. Post operative cystoid macular edema (CME) was noted in 6 (15.7%) eyes. At final follow-up, post surgery, visual improvement was seen in 76%, stable in 11% and deteriorated in 13% due to macular changes such as CME and epiretinal membrane. Pre and postoperative vision improvement showed significant improvement ($P<0.001$). Inflammation was controlled in 32(64%), uncontrolled and recurrent in 5(10%). CD4 counts at the time of surgery, or previous IRU did not show any statistically significant increase in risk of post operative inflammation.
Conclusion: HIV/AIDS patients can develop complicated cataract early. Patients with previous history of ocular OI can show clinically significant post operative inflammation even with moderate CD4 counts when compared to those without previous ocular OI and hence may require perioperative steroid cover. Phacoemulsification with acrylic foldable hydrophobic IOL implantation has best results in terms of inflammation control and visual recovery. No evidence of reactivation of primary disease with short term perioperative steroid cover. IRU does not have any additional risk of increased post operative inflammation. Cataract surgery can markedly improve visual acuity in patients under HAART

7. Assessment of glaucomatous optic disc damage in patients with secondary uveitic glaucoma
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Purpose: Objective quantitative assessment of glaucomatous damage in uveitis patients is often challenging. Diverse objective methods are compared and correlated with optic disc swelling assessed by fluorescein angiography (FA).
Method: Prospective single center analysis with 59 uveitis patients. Tests included automated visual field-testing (Humphrey 30/2), Heidelberg retinal tomography (HRT) and spectral domain optical coherence tomography (OCT). Objective parameters were correlated with IOP elevation and optic disc swelling (FA).
Results: Overall, 95 eyes of 59 patients were included. Average age was 41.1 ± 18.2 years. Predominant uveitis localization was anterior uveitis (40.6%) followed by intermediate (38.5%), posterior (11.5%) and panuveitis (9.4%). 41 (42.7%) eyes had elevated IOP, and 42 (43.7%) had optic disc leakage (FA). Estimated CDR, neuroretinal rim area, rim volume, RNFL thickness in HRT, and RNFL thickness in OCT were significantly different in patients with or without elevated IOP. Same applies for MD and PSD in visual field-testing. Optic disc edema significantly increased the neuroretinal rim area (p=0.0004) and rim volume (p=0.0004). In the presence of optic disc edema, RNFL thickness as measured by HRT was unchanged, while in OCT RNFL thickness increased (p=0.0008). When comparing eyes without elevated IOP and without disc edema with patients with elevated IOP and disc edema, none of the objective or the visual field testing parameters revealed any difference.
Conclusions: Assessment of established objective parameters in uveitis patients with elevated IOP is significantly influenced by optic disc edema. Optic disc swelling may significantly hamper the detection of glaucomatous disc. Therefore, IOP reading remains the most important criteria to start and monitor success of antiglaucomatous treatment in these patients.

8. Mycobacterium Tuberculosis: A quite common causative agent of infectious origin uveitis and retinal vasculitis
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Background: Tuberculous uveitis and/or retinal vasculitis induced by Mycobacterium tuberculosis are ocular clinical manifestations due to a frank infection or hypersensitivity mechanisms. The aim of the study was the evaluation of the diagnostic and therapeutic approach of tuberculous origin intraocular inflammation.
Methods: In a tertiary referral centre we recruited during a period of the last 30 years patients with uveitis and retinal vasculitis. Patients with “positive” (> 10mm induration initially and 6-14mm recently; >15mm: “strongly positive”) purified protein derivative (PPD) skin testing were taken into consideration for further investigation concerning tuberculosis. Therefore, patients suspected of having inflammation of tuberculous origin underwent a complete systemic evaluation and laboratory work-up for uveitis investigation, including also interferon-γ release assay (IGRA) in recent years.
Results: 91 cases with uveitis and 19 cases with retinal vasculitis were diagnosed as “presumed” tuberculous uveitis or vasculitis. However, in 10 additional cases with uveitis and 3 with retinal vasculitis a concomitant systemic (mainly pulmonary) disease or positive history of tuberculosis was documented. The uvea involvement included anterior uveitis, intermediate uveitis, choroiditis, chorioretinitis, panuveitis; vasculitis concerned involvement of the retinal veins. Ocular involvement was either unilateral or bilateral. No steroid treatment was administered in cases with active tuberculosis. Concerning the “presumed” cases administration of steroids was carried out. In all cases antituberculosis chemotherapy was administered for 9 months. Uveitis and vasculitis were resolved in 82% of the cases without severe complications experiencing good visual rehabilitation especially after cataract surgery when performed. In 18% of the cases major complications such as uveitic glaucoma or persistent cystoid macular edema were present. In 5 cases recurrent inflammation despite antituberculosis treatment suggested that the diagnosis of mycobacterium tuberculosis induced uveitis was incorrect.
Conclusions: Tuberculous origin uveitis and/or retinal vasculitis due to either frank infection or hypersensitivity mechanism (the later seems to be more common in our region) is not rare. Diagnosis was not always clear, almost initially, in those cases in which a hypersensitivity reaction was the underlying pathogenetic mechanism. On the other hand, since uveitis / vasculitis due to M. tuberculosis is a treatable disease prompt diagnosis and appropriate therapy may prevent devastating ocular complications.

9. Spectral domain-optical coherence tomography findings in acute syphilitic posterior placoid chorioretinopathy
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Introduction: Acute Syphilitic Posterior Placoid Chorioretinitis (ASPPC) is a rare, yet distinctive ocular manifestation of secondary syphilis. Solitary or multifocal, macular, placoid, yellowish gray lesions at the level of the retinal pigment epithelium (RPE), often with accompanying vitritis, display corresponding early hypofluorescence and late staining on fluorescein angiography. We describe the appearance of ASPPC on spectral domain-optical coherence tomography (SD-OCT) both before and after treatment.
Materials and Methods: Fifteen eyes of 15 patients with ASPPC from six Uveitis Center were evaluated. The diagnosis of syphilis was based on non-treponemal (VDRL, Venereal Disease Research Laboratory, RPR with a threshold >1) and treponemal tests (TPHA, treponema pallidum hemagglutination assay, with a threshold ≥80, and FTA, fluorescent Treponemal antibody assay, with a threshold ≥200). Ophthalmic examination at the time of presentation and at last follow-up visit was performed, including visual acuity, slit-lamp examination and dilated ophthalmoscopic examination. A fluorescein angiogram and SD-OCT were performed at baseline and at every follow-up visit. Standard treatment for neurosyphilis was given to each patient, including 4 million units of penicillin G administered intravenously every 4 hours for 10 days.
Results: All 15 cases of syphilitic uveitis were laboratory-confirmed, with one or more syphilis serologies positive in each patient. Six patients (40%) tested positive for both RPR and FTA-ABS, whereas 9 (60%) had a non-reactive RPR, but reactive FTA-ABS. Eleven patients were male and 4 female. The mean age at presentation was 50 years (range 27-70, median 48.7). The duration of symptoms prior to presentation ranged from 3 to 24 days. Five patients (33.3%) were HIV positive. Baseline visual acuity ranged from 20/20 to count fingers, with a median of 20/80. All cases (100%) were unilateral and showed a circular area of whitening involving the outer retina and inner choroid at the posterior pole, rarely extending beyond the vascular arcades. FA showed early hypofluorescence of the lesion with mid- and late-phase progressive hyperfluorescence, whereas ICG revealed hypofluorescent spots that persisted into later phases of the study in the area of the lesions. SD-OCT findings in the 15 affected eyes with ASPPC included punctuate hyperreflectivity of the external limiting membrane (ELM), segmental loss of the inner segment/outer segment junction, focal hyperreflectivity at the junction of the photoreceptors and the RPE, and pin-point hyperreflectivity in the underlying choroid with a

preserved choroidal vasculature. After completion of treatment, SD-OCT showed complete resolution of these alterations in each patient.
Conclusions: In our case series, 15 eyes (100%) with ASPPC showed on SD-OCT examination spike-like alterations of the ELM and of the RPE. These spots could represent foci of inflammatory cells or clusters of bacteria. The disappearance at the last follow up of these hyperreflective deposits in 15 out of 15 eyes (100%) could support the hypothesis that they represent inflammatory foci, which regress after the treatment.

10. Spectral Domain Optical Coherence Tomography changes following intravitreal dexamethasone implant, Ozurdex ® in patients with uveitic cystoid macular edema.
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Purpose: To correlate structural and functional changes following intravitreal injection of Ozurdex® implant in patients with uveitic cystoid macular edema (CME).
Methods: In this prospective interventional trial, 15 eyes of 11 patients with uveitic CME received Ozurdex® implant. Patients were followed up for 12 weeks. The outcome measures were change in central macular thickness (CMT), visual acuity (LogMAR units) and structural parameters including height of sub-foveal cystoid space (CS), sub-retinal serous retinal detachment (SSRD) and integrity of external limiting membrane (ELM), inner-outer segment junction (IS-OS) and photoreceptor layer (PR).
Results: Visual acuity improved in all eyes receiving the implant, i.e. from preoperative mean of 0.62 to 0.49 on the first day ($p < 0.001$) and to 0.3 at 12 weeks ($p < 0.002$). CMT decreased by 96 μm at 1 day ($p < 0.001$), 231.64 μm at 1 week ($p < 0.001$), 254.21 μm at 4 weeks ($p < 0.001$) and 249.14 μm at 12 weeks ($p < 0.001$) from a baseline of 524 μm. A decrease in CS, i.e. 133.28 μm from a baseline of 317.71 μm was noted on the first day ($p < 0.001$) with only 2 eyes showing presence of cysts at 12 weeks. SSRD was present in 8 eyes preoperatively. It resolved in 3 eyes on Day 1, 6 eyes at 1 week and all eyes at 4 weeks which was maintained up to 12 weeks. Patients with restored ELM and ISOS junction at 1 week postoperative had better final visual acuities at 12 weeks ($p < 0.003$).
Conclusions: The results indicate that Ozurdex ® implant improves visual outcome of patients with uveitic CME. Final visual outcome is determined by restoration of ELM and ISOS junctions rather than the preoperative CMT, height of CS or SSRD.

11. Characterization of macular lesions in punctate inner choroidopathy with spectral domain optical coherence tomography
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Punctate inner choroidopathy (PIC) is an ocular inflammatory disease. Spectral domain optical coherence tomography (SD-OCT) allows detailed visualization of retinal and choroidal structures. We aimed to describe the retinal changes on SD-OCT associated with PIC lesions localized in the macula.
METHODS: Retrospective case series: PIC lesions not associated with choroidal neovascularization (CNV) and captured by macular SD-OCT scans were identified and characterized.
RESULTS: Twenty-seven PIC lesions from seven patients (eight eyes) were identified and classified into four categories according to disease activity and temporal changes. Among clinically inactive patients, two main patterns were noted on OCT: (1) retinal pigment epithelium (RPE) elevation with sub-RPE hyper-reflective signals and (2) localized disruption of outer retinal layers with choroid and Bruch's membrane (BM) generally spared. Clinically active patients demonstrated lesions with intact BM with RPE elevation that fluctuated with disease activity and sub-RPE hyper-reflective signals. Photoreceptor-associated bands on SD-OCT (PRs) were not visible during active disease, but returned to normal visibility when lesions were clinically stable. Seven lesions in patients without clinically detected activity demonstrated alteration of RPE elevation.
CONCLUSION: SD-OCT can provide detailed structural characteristics of PIC lesions. RPE elevation is noted in many lesions while BM and choroid are spared. Photoreceptor-associated bands on SD-OCT appear compressed during clinically active stages and are visible during stabilization. OCT may provide information on activity not detected clinically.

12. Visual improvement in uveitis cases with vision loss attributed to macular edema
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PURPOSE: Among eyes of of patients with visually significant uveitic macular edema (ME), to estimate the incidence of and identify factors predictive of visual improvement.
METHODS: Retrospective cohort study of eyes with uveitis at five academic ocular inflammation centers in the United States wherein ME was documented to be currently present (using clinical examination or ancillary testing) and to be the primary cause of reduced visual acuity to a level worse than 20/40. Data were ascertained using standardized medical record review. The main outcome measure was a gain of at least two ETDRS lines (or equivalent) of visual acuity. Factors potentially predictive of such visual improvement were evaluated.
RESULTS: We identified 1,510 eyes (of 1,077 patients) with visual impairment to a level worse than 20/40 attributed to ME. Most patients were female (67%) and white (76%), and had bilateral uveitis (82%). The estimated 6-month incidence of at least two lines of visual acuity improvement in affected eyes was 52% (95% confidence interval [CI], 49%–55%). Vision reduced by ME was more likely to improve by two lines in those eyes with initially poor visual acuity (20/200 or worse; hazard ratio [HR] 1.5, 95% CI 1.3–1.7), active uveitis (HR 1.3, 95% CI 1.1–1.5), and anterior uveitis as opposed to intermediate (HR=1.2), posterior (HR=1.3) or panuveitis (HR=1.4) (overall p=0.02) at the time ME was diagnosed. During therapy, reductions in anterior chamber or vitreous cellular activity, or in vitreous haze, all led to statistically significant improvements in visual outcome ($p<0.001$ for each). Conversely, snowbanking (HR 0.7, 95% CI 0.4–0.99), posterior synechiae (HR 0.8, 95% CI 0.6–0.9), and hypotony (HR 0.2, 95% CI 0.06–0.5) were each associated with lower incidence of visual recovery with respect to eyes lacking each of these attributes.
CONCLUSIONS: These results suggest that many, but not all, patients with macular edema causing low vision in a tertiary care setting will enjoy meaningful visual recovery in response to treatment.

Evidence of significant ocular injury from inflammation (posterior synechiae and hypotony) portends a lower incidence of visual recovery. Better control of both anterior chamber and vitreous activity is associated with a higher incidence of visual improvement, supporting an aggressive anti-inflammatory treatment approach for cases with active inflammation.

13. Lymphocyte Migration Across Human Retinal Vascular Endothelium: Implications for Autoimmune Posterior Uveitis

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Purpose: Autoimmune posterior uveitis causes vision loss in a majority of affected individuals. Th1 or Th17 cells are initiators of the disease. B cells are also present in the leukocytic infiltrate, although little is known about their role in disease pathogenesis. In uveitis, T and B cells must traffic from the circulation into the posterior eye across the retinal endothelium. This process is little studied in human systems. We investigated the ability of human T and B cells to cross a simulated human retinal endothelium.
Methods: Th1 and Th17 cells were generated from CD4+ T cells, purified from human peripheral blood using RosetteSep, by FACS for CCR6- and CCR6+ cells, followed by culture on anti-human CD3 and CD28 antibody-coated plates under appropriate polarizing conditions. CD19+ B cells were obtained from peripheral blood by negative selection. Retinal endothelial transmigration assays were performed using a transwell system. PET transwell membranes (0.3cm2, 3µm pores) were pre-coated with collagen I, seeded with human retinal endothelial cells, and incubated for 4 days. 5x105 lymphocytes were migrated across the simulated endothelium from upper to lower wells for 18 hours (up to 10 human donors/condition). In some cases anti-human ICAM-1 (10µg/ml), VCAM-1 (30µg/ml) or ALCAM (30µg/ml) blocking antibody, or isotype-matched control antibody, was added to upper wells, and/or CXCL13 (100ng/ml) was added to lower wells. Diffusion of high molecular weight dextran between wells was measured to assess intactness of endothelial monolayers.
Results: CCR6- Th1 and CCR6+ Th17 cells migrated equally efficiently across simulated human retinal endothelium (21.5%±1.7% versus 20.9%±0.2% cells, $p>0.05$). There was a significant reduction in percentage of IL-17+ IFN-γ- Th17-polarized cells following migration, in comparison to pre-migrated cells and non-migrated cells ($p\leq0.05$). Blocking endothelial ICAM-1 significantly reduced migration of Th1 and Th17 cells for a majority of human donors ($p\leq0.05$). Conversely, VCAM-1 or ALCAM blockade reduced Th1 and Th17 migration in a minority of donors. CD19+ B cells (including 61.4%±14.3% immature CD20+CD27-CD38+; 32.1%±9.1% naïve CD20+CD27-CD38-; 22.4%±8.3% memory CD20+CD27+CD38-; and 1.5%±2.3% plasma CD20-CD27+CD38+) also transmigrated. B cells moved in substantially lower numbers than Th cells (0.6%±0.1%), but number of migrated cells increased in response to CXCL13 (1.1%±0.1%). Considering all donors, blocking endothelial ICAM-1 significantly reduced migration of B cells, both in the presence or absence of CXCL13 ($p\leq0.05$).
Conclusion: Helper T cells polarized towards Th1 or Th17 phenotypes migrate equally readily across a simulated blood-retinal barrier. B cells also transmigrate, albeit in relatively low numbers. Migration of both T and B cells is mediated in part by ICAM-1. Our findings suggest the potential for treating autoimmune posterior uveitis by ICAM-1 blockade.

14. Factors predictive of remission of new-onset anterior uveitis

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Purpose: To identify factors predictive of remission of inflammation in new-onset anterior uveitis cases presenting for tertiary uveitis care.
Methods: Patients diagnosed with anterior uveitis who presented to participating academic uveitis clinics within 90 days of initial anterior uveitis diagnosis and who had been followed for remission of inflammation over time were eligible for inclusion in the analysis. Data on these patients were available from a large retrospective cohort study based on chart review of patients with ocular inflammation. Incidence of remission of anterior uveitis was calculated as the number of cases per eye-year of follow-up at risk. Remission was defined as documented absence of uveitis activity at all visits spanning a 90 or greater day interval, in the absence of any systemic or topical corticosteroids or immunosuppressants. Cox proportional hazard models were used to calculate crude hazard ratios and adjusted hazard ratios for incidence of remission.
Results: Among 687 patients, 990 eyes diagnosed with anterior uveitis were seen within 90 days of initial presentation to the clinics and had sufficient follow-up for the remission definition to be met. These were followed for remission over 1,636 eye-years (1,149 person-years). The median follow up time was 160 days. Systemic diagnosis with juvenile idiopathic arthritis was associated with a lower incidence of uveitis remission (adjusted hazard ratio (aHR) 0.38, 95 % CI 0.19-0.74) with respect to no history of juvenile idiopathic arthritis. Anterior uveitis associated Behçet's disease had lower incidence of remission (aHR=0.10, 95% CI 0.01-0.85). Neither sarcoidosis (aHR 1.08, 95 % CI 0.75-1.54) nor other systemic conditions were associated with remission with the available statistical power. Presence of bilateral disease associated with lower incidence of remission (aHR=0.68, 95% CI 0.54-0.87). History of cataract surgery at the presentation was associated with lower risk of remission (aHR=0.51 95% CI 0.29-0.87). Regarding clinical findings at the initial visit, overall inflammatory activity and grade of anterior chamber cells were not predictive of remission of inflammation. However, a high degree of vitreous cells at initial presentation was associated with a lower incidence of remission (for 1+ or more, aHR=0.72, 95% CI 0.55-0.95). Initial visual acuity 20/200 or worse tended to have lower incidence of remission (aHR=0.52, 95% CI 0.32-0.86).
Conclusions: Factors associated with a lower incidence of remission among new-onset anterior uveitis cases included diagnosis with juvenile idiopathic arthritis, Behçet's disease, history of cataract surgery, findings of 1+ or more vitreous cells at presentation, and initial visual acuity 20/200 or more. Patients with these risk factors appear to be at higher risk of persistent inflammation; reciprocally, patients lacking these factors would be more likely to experience remission. Presence of these risk factors for non-remission of uveitis should be managed taking into account the higher probability of a chronic inflammatory course.

15. Spectrum of Fuchs' Uveitis Syndrome in North Indian population

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Purpose: To describe patients with Fuchs uveitis syndrome (FUS) in north India.
Design: Retrospective case series.

Methods: One ninety eight eyes of 188 patients with FUS were reviewed at Post Graduate Institute of Medical Education and Research between December 1996 to September 2011. Demographic profile, clinical findings at presentation, risk of new complications, and rate of decreased vision were the main outcome measures.
Results: The mean age at presentation was 30.1 ± 9.4 years. Male to female ratio was 1.1:1. Fifteen patients (8.1%) had bilateral involvement. Clinical findings at presentation included diffuse keratic precipitates (92.4%), anterior chamber cells (54.5%), diffuse iris atrophy without hypochromia (29.3%), heterochromia (24.7%), iris nodules (16.1%), cataract/pseudophakia (79.3%), vitreous cells (61.1%), elevated intraocular pressure (13.6%) and chorioretinal scars (2%). On fluorescein angiography, hyperfluorescence of the optic disc was detected in 28 of 51 eyes (55%), peripheral vasculitis in 1(2%) and both in 8 eyes (15.7%). OCT showed traction papillopathy in 6 of 34 eyes (17.6%). None of the eyes showed cystoid macular edema.
Conclusion: Heterochromia is seen only in 25% of patients with FHU in brown irides. Diffuse stellate keratic precipitates, low cellular reaction, vitritis, vitreous opacities, diffuse iris stromal atrophy in the absence of posterior synechia and macular edema are other parameters helpful in diagnosing FUS.

16. In vivo confocal microscopy in the assessment of the activity of endogenous uveitis in children

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Background: The assessment of endogenous uveitis activity using traditional criteria is often challenging due to subjective judgment of most sings and limited slit lamp resolution. Confocal microscopy (CM) is a modern tool for in vivo investigation of corneal microstructure.
Purpose: to estimate the value of CM in the assessment of activity of endogenous uveitis with anterior segment involvement in children.
Methods: We examined 65 children aged from 5 to 16 years, 97 affected eyes with anterior (75%), peripheral (13%) and pan- uveitis (12%). Active inflammation was observed in 52 (54%) of cases, remission – in 45 (46%). Changes in cells and extracellular structures of the central and paracentral areas of the cornea were evaluated using a confocal microscope (ConfoScan 4, Nidek, Japan).
Results: Moderate to severe epithelial edema was revealed significantly more often in active phase than in remission of uveitis (75% and 38% respectively, $p < 0.05$). Stromal edema was also typical for active uveitis (92% vs. 36%, $p < 0.05$) and its severity depended on the degree of inflammation. Activated keratocytes, pasting of their processes, areas of decreased density of keratocytes and vide high stromal folds were also associated with active inflammation. Changes in the endothelium related to active uveitis included: hyporeflective defects (60% vs. 40%, $p < 0.05$), local hyperreflectivity with dim cells borders (38% vs. 13%, $p < 0.05$), focal cells traction, dilatations of intercellular spaces, wave-lake change configuration of the endothelium in frontal plane, small hyperreflective inclusions, hyperreflective linear fibrin-like deposits, diffuse cloud-like opacity. Keratic precipitates (60% vs. 36%, $p < 0.05$) in cases of active inflammation were volumed with indistinct borders and often with processes, in remission – small, flat, with clear borders, few in number, sometimes – pigmented.
Conclusions: In vivo CM can be effectively used for the diagnosis and follow up of activity of endogenous uveitis with anterior segment involvement. Activity of inflammation is associated with changes in cytoarchitectonics of all corneal layers so their complex analysis is necessary. Precise CM assessment is essential in the correction of drug therapy, as well as in choosing the time of intraocular surgery.

17. Fundus autofluorescence imaging of chorioretinal inflammatory diseases

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Background: Fundus autofluorescence (FAF) is a non-invasive imaging modality which provides information about the outer retina/ RPE/choroid complex. In this study we describe the FAF imaging findings in chorioretinal inflammatory diseases and correlate them with disease activity and other imaging modalities.
Methods: Twenty-five patients (43 eyes) with various chorioretinal inflammatory diseases were evaluated during the disease course with fluorescein angiography (FA), FAF imaging, indocyanine green angiography (ICGA), and spectral domain optical coherence tomography (SD-OCT).
Results: FAF imaging best distinguished active from non-active lesions in serpiginous choroiditis (n=4; 7 eyes). The transition of the active area from hyper- to hypoautofluorescence corresponded to the degeneration of the photoreceptor-retinal pigment epithelium (RPE) complex on SD-OCT. A similar pattern was noted for syphilitic posterior placoid chorioretinopathy (n=1; 1 eye). In multifocal choroiditis and punctate inner choroidopathy (n=6; 10 eyes), scarred foci appeared hypofluorescent whereas active spots were either hyper- or hypoautofluorescent, corresponding with the SD-OCT findings. In multiple evanescent white dot syndrome (n=1; 1eye), and AZOOR-like disease (n=2; 2 eyes), hyperautofluorescent spots on FAF corresponded partially to hypofluorescent spots on ICGA, thus revealing the clinically unapparent pathology. FAF imaging was less informative than FA and ICGA in Vogt-Koyanagi-Harada syndrome (n=7; 14 eyes) and birdshot choroidopathy (n=4; 8 eyes).
Conclusions: FAF imaging may assist clinicians in assessing disease activity in chorioretinal inflammatory diseases that affect mainly the integrity of the photoreceptor-RPE complex. Further corroborative studies are required.

18. Intraocular biomarker identification in uveitis associated with Juvenile Idiopathic Arthritis

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Purpose: To investigate the presence of disease specific protein profiles in aqueous humour (AH) from patients with uveitis associated with juvenile idiopathic arthritis (JIA).
Methods: AH (n=73) and serum (n=105) samples form a total of 116 children were included. The samples were analyzed using Surface Enhanced Laser Desorption/ Ionisation - Time of Flight (SELDI-ToF) technique. Prior to statistical analysis the samples were divided in 4 groups: definitive JIA; suspected JIA; other uveitis entities and non-inflammatory controls. Biomarker identification was performed using the Selditof Biomarker Analysis Cluster Wizard (Ciphergen Express Software 3.0) followed by Expression Difference Mapping to statistically analyse the relevance of potential biomarkers. Biochemical identification of the biomarker was performed by polyacrylamide gel protein separation, followed by liquid chromatography-tandem mass spectrometry analysis of trypsin-digested peptides.
Results: Twenty-six and 21 protein peak clusters could be detected in AH and serum, respectively. In the definitive JIA group 3 protein peaks were detected in AH which were expressed significantly more often and at higher intensities compared to the other uveitis entities group and the non-inflammatory controls (6,672; 8,725 and 13,762 Da). Definitive JIA and suspected JIA samples showed similar protein profiles in AH and did not differ in any of the peak cluster intensities. For the protein at 13,762 Da no correlating peak in serum could be identified. By the presence of 13,762 Da protein peak and absence of the 8,255 Da protein peak in AH definitive JIA samples could be distinguished from other uveitis entities and controls with a sensitivity of 64% and a specificity of 96%. Using this method, 5 out of 8 (63%) patients with suspected JIA could be classified together with definitive JIA patients. Mass spectrometric analysis revealed the 13,762 Da marker as transthyretin (TTR) which was significantly over-expressed in patients with JIA and suspected JIA and its expression was associated with the activity of uveitis.
Conclusions: The AH of patients with JIA-associated uveitis has a distinct expression profile of proteins compared with controls and other uveitis entities. These expressions are similar to patients who

were on clinical grounds suspected for JIA-association of their uveitis but did not meet the International League against Rheumatism criteria completely. TTR was identified as a biomarker for JIA, however, its involvement in the pathogenesis of JIA-uveitis needs further investigation.

19. Intraoperative use of intravitreal dexamethasone implant (Ozurdex (R)) controls post cataract surgery inflammatory diabetic macular edema

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Purpose: To determine the effect of intraoperative intravitreal long acting dexamethasone implant (Ozurdex®) in post cataract surgery inflammatory diabetic macular edema.
Methods: In this prospective randomised interventional pilot trial, 18 eyes of 16 patients with type 2 diabetes mellitus and visually significant cataract with diabetic retinopathy were randomised into two groups, one receiving intraoperative Ozurdex® implant (Group A) consisting of eight patients (9 eyes) while remaining eight patients (9 eyes) served as controls (Group B). Patients were followed up for 6 months. The outcome measures were change in the central macular thickness and visual acuity.
Results: In group A, the macular thickness decreased by 36.44 μm at 1 week, 49.89 μm at 4 weeks, 70.56 μm at 6 weeks, 13.11 μm at 12 weeks and 18.22 μm at 24 weeks from a baseline of 335.89 μm; whereas in group B, the central macular thickness was significantly higher with an increase noted at every visit ($p < 0.026$). Group A showed a significant gain in number of ETDRS letters as compared to group B at all visits; 16.00 ($p < 0.001$), 18.22 ($p < 0.001$) and 15.22 ($p < 0.002$) at 6, 12 and 24 weeks. There was no significant difference in intraocular pressure between the two groups at any visit ($p > 0.22$).
Conclusions: The results indicate that intraoperative injection of Ozurdex® implant in patients undergoing cataract surgery controls inflammation leading to improved surgical outcome.

20. Abatacept as first line biological treatment for severe Juvenile Idiopathic Arthritis-related uveitis. A multicenter study

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Background: Anterior uveitis is a serious complication of Juvenile Idiopathic Arthritis (JIA). Recently, Abatacept (ABA) has been used in children with JIA-uveitis who had failed previous anti-TNF agents but little is known about its efficacy as first-line biological agent in severe JIA-related uveitis. Aim of the present study was to compare safety and efficacy of ABA used as first biological agent (ABA1st) with ABA used after one or more anti-TNF agents (ABA2nd), in patients with severe JIA-related uveitis.
Methods: A retrospective multicenter collection of data of patients with severe, MTX-resistant JIA-related uveitis treated with ABA at a monthly dosage of 10 mg/kg, administered intravenously as first line or second line biological agent, was performed. Absolute frequency of uveitis flares before and after ABA treatment, changes in ocular complications and ABA-related side effects have been recorded. The number of active joints was also assessed at each visit.
Results: Thirty-five JIA patients (33 females, 2 males) with a mean 12.5 years of age, and 7.7 years of uveitis duration have been treated with ABA for 19.6 months (range 5-42). Twenty-seven patients with MTX-refractory uveitis and at least 12 months follow-up entered study. 11 were included in the ABA1st group and 16 in the ABA2nd group. Age at uveitis onset, number of uveitis flares during 12 months before ABA and number of complicated uveitis were comparable in the two groups. The mean uveitis duration was significantly shorter in ABA1st (5.1 versus 9.5 years, p=0.009). The mean frequency of uveitis flares during the 12 months before and after ABA decreased from 4.1 to 1.0 in ABA1st (p=0.001) and from 3.5 to 1.1 in ABA2nd (p=0.001). The efficacy was comparable in both groups and in all ABA showed a better performance after the first six months of treatment as 21/30 (70%) uveitis flares occurred during the first semester. Pre-existing ocular complications improved or remained stable in all but 2 patients. Best corrected visual acuity (logMAR) improved from 0.42 to 0.38 (ns). 15/22 patients (68.2%) with active arthritis at baseline were in remission at 12 months follow-up; in the others, the mean number of active joints decreased from 10.1 to 7.0. In this regard, no significant difference was observed between the two ABA treatment modalities. Two patients (7.4%) experienced adverse events (1 post-infusion headache, 1 weight gain) but no serious events were observed. Two patients (7.4%) withdrew from the study (after 5 and 9 months) because of ABA inefficacy on both ocular and articular symptoms.
Conclusions: Abatacept, used as first-line biological treatment or after one or more anti-TNF agents, induced a comparable sustained improvement of refractory JIA-related uveitis. Efficacy was more evident during the second semester in both groups. Abatacept represents a treatment of choice in patients failing standard immunosuppressive treatment and/or anti-TNF agents for severe JIA-related uveitis.

21. Anti-TNF agents for JIA-related refractory uveitis: four years follow-up data from the ORCHIDEA Database

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BACKGROUND: Anterior uveitis (AU) is the most frequent extra-articular manifestation of juvenile idiopathic arthritis (JIA) with the potential for significant sigh-threatening ocular complications. Since 2007 an inception cohort registry, reporting all patients with JIA-related uveitis treated with anti-TNFα agents, has been established in Italy.
OBJECTIVES: To report the results on safety and efficacy of anti-TNFα treatment in refractory JIA-related uveitis.
METHODS: Since January 2007, a multicenter cohort of children treated with anti-TNFα agents for refractory JIA-related uveitis has been followed using a standardized protocol. Uveitis course, structural complications, type and dosage of anti-TNFα agents used and drug-related adverse events (AEs) have been analyzed at the beginning of treatment and at three-months intervals during the follow-up (F/U). Uveitis course was defined as chronic or recurrent according to SUN Working Group criteria (1). Clinical remission on medication was defined as the absence of active uveitis for more than 6 months on systemic treatment and with no or just minimal topical treatment.
RESULTS: Up to December 2011, 152 patients (120 female, 32 male) have been included in the registry, with mean age of 9.5 years, and mean follow-up of 28.1 months. All patients failed previous traditional immunosuppressive treatments (MTX, CyA, MMF). Eighty-four patients were initially treated with Adalimumab (ADA), 68 with Infliximab (IFX). The mean IFX dosage was 4.6 mg/kg (range 3.0-6.0); the mean ADA dosage was 0.9 mg/kg (range 0.5-1.6). Twenty-eight patients (18.4%) experienced a drug shift during treatment: 23 from IFX to ADA, four patients from ADA to IFX and one

from ADA to Abatacept, due to drug AEs or inefficacy. At the end of the first year of treatment, 59.3% of patients achieved AU remission, 31.4% had recurrent AU, and 9.3% maintained a chronic course. In general, we observed an overall improvement of AU in 79.3% of the patients after the first year of anti-TNF treatment and in 82.8% after the second year.
Structural complications, present at the treatment start in 30.8% of subjects, decreased to 19.4% after one year of anti-TNF treatment. No patient experienced serious AEs; minor AEs have been reported in 34 patients (22.4%) and included, with both treatments, recurrent infections (21) and headache (7), on IFX infusion reactions (9) and, on ADA, prolonged menses (2).
CONCLUSIONS: Anti-TNFα agents, IFX and ADA, appear to be effective and safe, on the medium-term period, for the treatment of refractory JIA-related uveitis. National registries represent important instruments to improve the quality of clinical research and to address safety issues for rare diseases treated with experimental drugs.

POSTER ABSTRACTS

P1. Cataract surgery in patients with Fuchs' heterochromic iridocyclitis.
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PURPOSE: To assess the particularities of cataract surgery and posterior chamber intraocular lens (IOL) implantation in patients with Fuchs' heterochromic iridocyclitis.
METHODS: Cataract extraction and IOL implantation were performed in 7 patients with uveitis-related cataract, in particularly with Fuchs' heterochromic iridocyclitis. In five cases for the cataract extraction phacoemulsification was practiced and in two cases extracapsular cataract extraction was performed. Preoperatively local anti-inflammatory therapy for 7 days was somministrated to all patients. All patients were examined after 2 weeks and a second postoperative examination was held after 4 weeks.
RESULTS: Mydriasis was about 5 mm. No posterior capsule rupture and no bleeding occurred during anterior chamber opening. A mild anterior chamber reaction and a small and transient rise in intraocular pressure was observed in almost all patients. But no postoperative glaucoma was observed. Best corrected postoperative visual acuity ranged from 5-7/10
CONCLUSIONS: Cataract surgery in patients with Fuchs' heterochromic iridocyclitis does not present any difficulties compared with normal senile cataract. No major complications occurred during and after the surgery and the final visual acuity was satisfactory.
Also, cataract surgery and IOL implantation did not negatively influence the natural course of uveitis in patients with Fuchs' heterochromic iridocyclitis. Correct surgical timing and adequate anti-inflammatory therapy may promote good results in these patients.

P2. Quadruple therapy for ocular toxoplasmosis
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Between March 2009, and March 2012 from a cohort of 1021 patients with active uveitis 8 patients (9 eyes) were diagnosed as ocular toxoplasmosis. The patients received quadruple therapy with pyrimethamine, trisulfapyrimidines, clindamycine and prednisone. The criteria for quadruple therapy were active lesion involving or threatening the macula or the optic disc or a visual acuity of 20/70 or worse due to vitreous inflammation. All cases showed improved vision in 6 weeks of therapy. Patients took clindamycine for 1-2 weeks, and received pyrimethamine and trisulfapyrimidine for 4 weeks with tapering dose of prednisone. The complications were diarrhea and bone marrow suppression. The lenght of follow-up ranged from 4 months to 24 months without any recurrences.

P3. Clinical Manifestations and Recurrence rates of Herpetic Keratitis, Scleritis, and Uveitis
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Purpose: To analyze the clinical characteristics, visual prognosis, and recurrence rates of patients with herpetic keratitis, scleritis, and uveitis. Methods: This is a retrospective observational study including 42 patients diagnosed with either herpes simplex type 1 (HSV)or herpes zoster virus (HZV) related epithelial, stromal or disciform keratitis, keratouveitis, scleritis, and iritis. The diagnosis was based on rise in anti-herpes virus antibody titers in blood, and the clinical findings. All of the patients received 6 weeks of acyclovir therapy followed by 4-12 months of valacyclovir prophylaxis. Results: 59% of the patients had HSV type 1, and 41% of patients had HZV related clinical manifestations. The mean follow-up was 9.2 months, and the mean number of recurrences was 0.62. The mean increase in best corrected visual acuity (snellen) was 2.85 lines. The causes of poor visual outcome were corneal neovascularization, cataract formation,history of refractive surgery, keratoconus and age-related macular degeneration. Conclusion: Long-term antiviral prophylaxis with valacyclovir is essential for decreasing the number of recurrences and increasing the visual acuities. However, the patients with corneal neovascularizations and history of refractive surgeries showed poor visual prognosis.

P4. Uveitis in Whipple's disease
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A 47 year-old woman presented with a four months history of progressive fever, malaise, weight loss, anorexia and abdominal pain. During her illness the patient complaints of blured vision in the right eye. On examination, she was found to have anterior uveitis and mild vitritis in the right eye and retinitis in the left eye. Definite diagnosis was made using histopathology and PCR of bowel tissue sample that surprisingly confirmed infection with tropheryma whipplei. Her symptoms improved and ocular findings resolved with the treatment within three months.
Conclusions: The diagnosis of whipple's disease is not difficult in patients who have manifestations from the gastrointestinal tract. However, the diagnosis is difficult when extragastrointestinal symptoms are predominant. Whipple's disease is a treatable condition and accurate diagnosis can result in a better visual prognosis.

***P5. An analysis of the outcome of cataract surgery in lens induced uveitis with traumatic cataract**
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Aim: To identify the outcome of cataract surgery in lens induced uveitis with traumatic cataract and to analyze visual rehabilitation.
Methods: Prospective study on 25 eyes of 25 patients over three years. An attempt was made to understand the clinical modes of presentation and post operative visual results. All these patients were subjected to planned cataract surgery which comprised of extracapsular cataract extraction, small incision cataract surgery or phacoemulsification.
Results: 72% percent had a posterior chamber intraocular lens implantation following surgery. 63% recovered visual acuity of 6/12 or better.27% had complications such as cystoid macular oedema or secondary glaucoma and following cataract surgery the visual acuity was less than counting fingers. 9 had lens induced glaucoma and 15 patients had phacotoxic uveitis. Univariate analysis was performed for selected risk factors such as age, sex nature of injury and duration of uveitis as predictors of final visual acuity.
Conclusion: Lens induced uveitis was most frequently encountered in the form intraocular inflammation accompanying phacolytic glaucoma. Patients with age more than 60 years and in whom uveitis was present for more than 5 days had a significantly higher risk of poor visual outcome post-operatively. Oral steroids were required in all the patients .Intraocular foreign bodies were noted in 3 patients. Bacterial endophthalmitis was considered as a diagnosis in 4 patients. Cataract surgery performed on these eyes was associated with good visual prognosis in a large number of patients.

P6. Prospective Evaluation of Retinal Microvascular Parametric Changes in Patients with HIV
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Purpose: To measure and compare retinal vascular parameters between patients infected with Human Immunodeficiency Virus (HIV) and controls, and to elicit the relationship between retinal vascular parameters and CD4 counts.
Methods: Prospective observational case-control study. 37 HIV patients with no clinical retinal pathology and 111 age-gender matched normal healthy controls from Singapore population-based studies were recruited. Standard retinal photographs were taken centered around the optic disc. Quantitative retinal vascular parameters (retinal vascular caliber, branching angle, tortuosity and fractal dimension) were measured from the photographs using a semi-automated computer-based program (Singapore I Vessel Assessment, version 3.0) by trained technicians following a standardized protocol.
Results: Patients with HIV were more likely to have higher total fractal dimension (1.457 vs. 1.439, p=0.045), higher venular fractal dimension (1.246 vs. 1.218, p=0.004), more tortuous arterioles (0.741 vs. 0.560 [x105], p<0.001) and venules (0.883 vs. 0.717 [x105], p<0.001), compared with healthy normal subjects. Amongst the HIV patients, decreased CD4 counts was independently associated with narrower retinal arteriolar caliber (β=0.060, p=0.006), after adjusting for age, gender, duration of HIV, hypertension and diabetes.
Conclusions: HIV is associated with unique retinal microvascular parametric changes. A linear relationship between CD4 counts and retinal vascular parameters is present.

***P7. Systemic diseases associated with intermediate uveitis**
Samir S Shoughy, Khalid F Tabbara

The Eye Center and The Eye Foundation for Research in Ophthalmology,Riyadh, Saudi Arabia
Purpose: The main objective of this study is to determine the systemic diseases associated with Intermediate Uveitis at The Eye Center in Saudi Arabia.
Methods: A retrospective review of medical records of 50 cases of Intermediate Uveitis referred to The Eye Center in Riyadh, Saudi Arabia was carried out. Patients had complete ophthalmic and medical examination. Laboratory studies were performed whenever indicated.
Results: There were 27 male and 23 female patients. The mean age was 29 years with an age range of 5 to 62 years. Ten cases (20%) had systemic disorders associated with Intermediate Uveitis, four had multiple sclerosis (8%), three had presumed tuberculosis (6%), one had inflammatory bowel disease (2%), one had central nervous system lymphoma (2%), and one had sarcoidosis (2%). There were eleven cases (22%) associated with asthma and elevated serum IgE levels.
Conclusion: Patients with Intermediate Uveitis should be properly investigated for systemic disorders.

P8. Correlation between aqueous protein level and clinical grading of flare and flaremetry
Samir S Shoughy, Khalid F. Tabbara
The Eye Center and the Eye Foundation for Research in Ophthalmology, Riyadh, Saudi Arabia

Purpose: The purpose of this study is to compare clinical grading of flare and flaremetry and the protein content of the aqueous.
Methods: A total of 20 patients were included. There were 10 patients with uveitis and 10 control patients who were scheduled for phacoemulsification. Each patient underwent complete ophthalmic examination, grading of the anterior chamber flare applying the SUN working group grading system. All Patients underwent paracentesis and 0.25 ml of aqueous obtained. The aqueous sample was stored at -70 0C and later analyzed for protein content. Objective assessment of flare was done using Kowa Laser Flaremeter FM-600.
Results: We found a positive correlation between the protein content of aqueous and the grading of flare clinically and objectively by flaremeter.
Conclusion: There is a correlation between the protein content of the aqueous and flare detected by laser flaremetry and clinical methods.

***P9. Proteomic Analysis of Aqueous Humor in Patients with Cytomegalovirus Retinitis**
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Purpose: To analyze the comprehensive ocular proteomic cytokine, chemokines and growth factor composition of patients with cytomegalovirus retinitis (CMVR).
Methods: Seventeen samples were obtained by aqueous paracentesis from 14 patients diagnosed with clinical CMVR receiving intravitreal ganciclovir therapy. There were 15 samples from patients with HIV, and 2 samples from patients with autoimmune disease on immunosuppression. Eleven control samples were obtained from 11 patients with no other ocular disease undergoing routine cataract surgery. Aqueous humor fractions were analyzed for the concentration of 42 different cytokines, chemokines and growth factors thought to be involved in viral induced inflammation, with the Luminex® (Bio-Plex 200) platform. The specific inflammatory signature of protein expression in CMVR patients relative to controls was assessed by multivariate analysis using the GeneSpring® software package.
Results: Of the 42 factors analyzed, 36 were expressed at some level in patient samples. A common signature of infection was revealed in patients with CMVR dominated by the expression of the chemokines fractalkine, IP-10 and MCP-1, the cytokine IL1-alpha and the growth factors EGF and FLT3-ligand when compared with the control group. Statistically significant differences were observed between cases and controls for all analytes in the signature; IL1-alpha (p=0.001), MCP-1 (p=0.002), EGF (p=0.003), fractalkine (p=0.009), IP-10 (p=0.019), FLT3-ligand (p=0.021). Interestingly the intraocular levels of fractatikine, a highly bioactive leukocyte chemotactic agent, demonstrated an inverse correlative trend with the levels of circulating CD4+ T-cell in patients.
Conclusions: Proteomic profiling of aqueous humor in patients with CMVR has revealed a pronounced and consistent proteomic immune signature which was apparent even in the relatively small patient sample size. The signature shares features of localized viral induced inflammation and is characteristic of a tissue specific myeloid/granulocytic response. This observation is supported by the absence of detectable intraocular T-cell derived cytokines during infection. The association with intraocular fractalkine levels and adaptive immune dysfunction, as measured by circulating CD4 T-cell counts, may reflect a specific suppression in anti-CMV immunity. A more extensive cohort analysis may be required to test this hypothesis. Further longitudinal analysis may help elucidate the underlying processes involved in CMV eye disease. This may lead to development of novel, targeted treatment strategies for CMVR in the near future.

P10. 'Dark spot' in Fibrinous Central Serous Chorioretinopathy masquerading Choroiditis
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Department of Ophthalmology, Advanced Eye Centre, Post Graduate Institute of Medical Education and Research, Chandigarh, India
Purpose: We observed that eyes with acute fibrinous central serous chorioretinopathy (CSC) masquerading active choroiditis had a 'dark spot' within the yellow fibrinous deposit. The present study aims to describe this sign as a clinical indicator of acute serofibrinous exudative detachment, thus helping to differentiate it from active choroiditis.
Method: We retrospectively reviewed the records of 19 patients of fibrinous CSC masquerading active choroiditis. Color fundus photographs, fundus fluorescein angiogram (FFA) and optical coherence tomography (OCT) at baseline and follow up were studied for 'dark spot'. The systemic steroids were stopped and all patients were followed up.
Results: There were 12 men and 7 women with a mean age of 39.8 years. Fourteen patients had received systemic steroids. Fundoscopy revealed creamy yellow subretinal lesion/s simulating active

choroiditis lesion in all eyes and exudative retinal detachment in 9 eyes. The 'dark spot' was seen as a round greyish dark spot within the fibrinous lesion in all the eyes. On FFA and OCT, this dot corresponded to the site of leakage. All eyes showed resolution of CSC on follow-up.
Conclusion: Detection of 'dark spot' within fibrinous CSC is an important clinical sign that if present, helps to avoid misdiagnosis, unnecessary diagnostic tests and incorrect treatment.

P11. Primary Intraocular Non Hodgkin's Lymphoma presenting as diffuse vasculitis
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Purpose: To report diffuse vasculitis as rare initial manifestation of Intraocular Non Hodgkin's lymphoma
Methods: Case study of a 49-year old female patient with diffuse retinal vasculitis and vitritis. Disease progression after receiving systemic corticosteroids, azathioprine and anti tuberculosis treatment for one year along with appearance of RPE mottling led to diagnostic vitrectomy with vitreal and retinal biopsy and aspiration of subretinal fluid. Cerebrospinal fluid (CSF) evaluation and head magnetic resonance imaging (MRI) were performed.
Results: Serial sectioning of a retinal biopsy showed no retinal neoplastic infiltration and vitreous biopsy cytology wss inconclusive. However, immunocytochemistry performed on subretinal fluid showed weak positivity for Leucocyte Common Antigen and is negative for desmin, HMB – 45 as well as Neuron Specific Anolase. Features were consistent with the diagnosis of Non-Hodgkin's Lymphoma. MRI, CSF analysis as well as bone marrow biopsy revealed normal study. Patient subsequently received intravitreal injection methotrexate biweekly following which lesion started resolving.
Conclusion: Retinal vasculitis with vitritis maybe the presenting features of primary intraocular lymphomas

P12. Cross-sectional survey of treatment patterns in a tertiary referral uveitis clinic
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Purpose: Complex uveitis problems are likely to be seen in a tertiary referral regional clinic. Patients receive multiple therapies including systemic immunosuppression that require appropriate staffing and financial resources to be in place. To recognise what resources are required we undertook a study of the treatments prescribed to uveitis patients.
Methods: Cross-sectional survey of 300 patients attending a tertiary referral Uveitis clinic. Case note review of anatomical classification, causes of uveitis, and treatment modalities.
Results: The majority of patients were female (165:135). Anatomical classification: anterior 36%, intermediate 10%, posterior 9%, pan 45%. Uveitis was idiopathic in 47% and infectious in 9%. The commonest non-infectious diagnoses were HLA-B27 related and sarcoidosis. 53 patients (18%) were on no treatment, 207 (69%) on topical corticosteroid, 67 (22%) on topical dilation, and 86 (29%) on topical IOP lowering agents (between 1-4 different agents). 66 patients (22%) were on oral prednisolone (mean dose 10 mg/day), 48 (16%) were on an oral immunosuppressant, the commonest being methotrexate (mean dose 15 mg/week), and 9 (3%) were on a biologic.
Conclusions: Uveitis patients attending a tertiary referral Uveitis clinic are on numerous topical and systemic medications to control their intraocular inflammation and its complications. Up to 20% of patients are on immunosuppressants that require regular blood monitoring. Some of the drugs prescribed are expensive. Clinics should be staffed by health professionals with knowledge of systemic immunosuppression, with provision for the use of expensive drugs.

P13. Eculizumab-induced Resolution of Bilateral Serous Retinal Detachment in Atypical Hemolytic-Uremic Syndrome: A Case Report
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Purpose- Ocular manifestations of hemolytic uremic syndrome (HUS) are very rare and their management is based on the systemic course and treatment. The purpose of this case report is to first describe the outcome of eculizumab therapy (humanized monoclonal antibody against complement protein C5a) in bilateral serous retinal detachment in a patient with atypical HUS.
Methods- Descriptive case report.
Result- A 23 year- old female developed preeclampsia with HELLP syndrome during the 3rd trimester of her first pregnancy for which she underwent cesarean section. Following delivery, thrombocytopenia persisted and plasma exchange in addition to hemodialysis was initiated until stabilization of platelet count was achieved. Later, she suffered from deteriorating renal function, microangiopathic hemolysis, thrombocytopenia and uncontrolled hypertension. Also, she complained of blurred vision. Bilateral serous retinal detachment (SRD) was diagnosed. The diagnosis of aHUS was deduced after ruling out differential diagnoses. Treatment with plasma exchange, hemodialysis, antihypertensive medication and systemic steroids was reinstituted with partial systemic and ocular response. Thus, eculizumab was added to the treatment. Under this treatment there was prompt improvement of her blood parameters together with a complete resolution of SRD.
Conclusion- This case indicates that eculizumab seems to be a promising treatment for aHUS and its systemic and ocular complications.

P14. Infliximab as first line therapy in Behçets Uveitis
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Behçet's Disease is an idiopathic, chronic, relapsing inflammatory multisystem disorder, characterized by recurrent oral and genital aphthous ulcers, ocular inflammations, and skin lesions. There is no specific diagnostic test for Behçet's Disease and the diagnosis relies mainly on its typical clinical features. Infliximab is a human-murine chimeric monoclonal antibody IgG. It acts against inflammatory tumor necrosis factor-α.
We present our experience with three patients of active Behçet's Disease (uveitis, vasculitis) from the Middle-East, who were put on infliximab therapy for varied indications including poor response to conventional therapy, recurrent sight-threatening uveitis /vasculitis and severe tissue damaging inflammation.
All patients had dramatic response to infliximab therapy in terms of clinical and visual improvement, and optical coherence tomography documented decrease in tissue inflammation. Some of these patients showed positive response within 24 hours of infliximab therapy.
Behçet's eye disease affects young population and can lead to blindness if treated inadequately or inappropriately. As supported by other studies, infliximab should be implemented as first line therapy in severe tissue damaging Behçet's uveo-vasculitis.

P15. Branch retinal artery occlusion as a presenting sign of ocular toxoplasmosis
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Purpose: To report an unusual case of ocular toxoplasmosis that was initially missed.
Results: We describe a case of a 24 year old woman with retinochoroiditis associated with branch retinal artery occlusion of an artery passing through the acute necrotic focus which was misinterpreted

as a side effect of the use of oral contraceptive pills. The patient didn't have any signs of active inflammation at the time of the occlusion. The case was complicated by a branch retinal vein occlusion in the same area which was treated with Ozurdex intravitreal implant. Late in the development of the case the patient presented typical signs of ocular toxoplasmosis with prompt response to antiparasitic treatment.
Conclusions: Ocular toxoplasmosis must be considered in the differential diagnosis of patients with unilateral branch retinal artery occlusion and retinochorioiditis especially in younger patients.

P16. CMV retinitis in healthy patients but receiving systemic immunosuppression for common conditions
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The use of systemic immunosuppression with methotrexate or azathioprine is common in rheumatology and neurology clinics. We present the cases of patients (HIV negative) on long term immunosuppression with these agents who presented with hypertensive uveitis and retinitis typical of CMV infection confirmed on aqueous PCR. We present the outcome in our patients and discuss a literature review on how these rare cases may best be managed.

P17. The Manchester Uveitis Clinic: The First 3000 Patients
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Purpose: To present the epidemiology of a busy specialist uveitis clinic in the UK
Methods: Extraction of prospectively-entered data from clinic database
Results: 3119 referrals were made to the Manchester Uveitis Clinic (MUC), predominantly from the conurbation of Greater Manchester, but also from a wide area of Northwest England, Wales and elsewhere. The peak age at disease onset was 30yrs (<1-87),527 were children <16yrs, 55% were female and the most common diagnoses were Fuchs' heterochromic uveitis(337),sarcoidosis(272), juvenile idiopathic arthritis(237), toxoplasmosis(192), HLA-B27-related uveitis(132)and Behcet's disease(110)
Discussion: The MUC was set up by one of us (NPJ) in 1991 and accepts tertiary referrals from a large area of Northwest England, and North Wales. For a predominantly Caucasian population in a temperate island, HLA B27-related disease, sarcoidosis and Fuchs' heterochromic uveitis are common diseases. Tuberculosis is increasingly common.

P18. MicroRNA-146a and Ets-1 gene polymorphisms in ocular Behcet's disease and Vogt-Koyanagi-Harada syndrome
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Purpose: MicroRNA-146a (miR-146a) is involved in certain immune-mediated diseases. Transcription factor Ets-1 strongly affects miR-146a promoter activity and directly regulates miR-146a expression. This study was performed to investigate the association of miR-146a and Ets-1 gene polymorphisms with Behcet's disease (BD) and Vogt-Koyanagi-Harada (VKH) disease in a Chinese Han population.
Methods: A total of 669 BD patients, 613 VKH patients and 1132 normal controls were genotyped for miR-146a/rs2910164, ets-1/rs1128334 and rs10893872 using a PCR restriction fragment length polymorphism assay. miR-146a expression was examined in PBMCs by real-time PCR. Cytokine production by PBMCs were measured by ELISA.

Results: A significantly decreased frequency of the homozygous rs2910164 CC genotype and C allele was observed in BD patients compared with controls (pc=2.19×10-5, odds ratio (OR) 0.61; pc=9.3 10-5, OR 0.75, respectively). MiR-146a expression in GG cases was 2.45-fold and 1.99-fold respectively higher than that in CC cases and GC cases. There was no association of rs1128334 or rs10893872 with BD. There was also no association of these three SNPs with its main clinical features. No associations were found with the three SNPs tested and with its clinical manifestations in VKH disease. IL-17 and IL-1β production from rs2910164 CC cases was markedly lower than that in GG cases. No effect of genotype was observed on the IL-6 and MCP-1 production and IL-8 expression was slightly higher in CC cases.
Conclusions: Our study identified a strong association of rs2910164 of miR-146a with BD in a Chinese population and an decreased expression of miR-146a and certain proinflammatory cytokines in individuals carrying the CC genotype.

P19. Multifocal Paravascular Retinitis with Macular Infarction in Two Children
Tanawade R, Troutbeck R, Ashworth J, Jones NP
The Manchester Royal Eye Hospital

Purpose: To present two children with a similar, unusual, severe multifocal paravascular retinitis with macular infarction and permanent central visual damage
Methods: Two case reports with common features
Results: Both children presented after prodromal illness with acute bilateral visual loss, widespread contiguous paravascular multifocal retinitis and macular oedema. One child showed evidence of post-streptococcal disease, the other, recent HSV infection. Retinitis recovered on treatment, leaving permanent macular damage
Discussion: Multifocal retinitis in children is rare. Both children showed evidence of recent infection. We hypothesise a para-infectious response to a different organism for each of these children with severe inflammation and common features

***P20. Corticosteroid Usage in the LUMINATE Uveitis Clinical Trials– Implications for Management of Noninfectious Uveitis Involving the Intermediate or Posterior Ocular Segment**
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Objective: To discuss the use of corticosteroids in the LUMINATE clinical development program for noninfectious uveitis involving the posterior segment and its implications for the management of this diverse group of diseases.
Method: Study LX211-01, a double-masked, dose-ranging, controlled trial, enrolled 218 patients with active, posterior segment uveitis. The co-primary efficacy endpoints were mean change from baseline in vitreous haze (VH) score in the study eye after 16 and 24 weeks of therapy or at time of rescue, if earlier. Mean baseline corticosteroid doses (mg/day of prednisone or its equivalent) for subjects randomized into the trial ranged from 17.7 mg/day to 28.3 mg/day. The percentage of subjects in whom oral corticosteroids were not used at baseline ranged from 21.3% to 35.7%. Concomitant immunosuppressive agents, if used, were discontinued prior to randomization.
Results: In Study LX211-01, the voclosporin 0.4 mg/kg group BID demonstrated statistically significant differences from the control group in the co-primary endpoints, Week 16 and Week 24 (p=0.008 at 16 weeks, p=0.027 at 24 weeks). The co-primary endpoints reflect both an initial and persistent treatment effect. In subjects not using systemic corticosteroids at baseline (corticosteroids were either refused or medically inappropriate), treatment with voclosporin 0.4 mg/kg (N=14) was statistically significant at Week 16 (p=0.021) and nearly significant at Week 24 (p=0.082) compared to the control group (N=7).
Conclusion: In Study LX211-01, clinically meaningful reduction in vitreous haze with strong statistical significance was observed. Substantial pharmacological activity was observed in patients for whom

corticosteroids were not used at baseline, supports the effect of voclosporin on the reduction of ocular inflammation and underscores its utility as an agent to limit the use of systemic corticosteroids. The potential for voclosporin as monotherapy for initial treatment of active noninfectious uveitis involving the posterior segment is merited.

***P21. Final Results of an Investigator initiated, multicenter randomised controlled trial of the efficacy of Adalimumab in active uveitis refractoty to standard treatment (ADUR)**

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Purpose: TNF alpha inhibitors have revolutionized the care of autoimmune diseases, among them severe cases of non-infectious uveitis. Randomized clinical trials are lacking for this indication except for etanercept. We aimed to close this gap by initiating a randomized clinical trial testing Adalimumab (ADA) in severe forms of uveitis.
Methods: Local and federal authorities approval has been obtained. Patients with active uveitis despite 0,1mg/kg/bodyweight of prednisone and already one immunosuppressive medication were eligible. Patients were randomized into either a therapy with ADA 40 mg s.c. every other week and high dose corticosteroids in a tapering regime or to increase the corticosteroids only. At three months main outcome parameters are assessed and efficacy determined. In case of treatment failure switch to the other arm was possible.
Results: 25 patients were enrolled. The last patient will finish the trial in september 2012. 20 patients have been evaluated to date. The primary outcome criterion (Visual accuity improvement > 2 lines) was reached by 63.3% patients in the ADA group (mean improvement 0.29 logMar). In the control arm only 25% of patients improved > 2 lines. In parallel the control arm showed less reduction in inflammatory activity (reduction in activity score by a mean 2.89) as compared to the ADA group (mean reduction by 15.3 points).
Conclusions: The results oft he trial show clear superiority of ADA over control in the treatment of severe uveitis forms in termy of visual accuity and inflammatory activity.

P22. The relationship between serum levels of angiogenin, bFGF, VEGF and ocular involvement in patients with Behçet's disease

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Aim: Since vascular endothelial dysfunction plays a prominent role in the pathogenesis of Behçet's disease (BD), we considered angiogenic cytokines as an interesting target for investigation in BD. The aim of this study was to investigate the possible role of angiogenin (ANG), vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF) in the pathogenesis of BD. We also investigated whether disease activity, age, or duration of BD correlates with serum levels of ANG, VEGF and bFGF.
Materials and Methods: Sixty-five patients with Behçet's disease (34 with ocular involvement and 31 without ocular involvement) and 21 healthy controls were included in the study. All patients were queried for the clinical manifestations and possible systemic involvements of Behçet's disease. Serum ANG, bFGF and VEGF concentrations were determined by using in vitro enzyme immunoassay (ELISA) kits according to the manufacturer's instructions.

Results: The median serum ANG level was significiantly higher in Behçet's patients group with ocular involvement [384.5 pg/ml (range : 236.6-558.4)], without ocular involvement [398.1 pg/ml (range: 151.6-594.8)] than controls [298.8 pg/ml (range:241.9-449.6)]. The mean serum level of bFGF was higher in BD patients with ocular involvement (40.9+/-12.9 pg/ml) and without ocular involvement (36.6+/-11.3) than controls (33.2+/-13.5), but this difference was not statistically significant (P<0,05). The median serum VEGF level was higher in Behçet's patients with ocular involvement [(241.3 pg/ml (range: 56.8-575.7)], and decreased gradually in Behçet's patients without ocular involvement [222 pg/ml (range: 53-991.3)] and controls [189.4 (range: 53.6-357.9)].
Conclusions: This study highlights the need for further investigation into the role of ANG, VEGF and bFGF serum levels in BD susceptibility and its clinical manifestations. Especially ANG may be more important in the pathogenesis of Behçet's disease. To the best of our knowledge, this is the first report regarding angiogenin levels in patients with Behçet's disease.

P23. Anterior uveitis associated with laser epilation of eyebrows

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Purpose: To report a case of unilateral anterior uveitis after laser hair removal of the eyebrows with an alexandrite laser.
Methods: Case report
Results: A 36-year-old female presented with painful red eye and photophobia in her left eye 2 days after receiving alexandrite (755 nm) laser epilation of both eyebrows. Visual acuity was 20/20 in both eyes. Right eye examination was normal. Left eye examination showed conjunctival injection, 2+ cells in the anterior chamber and local posterior synechiae. Intraocular pressure and fundus examination were normal in both eyes. Topical steroids and cycloplegic drops were prescribed. Three days after the initiation of topical treatment, there was a reduction in anterior chamber cells to 1+, but posterior synechiae enhanced. One week after, there was 0.5+ cells in the anterior chamber and no further enlargement of posterior synechiae. We still follow the patient.
Conclusion: Laser hair removal of the eyebrows can lead to ocular damage, and should be avoided.

P24. Assessment of choroidal morphology in idiopathic panuveitis using enhanced depth imaging spectral domain optical coherence tomography

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Purpose: To characterize chorioretinal changes in the maculae of patients with idiopathic panuveitis using enhanced depth imaging (EDI) spectral-domain optical coherence tomography (SD-OCT).
Methods: This is a non-interventional, cross-sectional study. Data from EDI SD-OCT images were collected from patients diagnosed with idiopathic panuveitis. Quantitative segmentation of the retina and choroid was performed for each case using custom made software.
Results: Twenty-one eyes from 21 patients were analyzed. Mean age was 47.7 years (range: 23-88). Male to female ratio was 7/14 and mean best corrected visual acuity (BCVA) was 0.71 (range: 0.017-1.2). The mean duration of uveitis was 78.4 months (range: 1-240). Mean choroidal thickness was 233.7 ± 73.3 µm. Mean thickness of the Sattler's and Haller's layers was 66.1 µm ± 36.7 and 167.8 µm ± 53.7 respectively. Mean retina thickness was 342.1 µm ± 110.3. Mean duration of uveitis was negatively correlated with BCVA (r=-0.486,p=0.025) but was not correlated with the mean thickness of the retina, choroid, Sattler's and Haller's layers (r=-0.057,p=0.805, r=-0.247,p=0.280, r=-0.163,p=0.481 and r=-0.115,p=0.619 respectively). Mean choroidal thickness had a highly significant

negative correlation with age (r=-0.716,p=000). Age was also negatively correlated with the thickness of Sattler's and Haller's individual layers (r=-0.665,p=0.001 and r=-0.674,p=0.001 respectively) and the retina (r=-0.461,p=0.036). The ratio of retinal/choroidal thickness was negatively correlated with BCVA (r=-0.580 ,p=0.006)
Conclusions: The majority of our patient-cohort were females, had bilateral disease and were treated with systemic immunosuppression. Nine patients (42.8%) had either cystoid macular oedema or an epiretinal membrane and BCVA was lower in these patients. BCVA was negatively correlated with uveitis duration and the ratio of retinal/choroidal thickness.

P25. Role of Polymerase chain reaction (PCR) for mycobacterium tuberculosis (MTB) in subjects with choroiditis

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Medical and Vision Research Foundation, Sankara Nethralaya

Aim: To study the role of PCR for MTB in patients having choroiditis with varied presentations.
Methods: Retrospective evaluation of 39 eyes of 39 subjects who presented with varied forms of choroiditis with suspicious underlying tubercular etiology. All patients underwent nested PCR for MTB using IS6110 and MPB64 primers from mainly aqueous and vitreous aspirate in 1 eye. Clinical presentations such as serpiginous choroiditis(SC), ampiginous choroiditis(AC), multifocal choroiditis(MFC) and focal choroiditis(FC) in group A and known presentations with tubercular etiology such as choroidal abscess(CA) and choroidal tubercle(CT) were included in group B. Positive results of PCR for MTB within the group and between two groups were statistically analyzed using Chi square test.
Results: Out of 39 subjects 24 were male and 15 females. The mean age at presentation was 34.66 years (range 14-62). 28 and 11 patients were included in group A and B respectively. Out of 14 patients with SC, 4(28.6%) were positive for PCR MTB, 1 out of 3(33.3%) was positive in patients with AC and 5 out of 11(45.4%) were positive in patients with MFC and FC. While in group B out of 11, 9(81.8%) were positive. Out of 28 patients in group A, 12(42.85%) were positive and out of 11 in group B, 9(81.81%) were positive for PCR MTB. The difference of positive results between two groups were statistically significant (p=0.028).
Conclusion: Aqueous aspirate for PCR MTB was diagnostically productive in both the groups (more in group B). Hence it is recommended as an investigation of choice in choroiditis with suspected tuberculous or inflammatory etiology

***P26. The clinical features and outcome of patients with infectious scleritis in a tertiary eye care center in South India**

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PURPOSE: To describe the clinical profile of patients with infectious scleritis.
DESIGN: Retrospective interventional case series
METHODS: We reviewed the clinical findings, microbiology findings, therapeutic interventions, and visual outcomes of 14 patients with infective scleritis.
MAIN OUTCOME MEASURES: Structural changes like scleral thinning and visual acuity.
RESULTS: In the series we reviewed 16 eyes of 14 patients who were diagnosed with infective scleritis. Two cases were bilateral, with 5 males and 9 female patients.
There were 6 cases (42%) of tuberculous scleritis, 2 cases with leprosy(14%), 4 (28%)cases with bacterial scleritis, 1 (7%)case of herpes zoster, 1(7%) case of fungal infection.
Two of the patients had Wegener's granulomatoses had superadded bacterial and fungal infection and 2 had history of trauma.
All patients received intensive systemic medical and topical therapy based on the etiology and 5(35%) patients required surgical management, incision and drainage(3) and scleral patch graft(2).
Seven cases (50%) out of the 14 resolved completely without any structural changes.Five (35%) of them resolved with scleral thinning and 2 patients had stable scleral patch grafts.
In all the cases there was an improvement in the visual acuity with the treatment.
CONCLUSION: infective scleritis is a rare entity but an early clinical suspicion of infectious origin, identification of the infecting organism and institution of appropriate medical and/or surgical therapy can improve the outcome.

***P27. Paediatric Uveitis in India**

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AIM: To analyse the demography, etiology, complications, treatment modalities and visual outcome in paediatric patients with uveitis in a tertiary eye care hospital in south India
DESIGN: Retrospective cohort study
METHODS: Records of patients with uveitis in the age group of 1-16 years seen in our uvea clinic during a period of one year were analysed.
RESULTS: Among 190 children who were diagnosed to have uveitis, 64.2% were boys and 35.8% were girls. Mean age at presentation was 11 years. 112 patients had unilateral disease and 78 patients had bilateral disease. 99 out of 190 cases were diagnosed to have anterior uveitis, 49 cases had intermediate uveitis, 27 had posterior uveitis and 15 patients had pan uveitis. Mean follow up period was 18 months. 53 children had complications related to uveitis either at the time of presentation or during the follow-up period. Ocular complications were noted in 73 out of 190 cases (38.4%), among which cataract was the most common complication noted in about 58% of cases. Incidence of glaucoma was about 11.3%. Posterior segment complications were noted in 20 patients. Based on the etiological and anatomical diagnosis, patients were treated with topical, posterior subtenons injection of steroids, oral or intravenous corticosteroids, immunosuppressants or a combination of them. Specific treatment against the infectious organism in cases of infectious uveitis was also given. Surgical procedures were undertaken in 55 patients. Cataract extraction was the most common surgery done in about 54.5% of all the surgeries performed and phacoemulsification with intraocular lens implantation was done in 18patients. Lensectomy with vitrectomy was done in 12 patients. 20 patients required retinal surgery. Among 190 cases in our visual outcome was found to be stable in 40(23%) cases, improved in 120 (69%) cases and it deteriorated despite treatment in 14 (8%)cases.
CONCLUSION: Paediatric Uveitis is a challenging condition to diagnose and treat ,the reasons being the difficulty in examination of the child , greater risk of development of complications Idiopathic anterior uveitis was the commonest type. Commonest complication was cataract. Proper management, follow up and prevention of amblyopia in these children will reduce the ocular morbidity and maintain the psychosocial well being of these children.

P28. Production of Th1/Th2 cytokines and nitric oxide in Behçet's uveitis

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INTRODUCTION: The objectives of this study is to situate the role of Th1 cytokines (IL-12) and Th2 (IL-4) and nitric oxide in the immunopathological mechanisms of uveitis associated with Behcet's disease.
METHODS: We included in this study 104 patients with Behçet's disease and 35 healthy subjects. Serum levels of cytokines were measured in two groups by enzyme immunoassay (ELISA sandwich technique). Production of nitric oxide was evaluated by determination of nitrite by modified Griess method.

RESULTS: We observed a significant increase in the production of nitric oxide and Th1 / Th2 compared control subjects (p <0.001).
DISCUSSION: These biological data may have implications in the development of tests for early diagnosis of uveitis associated with Behcet's disease, but their interest is primarily in helping to forecast the development of specific treatments.
CONCLUSION: The study of biomolecules (cytokines and nitric oxide) provides useful information in understanding the immune mechanisms of Behçet's disease.

P29. Evaluation of posterior Sub-tenon's triamcenolone injection by a 19 gauge, flat tipped, blunt, curved cannula in the treatment of uveitis

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Objectives : Posterior sub-tenon injection of triamcenolone is a good alternate to systemic steroid in cases of intermediate, intractable or posterior uveitis with or without CMO. Usual practice is to use 26 gauge needle which is fraught with danger of globe perforation and the injection becoming anterior sub- tenon's or sub- conjunctival. The authors evaluated the efficacy and complications of posterior subtenon's triamcenolone injection by 19G , flat tipped, blunt , curved cannula for the treatment of uveitis.
Methods : Non –randomised , uncontrolled interventional study of 42 patients (48 eyes) who undergone triamcenolone injection for treatment of intermediate uveitis, CMO , posterior uveitis or intractable anterior uveitis using a 19G flat tipped,blunt,curved,cannula after local cauterization and making incision through conjunctiva and tenon's capsule.
Results: No untoward complications including globe perforation was reported. In 3 cases, injections became sub-conjunctival or sub-tenons. In 28 eyes (58.33 %) ,patient experienced no pain during the procedure. Improvement of Visual acuity was noted within 2 weeks after injection in 30(62.5 %) patients. 38 eyes (79.16 %)showed maximum visual gain upto the range of 3 lines within 4 weeks. In 10 patents, PST was repeated after 2 weeks. Patient were followed up for 4 months with the interval of 2 weeks, 4 weeks, 8 weeks and 4 months for IOP assessment by Applanation tonometry. IOP recorded at 4 months were in the range of 12-24 mmHG , mean 15.54 (± SD 3.27).
Conclusion: Posterior sub- tenon's triamcenolone injection by 19G flat tipped, blunt,curved cannula is found to be safe and effective in depositing the medicine in the required space under direct visualization for the treatment of uveitic inflammation.

***P30. Amelioration of endotoxin-induced uveitis treated with an IkappaB kinase beta inhibitor**

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Purpose: Endotoxin-induced uveitis (EIU) is an animal model for acute ocular inflammation. There are several substances that play major roles in the development of inflammatory changes in EIU, including TNF-alpha, interleukin (IL)-1beta, and IL-6. These inflammatory cytokines trigger the degradation of IkappaB by activating IkappaB kinases (IKKs). Released NFkappaB subsequently translocates to the nucleus, where it expresses its pro-inflammatory function. IMD-0354, N-(3,5-Bis-trifluoromethylphenyl)-5-chloro-2-hydroxybenzamide, selectively inhibits IKKbeta, particularly when it is induced by pro-inflammatory cytokines, such as TNF-alpha and IL-1beta. In the present study, we examined whether IKKbeta inhibition has therapeutic effects on EIU by using IMD-0354 and its prodrug IMD-1041.
Methods: Six-week-old male Lewis rats were used. EIU was induced by subcutaneous injections of 200 μg of lipopolysaccharide (LPS) from Escherichia coli that had been diluted in 0.1 ml of phosphate-buffered saline. IMD-0354 was administered intraperitoneally at 30, 10, 3 or 0 mg/kg, suspended in 1.0 ml of 0.5% carboxymethyl cellulose sodium. Its prodrug IMD-1041 (100mg/kg) was also administered orally. The rats were euthanized 24 hours after LPS injection and EIU severity was evaluated histologically. The numbers of infiltrating cells, the concentrations of protein, TNF-alpha, and MCP-1 in the aqueous humor were determined. TNF-alpha and MCP-1 concentrations were quantified with ELISA. Eye sections were also stained with anti-NFkappaB and phosphorylated I-kappaBalpha antibodies.
Results: The numbers of infiltrating cells in aqueous humor were 53.6±9.8×10^5, 72.5±17.0×10^5, 127.25±32.0×10^5, and 132.0±25.0×10^5 cells/ml in rats treated with 30, 10, 3 or 0 mg/kg of IMD-0354, respectively. The total protein concentrations of aqueous humor were 92.6±3.1 mg/ml, 101.5±6.8 mg/ml, 112.6±1.9 mg/ml, and 117.33±1.8 mg/ml in rats treated with 30, 10, 3 and 0 mg/kg of IMD-0354, respectively. Infiltrating cells and protein concentrations were significantly decreased by treatment with IMD-0354 ($p<0.01$). IMD-0354 treatment significantly reduced concentrations of TNF-alpha ($p<0.05$) and MCP-1 ($p<0.01$) in aqueous humor. The number of NFkappaB positive nuclei was reduced when treated with IMD-0354. Furthermore IMD-0354 treated EIU rats showed only background levels of phosphorylated I-kappaBalpha, however it was strongly expressed in perinuclear cytoplasm of iris/ciliary body cells when EIU rats were untreated with IMD-0354. Oral administration of IMD-1041 also decreased the cell number ($p<0.01$) and protein concentration ($p<0.05$) of aqueous humor in EIU.
Conclusions: Acute uveitis was ameliorated by inhibition of IKKbeta in rats. IMD-0354 and its prodrug IMD-1041 seem to be promising candidates for treatment of intraocular inflammation/uveitis.

***P31. Intra-cameral level of ganciclovir following topical application of 0.15% ganciclovir gel for Cytomegalovirus (CMV) anterior segment infection**

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Purpose: To investigate the intra-cameral level of ganciclovir following topical application of 0.15% ganciclovir gel for Cytomegalovirus (CMV) anterior segment infection
Methods: Sixteen patients with active CMV anterior segment infection confirmed by a positive aqueous real time PCR(RT-PCR) and have not had any form of ganciclovir treatment in the past 1 month were recruited in the study. Patients were given 0.15% ganciclovir gel 1cc 5 times a day for 6 weeks. Following 6 weeks of treatment, tears and aqueous samples were collected. Aqueous was sent for RT-PCR for CMV status. Ganciclovir drug level in both tears and aqueous was measured by HPLC method. Clinically, degree of the intraocular inflammation, Intra ocular pressure (IOP) and central corneal thickness (CCT) were recorded at baseline and post-treatment.
Results: There were 14 CMV anterior uveitis and 2 endotheliitis patients recruited in the study. At the end of 6 weeks, 13 patients had undetectable CMV titre in aqueous with minimal or no anterior chamber (AC) inflammation and controlled IOP. Two patients had an increase CMV titre with increased AC inflammation and were found to be non- compliant to the treatment. 1 patient had a reduced CMV titre in aqueous with minimal inflammation and normal IOP. Mean concentration of ganciclovir in aqueous and tears were 119.6± 380.6ng/ml and 17.0±34.4ug/ml respectively. There was a moderate correlation between aqueous ganiclovir concentration and CCT($r=0.5$).
Conclusion: Although ganciclovir ointment exhibited a poor Intra-cameral penetration with an aqueous concentration below IC50 for CMV, continuous topical application of the gel is effective in treating CMV anterior segment infection. Ocular penetration of ganciclovir may vary depending on corneal thickness.

P32. Use of PCR in the diagnosis of syphilitic uveitis. Case series.

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Introduction: Polymerase chain reaction has been used to diagnose uveitis, including viral uveitis, mycobacterial intraocular infections, infectious endophthalmitis, and protozoa eye diseases. In any

case, to ensure an accurate diagnosis, one must consider clinical data in the interpretation of a PCR result. We present diagnostic applications and examples of utilization of PCR in infectious uveitis.
Material-Methods:
Case 1
A 47-year-old arrived from Gibraltar, HIV+ was referred to our clinic with reduction of vision initially affecting his left eye and later the right eye in a more aggressive way. He had been given the diagnosis of CMV retinitis and was receiving intravenous ganciclovir at the time of the referral. A diagnostic vitrectomy was performed on OD and intravitreal injection of 2.4 mg Foscarnet was given.
The PCR of the vitreous tap revealed a positive PCR result for Treponema pallidum (TP) and HIV and was tested negative for varicella zoster virus, HSV type 1 and 2, CMV, Epstein–Barr Virus (EBV) and toxoplasma. Anti-viral therapy was discontinued and high dose PO Doxycyclin treatment was commenced to treat a probable ocular syphilitic infection. Follow-up three months later revealed visual acuities of CF in the right eye and 6/9 in the left eye, with no residual uveitis in both eyes.
Case 2
A 39 year old Caucasian man was referred to our clinic with severe pain, redness, photophobia and vision deterioration in his right eye. The patient admi.ted to be homosexual and HIV positive under systemic antiretroviral therapy with zidovudine Further blood investigation failed to show evidence of sarcoidosis, toxoplasma, HIV or syphilis infection. PCR of the anterior chamber specimen was negative for Herpes, Varicella and CMV infection but showed evidence of syphilis infection. VDRL was repeated and revealed to be positive this time. The patient was immediately commenced on Doxycyclin 200 mg per day orally. Six weeks after starting oral treatment his uveitis had resolved and his visual acuity returned to 6/9.
Conclusion: PCR is an auxiliary diagnostic procedure that should always be evaluated taking into account the clinical manifestations of the condition. As demonstrated, the detection of TP in vitreous or aqueous biopsy allowed definitive diagnosis and adequate treatment in a sight threatening infection. TP-PCR is a highly useful diagnostic procedure and should be included in the investigations of infectious uveitis.

P33. A case of treatment refractory Serpiginous Choroidopathy
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A case of treatment refractory Serpiginous Choroidopathy
Material-Methods: A 52 yo, Caucasian, female who had been treated for tuberculosis (TB) in childhood. She first presented to our clinic in 2002 with RE photopsias and decreased RVA to 6/60. She was diagnosed with a RE CNV secondary to serpiginous choriodopathy. She declined any treatment for the CNV. In 2004 she developed symptoms in her left eye related to active serpiginous choroidopathy. She had a strongly positive Heaf test and was started on anti-TB therapy for 6 months, and was also started on prednisolone 120mg/day, which was gradually tapered and discontinued in 2005. She developed a new parafoveal lesion in 2009, and a possible TB reactivation due to incomplete therapy was considered. She was restarted on a third course of anti-TB therapy and oral steroids. Due to resistance concerns amikacin was also proposed, but was only briefly used due to intolerance. In spite of all treatment, which has also included immunosuppressive agents, she has experienced further progression of disease in her left eye. She has not been able to reduce prednisolone below 25mg. She will now be started on anti-TNF therapy after this option was considered safe by a chest physician.
Conclusions: Serpiginous choroidopathy (SC) is classified as an idiopathic chorioretinal disease. Atrophy of external retina involving foveolar area and/or submacular neovascularisation are the leading causes of visual loss. The association with TB has been recently established, and progressive disease may develop in spite of specific therapy and aggressive immunosuppression. This condition continuous to represent a complicated therapeutic problem.

P34. Macular retinoschisis in a patient with Marfan's syndrome
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Purpose: To describe a case of macular retinoschisis in a patient with Marfan syndrome (without evidence of optic nerve pits or peripapillary retinoschisis or any abnormality of the fundus) and reveal usefulness of OCT in diagnosis & monitoring over 24 months.
Material-Methods: A case is presented of a 54 years old lady with Marfan's syndrome.
Marfan syndrome is a widespread disorder of connective tissue. It is characterized by systemic and ocular features due to mutations in the fibrillin gene.
This patient has in the past, had multiple ophthalmic complications and operations which have left her right eye pain free but NPL.
She has high axial myopia in the left eye and an anterior chamber lens in place. She had a myopic choroidal neovascularisation membrane in her left eye, was treated with a single intravitreal injection of Lucentis in August 2007 and was doing very well. Six months after the injection the vision in her left eye was still 6/12. Retina was attached all throughout. Foveal reflex was good in both the eyes. To know the cause of visual loss, spectralis-OCT was done. It showed that proper foveal architecture was not maintained, and parafoveal disruption of photoreceptors detected. Schisis was involved in entire macular area and was located at both INL and outer nuclear layer (ONL) /outer plexiform layer (OPL). Besides the schisis cavity, cysts within ganglion cell layer were found. No peripheral retinoschisis was detected.
Conclusion: Awareness and prompt recognition of the ocular complications of Marfan syndrome may enable improvement and preservation of sight. OCT can be used to investigate macular schisis – which can remain stable with good visual acuity despite severe apparent disruption on OCT

P35. Intravitreal bevacizumab for inflammation-related choroidal neovascularization in a case of ocular tuberculosis
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Purpose: The purpose of this study was to report our experience with intravitreal bevacizumab for inflammation-related choroidal neovascularisation (CNV) in a case of tuberculosis
Methods: A 27 year old male from Somalia presented with a one month history of blurred vision and distortion in his both eyes. At presentation the visual acuity was 6/60 in the right eye and 6/24 in the left eye. Examinations revealed in both eyes, iritis with intermediate uveitis, multi-focal chorioretinal lesions, with macular haemorrhage. Investigations confirmed the presence of active CNV.
Further investigations including chest x-ray, serum ACE, VDRL and Quantiferon were performed. The Quantiferon was reported positive twice and following discussion with respiratory physicians he was treated for TB for six months with additional oral Prednisolone therapy. Applications were submitted to confirm funding for treatment with intravitreal bevacizumab. However given the patients choice to delay commencing therapy prognosis is guarded for visual recovery.
Conclusion: Intravitreal therapy with bevacizumab for inflammatory CNV may be useful in improving visual acuity in eyes with Choroidal neovascular membranes with controlled ocular inflammation.

P36. Are Second line agents effective in controlling Birdshot chorioretinopathy?
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Purpose: To examine the long term prognosis of patients with birdshot chorioretinopathy using second line agents.
Methods: We retrospectively examined sequential data from 96 eyes of 48 patients with birdshot chorioretinopathy who were HLA-A29+. Patients were divided into two groups, those who received no treatment or only short term steroid treatment and a second group of patients who were given 2nd-line agents.
Results: Patients were followed for an average of 57.2±5.76months (20.83% follow up of at least 10 years). Patients in both groups maintained a steady best corrected visual acuity throughout the follow-up with a difference only during the early treatment period (first 6 months). Serial VF demonstrated that while the acute group had a little to no change in mean deviation (MD) (R2=0.02) and a worsening of pattern standard deviation (PSD, R2=0.32), 2nd-line patients' visual fields had MD improving (R2=0.32) with PSD growing smaller (R2=0.04).
Conclusion: Our results suggest that while untreated patients had stable visual acuity, a progressive deterioration in visual fields was noted over 10 years, suggesting loss of peripheral retinal function. However, patients on 2nd-line agents appear to have an improved outcome mainly reflected in their peripheral retina function.

P37. Pars plana vitrectomy with epiretinal membrane peel in patients with uveitis

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Purpose: To report the outcomes of pars plana vitrectomy (PPV) with epiretinal membrane (ERM) +/- internal limiting membrane (ILM) peel in patients with chronic uveitis.
Design: Retrospective interventional noncomparative case series.
Methods: A retrospective review of records of all patients who underwent a PPV with ERM +/- ILM peel between 2005 – 2011.
Results: Thirteen consecutive patients (13 eyes) records were analysed and included three combined procedures (phacoemulsification with lens implantation). The mean duration of ERM at surgery was 33 months and mean patient age at surgery was 41 years. The mean follow-up period was 20.5 months (range 6-40 months). At 6 months after surgery, 1 eye (8%) had improved visual acuity (VA) by 2 lines or more, 9 eyes (69%) remained stable and 3 eyes (23%) were worse. The causes of decreased vision were pre-existing macular scar (1) and 2 eyes with post-vitrectomy cataract awaiting surgery. Postoperative complications included cataract (3), fibrinous uveitis (2), transient hypotony (2), transient raised IOP (1), residual ERM (3) and macular edema (2).
Conclusion: PPV with ERM +/- ILM peel improves visual acuity in some patients with uveitis. Good perioperative control of inflammation and careful selection of cases enhances visual outcome. There is a significant rate of complications and more aggressive immunosuppression may prevent the need for surgery.

P38. Treatment of primary intraocular lymphoma (PIOL) with intravitreal rituximab

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Purpose: Intravitreal injection of methotrexat (MTX) for primary intraocular lymphoma (PIOL) results in a higher concentration, a better effect in the eye and less systemic side effects compared to systemic therapy. The chimeric monoclonal CD20 antibody rituximab offers a potentially new intravitreal treatment option and used successfully for treatment of ZNS Lymphoma. In our case series, we report about clinical course after repeating intravitreal injections of rituximab for PIOL.
Methods: Diagnosis of PIOL were confirmed by clinical investigation in three cases (additional vitreous biopsy in one patient). Two patients were pretreated with systemic chemotherapy (ifosfamid - infiltration of the optic disc, MTX – primary ZNS lymphoma). Ocular clinical findings (visual acuity, intraocular pressure, vitreous haze, tumor size) were recorded before and after rituximab therapy. Intravitreal 1mg/0,1mL rituximab injections were conducted in accordance with the German Ophthalmic Society guidelines. Data were implemented in a nationwide open register for PIOL supported by the German Federal Ministry of Education and Research.
Results: 5 eyes from 3 patients received minimum 1 to maximum 7 rituximab injections. After a follow up of 4-30 months, we observed a significant reduction of vitreous haze in all eyes (measured by Nussenblatt classification), a preserved constant visual acuity or improvement (two eyes: finger count to 20/32; 20/40 to 20/32) and regressive tumor size. All patients reported about a reduction of discomfort after therapy. No intraocular adverse effects have been observed.
Conclusions: In our case series, we demonstrated advancement in clinical findings of PIOL and, to some extent, visual acuity without adverse intraocular side effects after intravitreal rituximab injections. Further long-term studies are necessary to illuminate local and systemic effects and possible side effects after rituximab therapy for intraocular lymphoma.

P39. Clinical Presentation of Anterior Uveitis in Korean tertiary ophthalmic center

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Purpose: To investigate the clinical manifestation of anterior uveitis in Korean tertiary ophthalmic center.
Methods: Electrical chart review was conducted retrospectively for the patients who visited an ophthalmic clinic at Seoul National University Hospital from 2000 to 2011 and were diagnosed with anterior uveitis clinically.
Results: A total of 603 patients were included in the study. Mean age was 42±17 and the number of men and women were 266 and 337. The patients included idiopathic anterior uveitis (N=260, 43%), HLA-B27 (+) uveitis (N=175, 29%), glaucomatocyclitic crisis (N=64, 11%), Behcet disease (N=40, 7%), rheumatoid disease (N=22, 4%), Herpes zoster ophthalmicus (N=15, 2%), and sarcoidosis (N=12, 2%). HLA-B27 (+) uveitis was more frequently observed in young male person than other types of uveitis. HLA-B27 (+) uveitis had a similar visual outcome to idiopathic uveitis despite the characteristics of recurrence.
Conclusion: The clinical manifestation of anterior uveitis in Korea was comparable to Western countries. HLA-B27 uveitis had a prognosis similar to idiopathic uveitis due to proper treatment.

P40. Differential corneal inflammatory response between Gram+ve and Gram-ve pathogens detected with AS-OCT

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Introduction: Bacterial keratitis is a potentially blinding corneal infection with at least 4000 cases requiring hospital treatment in the UK annually. It is characterised by epithelial ulceration, stromal inflammatory infiltration and corneal oedema.
Design: Prospective longitudinal case series.
Participants: Twenty-six eyes of 26 patients treated for clinical bacterial keratitis.

Methods: Patients underwent AS-OCT (Visante-OCT) and slit-lamp examination on presentation (day 0) and days 3, 7 and 14 of treatment. Corneal thickness (CT) in the infiltrated area, infiltrate thickness (IT) and infiltrate width (IW) were measured on high-resolution AS-OCT scans. Mean values for each day and rates of change for each interval were calculated and compared (one-way ANOVA, paired t-test).
Main outcome measures: CT, IT and IW.
Results:CT on presentation was greater(mean CT [SD]: 1072 [196] vs. 807 [142] µm, p=0.001)
IT on presentation was greater (mean IT [SD]: 501 [117] vs. 344 [189] µm, p=0.057)
IW on presentation was larger (mean IW [SD]: 2628 [1057] vs. 1035 [565] µm, p=0.003)
Only IW differences persisted beyond day 3 of treatment
Gram –ve bacterial keratitis is characterised by:
Large infiltration
diameter
depth
Severe corneal oedema
Conclusions: Appropriate treatment of causative pathogen results in reduction of the inflammatory parameters, CT and IT, by day 3 of treatment.
CT and IT as measured by AS-OCT at presentation provides information towards causative organism
Serial AS-OCT examination can be used for objective assessment of the treatment response
Financial disclosure: None

***P41. Association of intraocular and testicular lymphoma**

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Purpose: To describe the association between vitreoretinal and testicular lymphoma in 8 patients and report on their clinical manifestations and prognosis.
Design: Observational case series.
Participants: We identified 8 patients who developed a combination of vitreoretinal and testicular lymphoma.
Methods: Retrospective study of clinical data of all 8 patients including age, uni or bilateral testicular and ocular involvement, course of the disease and types of treatment, CNS involvement and additional other sites of lymphoma, ocular manifestations morbidity, mortality and if appropriate a cause of death.
Results: All patients had diffuse large B-cell lymphoma. Clinical manifestation and course of disease of these patients will be presented. Additionally, we will discuss the hypothesis of “the immune privileged site lymphoma”.
Conclusions: We report on 8 patients with a combination of testicular and ocular lymphoma and discuss the hypotheses of the intriguing mechanism of lymphoma spread among immune privileged sites.
Financial disclosure: The authors have no proprietary or commercial interest in any materials discussed in this article.

P42. Bevacizumab (Avastin) in Uveitic Cystoid Macular Oedema

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Purpose: To assess the effect of intravitreous injections of Avastin (IVA) on Central Retinal Thickness (CRT) and Best Corrected Log MAR Visual Acuity (BCVA) in patients with chronic uveitic macular oedema.
Methods: Ten eyes from seven consecutive patients with chronic uveitic macular oedema were included. Male/Females: 4/3, 5 Caucasian, 1 Afro-Caribbean and 1 Asian. The mean age of the patients was 45.7 (±12.2) years. Uveitis was associated with tubulointerstitial nephritis: in one patient, tuberculosis: in one patient, idiopathic: in three patients and retinal vasculitis: in two patients. Most patients were on immunosupression and all had previously received regional injections of steroids.
Results: After a mean follow up of 20.7 (±7) months, mean CRT was statistically significantly lower [454.1 (±152.7) vs 314.1 (±108.2); p=0.005] and BCVA statistically significantly better [0.65 (±0.5) vs 0.3 (±0.18); p=0.03]. The mean average number of IVA injections per eye was 3.2 (± 2.2). No complications were noted in relation to IVA injections.
Conclusions: IVA appears effective adjunctive treatment in patients with chronic uveitic macular oedema.

P43. Retinal vasculitis and its systemic associations

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Purpose: To determine systemic associations of retinal vasculitis in a UK tertiary referral uveitis centre
Methods: A retrospective review of our records included 229 patients attending the Uveitis Clinic at St Paul’s Eye Unit, Royal Liverpool University Hospital, United Kingdom during the last 5 years. We included in the study all patients with uveitis and retinal vasculitis.
Results: 34 out of 229 (14.8%) patients had uveitis and retinal vasculitis. 20 out of 34 (58.8%) patients had retinal vasculitis which was associated with a systemic underling condition. 11 patients with retinal vasculitis had Adamantiades-Behcet’s disease and 4 had sarcoidosis. 2 out of 229 patients with uveitis had systemic vasculitis. 1 out of 34 patients with uveitis had retinal and systemic vasculitis.
Conclusions: In our series 58.8% of patients with retinal vasculitis had an underlying systemic association. It is imperative that patients with retinal vasculitis have systemic investigations with physician’s support.

P44. Neuroretinitis associated with choriocapillaris ischemia

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Purpose: To report two cases of neuroretinitis associated with choriocapillaris ischemia.
Methods: Two female patients with unilateral neuroretinitis associated with choriocapillaris ischemia are described. Both underwent detailed ophthalmic examination, fluorescein angiography (FA), indocyanine green angiography (ICGA), and optical coherence tomography.
Results: The first patient, aged 52 years, was diagnosed with unilateral neuroretinitis associated with deep well-circumscribed yellowish confluent lesions at the level of the outer retina and retinal pigment epithelium in the posterior pole. Serology testing was positive for Rickettsia conorii. The second patient, aged 19 years, presented with unilateral neuroretintis associated with multiple white dots and retinal pigment epithelial changes. In both patients FA and ICGA showed features of choriocapillaris ischemia. The second patient was treated with oral corticosteroids.During follow-up, optic disc edema and features of choriocapillaris resolved. Final visual acuity was 20/20 in both patients.
Conclusions: Physicians should be aware of the association of choriocapillaris ischemia with neuroretinitis. Rickettsiosis should be ruled out mainly in countries where the disease is prevalent.

P45. Macular involvement in patients with Behçet's uveitis

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Purpose: To assess macular involvement in patients with Behçet's uveitis.
Methods: The study included 65 patients (120 eyes) with Behçet's uveitis. All patients underwent detailed ophthalmic examination, including dilated biomicroscopic fundus examination, fundus photography, fluorescein angiography, and optical coherence tomography. Follow-up ranged from 6 to 46 months (mean 20 months).
Results: At initial examination, 29 eyes (24.1 %) had macular involvement including macular edema (16 eyes, 13.3 %), serous retinal detachment (SRD; 5 eyes, 4.1 %), active retinitis (3eyes, 2.5 %), macular hole (3 eyes, 2.5 %), macular atrophy (2 eyes, 1.6 %), macular ischemia (one eye, 0.8 %), epiretinal membrane (one eye, 0.8 %), branch retinal vein occlusion involving the macula (3 eyes, 2.5 %), and branch retinal artery occlusion involving the macula (2 eyes, 1.6 %). During follow-up, 22 eyes (18.3 %) developed macular complications including macular edema (ten eyes, 8.3 %), SRD (4 eyes, 3.3 %), active retinitis (2 eyes, 1.6 %), severe macular atrophy (2 eyes, 1.6 %), macular ischemia (3 eyes, 2.5 %), macular hole (one eye, 0.8 %), epiretinal membrane (2 eyes, 1.6 %), and subretinal fibrosis (one eye, 0.8 %). Branch retinal vein occlusion involving the macula developed in 2 eyes (1.6 %). Final best corrected visual acuity in patients with macular involvement ranged from 20/400 to 20/25 (mean 20/80).
Conclusions: Macular edema and other vision-threatening macular complications are common in Behçet's uveitis. Macular damage is often irreversible, causing permanent visual impairment. Early and appropriate treatment of Behçet's uveitis is mandatory to reduce the risk of visual impairment due to macular involvement.

P46. Intraocular pressure elevation and glaucoma in patients with viral anterior uveitis

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Purpose: To assess the prevalence and outcome of intraocular pressure (IOP) elevation in patients with viral anterior uveitis.
Methods: Retrospective study of 55 patients (57 eyes) with viral anterior uveitis treated at the department of Ophthalmology, Fattouma Bourguiba University hospital, Monastir, Tunisia. All patients underwent detailed ophthalmic examination including best-corrected Snellen visual acuity, slit-lamp examination, tonometry, gonioscopy, and fundus examination. Mean follow-up was 14 months.
Results: Thirty five eyes (61.4%) had HSV anterior uveitis and 22 eyes (38.6%) had VZV anterior uveitis. Overall, 25 eyes (43.8%) suffered from IOP elevation. IOP rise was seen in 51.42% of eyes with HSV anterior uveitis and 31.81% of eyes with VZV anterior uveitis. Secondary glaucoma developed in 10 eyes (14.28% and 22.72 % of HSV and VZV groups, retrospectively). Mean initial visual acuity was 20/63 (range, light perception-20/32). Mean IOP was 29 mmHg (range, 23-54). All eyes (25 eyes) were treated with systemic or topical antiviral therapy associated with topical corticosteroids and topical glaucoma therapy. Fourteen eyes (56%) also received systemic glaucoma therapy. The IOP normalized (IOP ≤ 21 mmHg) within a few days after anti-inflammatory and anti-glaucomatous therapy in 24 eyes (96%), with a need for long-term anti-glaucomatous treatment in 9 eyes (37%). Filtering surgical was performed in only one eye (1.75%). Mean final visual acuity was 20/23 (range, counting fingers-20/20).
Conclusions: Raised intraocular pressure is a common complication of viral anterior uveitis. In most cases, patients responded rapidly to combined topical steroids, antiviral and antiglaucomatous therapy with good visual outcome.

P47. Differential diagnosis of serous retinal detachment in patients with Behçet's uveitis

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Purpose: To assess causes of serous retinal detachment (SRD) in patients with Behçet's uveitis.
Methods: Retrospective study including 122 eyes of 66 patients with Behçet's uveitis. All patients underwent detailed ophthalmic examination, fundus photography, fluorescein angiography, and optical coherence tomography (OCT). Follow-up ranged from 6 to 46 months (mean 20 months).
Results: SRD was recorded in 12 eyes (9.8%). It was visible on fundus examination in 4 eyes and detectable only by OCT in 8 eyes and. SRD was associated with branch retinal vein occlusion (BRVO) in 6 eyes, epiretinal membrane in one eye, breakdown of blood-retinal barrier in 2 eyes and corticosteroid use (central serous chorioretinopathy (CSCR)) in 3 eyes. It was associated with cystoid macular edema in 5 eyes.
Conclusions: Patients with Behçet's uveitis are at risk of developing SRD that can cause visual loss. BRVO is the leading cause of SRD; however, corticosteroid-induced CSCR should also be kept in mind.

P48. Branch Retinal Artery Occlusion Associated with Behçet Disease

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Purpose: To report 2 cases of branch retinal artery occlusion (BRAO) associated with Behçet disease (BD).
Methods: Review of two patients' charts, fluorescein angiography, and optical coherence tomography (OCT).
Results: We report two young patients diagnosed with BD who developed decreased vision secondary to BRAO for the first patient and cilioretinal artery occlusion associated with branch retinal vein occlusion for the second patient. In the two cases, artery occlusion was associated with active intraocular inflammation.
Conclusions: Although less common than branch retinal vein occlusion, BRAO, with subsequent transient or permanent visual impairment, can occur with Behçet uveitis.

P49. Clinical Features of Cytomegalovirus Retinitis in Korea

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CMV retinitis associated with AIDS is well studied around the world, and the prevalence was found to be 0.36 cases per 100 person-years in a recent study. CMV retinitis in other immunosuppressed hosts, is known to be much less common than in HIV patients, however, its importance is increasing with the increase in number of transplantations, improved recipient survival, and more potent immunosuppressive drugs being administered, and it's importance should be considered in regions with low prevalence of AIDS. We reviewed all patients treated for CMV retinitis in the last decade to describe the clinical features of CMV retinitis in Korea, which is a HIV-low region, and possibly identify any difference of clinical features of CMV retinitis in HIV and non-HIV patients. Retrospective review of all the patients newly diagnosed with CMV retinitis was done. The mean age of the patients was 41 years old, with male predominance, possibly due to the male predominance in HIV positive patients.

On analysis of the underlying condition of the patients, 40% were identified to have AIDS, while about one third had hematologic malignancies with BMT. 9% had other malignancies with immunosuppression due to anti-cancer treatment, and 6% had solid organ transplantation. The fundoscopic features were similar to previous reports in CMV retinitis in HIV positive patients. On subgroup analysis for comparison of HIV versus non-HIV patients, bilateral cases and multifocal retinitis were significantly more common in the non-HIV group. Also, marked hemorrhage was more common in the non-HIV group, possibly due to impaired hemostasis in these patients. There were no differences observed in the final visual and anatomical outcome among the two groups. In conclusion, AIDS-associated CMV retinitis is less common in Korea, even at SNUH which is a tertiary referral hospital for AIDS. Non-HIV associated CMV retinitis tended to be more bilateral and multifocal, with more hemorrhagic appearance.

P50. Acute macular neuroretinopathy: report of 2 cases

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Purpose: To report two cases of acute macular neuroretinopathy (AMNR).
Methods: Two young female patients with AMNR are described. Both underwent detailed clinical examination with additional infrared imaging. Fluorescein angiography (FA), indocyanine green angiography (ICGA), and optical coherence tomography were also performed.
Results: The first patient, aged 26 years, was diagnosed with AMNR after a voluntary interruption of pregnancy after which she received treatment with vasoconstrictive drugs. The second patient, aged 19 years, complained of central scotoma following a bout of flu. In both patients infrared imaging was superior to standard white light in identifying macular lesions.
Conclusions: AMNR is a rare disease of unknown origin, usually occurring in young women. It could cause visual loss, photopsia, and paracentral scotoma. It often occurs after a flu-like syndrome. Tiny changes may be observed in the fundus: reddish-brown ovoid dots around the fovea. FA and ICGA are usually normal. Infrared imaging is very useful in detecting typical fundus lesions in AMNR both early and late in the course of the disease.

***P51. Double-organ bias in randomized controlled trials of uveitis**

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Background: A basic requirement in performing a test of significance is that each data entry is inherently independent of other entries. As is true for other double organs a change observed in one eye should not be considered totally independent of what is observed in the other eye. Therefore it is improper to do statistical testing on 50 eyes of 25 patients in significance testing as sometimes observed in the ophthalmology literature. In this study, we aimed to formally survey the frequency e of this “double-organ bias” in randomized controlled trials in uveitis.
Methods: Reports of randomized controlled trials of uveitis published in the 15 highest-impact-factor ophthalmology and general medicine journals between May 1999 and May 2009 were searched and the frequency of the above described double-organ bias was tabulated. The articles were also further classified as surgical and medical studies.
Results: 79 articles qualified for the survey. 15 of the randomized controlled trials were surgical studies, while in 15 articles only a medical treatment was given. In 11 of the 79 articles (13.9%) double-organ bias was found. The bias was more common in medical (3 of 15, 20%) compared to surgical studies (7 of 58, 12%).

Conclusion: Double-organ bias was observed around 14% of the published randomized controlled trials, leading to inaccurate calculations in statistical testing. This problem is less frequent in surgical studies, probably because we seldom perform surgery on both eyes of an individual during the same session. More awareness of the double-organ bias should improve the quality of randomized controlled trials.

***P52. Subclinical retinal vasculitis identified in patients with systemic small vessel vasculitis**

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Purpose: To describe the changes seen on wide-field fluorescein angiography in patients with primary small vessel vasculitis.
Methods: Between September 2010 and January 2012, consecutive patients under investigation for systemic vasculitis at the Royal Liverpool Vasculitis Service were assessed using slit lamp examination, dilated fundal examination and wide-field fluorescein angiography (FFA) using with a HRA 2 scanning laser ophthalmoscope and Staurenghi SLO 230 lens to assess for evidence of retinal vasculitis.
Results: Fourty-six patients were assessed; 17 had Wegener’s Granulomatosis (WG), 4 Churg Strauss (CSS), 2 Microscopic Polyangiitis (MPA), 6 had anti-neutrophil cytoplasmic antibody (ANCA) associated vasculitis without further sub-classification, 3 had ANCA negative vasculitis and 14 patients had no confirmed diagnosis. None had evidence of retinal vasculitis on clinical examination. Fourteen patients were found to have retinal peripheral vasculitis on wide field FFA. 8 of these patients had Wegener’s Granulomatosis and 7 of these had active disease at other sites. Two patients with MPA had retinal vasculitis on angiography and had active disease at other sites. One patient had an ANCA positive vasculitis and one had an ANCA negative vasculitis, both with active disease. Two patients were under investigation. No patients with CSS had vasculitis on angiography.
Conclusions: These results show that 30% of our patients have evidence of subclinical retinal vasculitis, and this was as high as 47% in patients with Wegener’s granulomatosis. We believe that wide-field FFA should be used as a tool in the diagnosis and management of small vessel vasculitis. We are studying this further to gain a better understanding of the relevance and benefit of wide-field FFA in the diagnosis and management of vasculitis.

***P53. Pharmacokinetics and Tolerability of Intravitreal Sirolimus**

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Purpose: To evaluate the pharmacokinetics and tolerability of a proprietary sirolimus depot-forming ocular formulation (DE-109; currently in clinical trials for posterior uveitis. www.clinicaltrials.gov; NCT01358266) in rabbits and humans following intravitreal (IVT) injection.
Methods: New Zealand White (NZW) rabbits were injected intravitreally in both eyes with the formulation in 5 (3 PK and 2 tolerability) studies. Sixty-three animals were divided into 3 groups receiving either 22, 66, or 220 µg sirolimus per eye. At 3, 7, 14, 29, 62, 90 and 162 days post-injection, 3 animals/group were euthanized, both eyes enucleated, frozen and dissected to separate retina/choroid and vitreous humor (VH). Whole blood samples were obtained at each time point prior to euthanasia. Sirolimus concentrations in ocular tissues and whole blood were measured using LC/MS/MS. In a separate prospective, open-label study of Age-related Macular Degeneration (AMD), 10 patients received an IVT injection in one eye of 352 µg sirolimus bimonthly (NCT 00712491). Whole blood samples were collected at similar time points for quantification of sirolimus concentration using LC/MS/MS. Tolerability evaluations were conducted.
Results: Intravitreal delivery of DE-109 in NZW rabbits following a single IVT injection was characterized by a gradient of sirolimus concentration in the order of VH >retina/choroid >sclera >whole blood

with detectable ocular tissue levels extending 60 days. Three days post-injection of 220 µg per eye (440 µg total), mean sirolimus concentrations of 390, 1.6, 0.01 and 0.004 µg/(g or mL) were detected in VH, retina/choroid, sclera, and whole blood, respectively. There was a clear dose-dependent change in both sirolimus concentration and duration of exposure. Sirolimus concentrations declined exponentially over time, with elimination half-life (t1/2) of 7 to 8 days. Whole blood sirolimus concentrations in AMD patients injected intravitreally appeared to follow similar kinetics (t1/2; 8-9 days). The highest sirolimus levels were shown at Day 2 and were <2 ng/mL. There was no accumulation 30 days after injection. Safety studies conducted on rabbits indicated good local tolerability; sirolimus-related effects were limited to minor incipient cataract findings and mild lenticular changes. In the clinical study intravitreal injections were well tolerated.
Conclusions: After IVT administration of DE-109, the formation of a depot in the VH that dissolves over time, allows extended availability of sirolimus to ocular tissues with low and transient systemic exposure. Across the tolerability studies, there were no local or systemic significant findings observed.

P54. The value of the QuantiFERON-TB Gold test in TST-positive uveitis patients

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Objective: To evaluate the additive value of the QuantiFERON-TB Gold test (QFT-G) in tuberculin skintest (TST)-positive uveitis patients.
Methods: The medical records of TST-positive uveitis patients at the Rotterdam Eye Hospital between 1988 and 2009 were reviewed for demographic data, uveitis type, QFT-G testing and start of anti-tuberculosis treatment (ATT).
Results: There were 62 TST-positive uveitis patients, of which 31 had additional QFT-G testing. Mean age was 49 ± 16 years. 79% had a negative chest x-ray. 73% had unilateral disease. 11% had documented granulomatous uveitis. 40% was categorized as anterior uveitis, 21% as intermediate uveitis, 34% as posterior or panuveitis and 5% as other entities. ATT was started in 18 out of 31 patients (58.1%) with only a positive TST, compared to 48.4% (15 out of 31) of patients in whom an additional QFT-G was performed. 32.3% (10 out of 31) of patients with a QFT-G tested negative and were not treated. Of the 21 QFT-G positive patients only 71.4% received ATT. The median QFT-G value was high: 13.13 (range 1.13 – 20.07).
Conclusion: The combination of a positive TST and QFT-G led to 13.3% more patients receiving ATT than with positive TST alone. Comparing TST only with the addition of QFT-G overall reduced the start of ATT by 9.7%. Moreover, through a negative QFT-G one third of TST-positive uveitis patients could be excluded directly from ATT. In other words, QFT-G testing seems more selective in the decision to start ATT in uveitis patients suspected of ocular tuberculosis.

***P55. OCT changes in chronic uveitis**

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(1) To describe the optical coherence tomography (OCT) changes in patients with chronic uveitis, (2) to investigate the association of morphological characteristics of macular oedema with central retinal thickness (CRT) and visual acuity (VA), (3) to determine the impact of treatment on OCT pattern and (4) the impact of OCT pattern on vision over time.
Methods: 132 Eyes/89 patients with chronic uveitis and adequate media clarity were included. M/F=39/50. Caucasian (42), Asian (31), Afro-Caribbean (16). The mean age was 46.5 years (SD15.6).
Results: Three patterns of macular oedema were identified: cystoid macular oedema (CMO), diffuse macular oedema (DMO) and serous retinal detachment (SRD). CMO was detected in 68 eyes (51.5%), in 29 (40.6%) of these, CMO was associated with SRD. DMO was detected in 56 eyes (42.4 %), in 21 (37.5%) of these, DMO was associated with SRD. Isolated SRD was present in 6 eyes (6.7%), epiretinal membrane(ERM) in 47 (35.6%), vitreomacular traction (VMT) in 8 eyes (6%). At initial assessment, the mean CRT in eyes with CMO was 472.45μm (SD 155.7), in DMO 340.4μm (SD 92.9), in SRD 317.5μm (SD 82.6). Eyes with CMO had statistically significantly greater CRT compared to eyes with DMO (P<0.001).
After a follow up of 23.4 months (SD 12.6), the mean CRT in eyes with CMO was 331.9μm (SD 180.7), in DMO 269.4μm (SD 65), in SRD 196 μm (SD 27.6). Eyes with CMO had statistically significantly greater CRT compared to eyes with DMO (P=0.005). At initial assessment, the mean VA (LogMAR) in eyes with CMO was 0.61 (SD 0.46), in DMO 0.36 (SD 0.31). The VA in eyes with CMO was statistically significantly lower compared to eyes with DMO (p<0.01). At the last follow up, the mean VA (LogMAR) in eyes with CMO was 0.41(SD 0.35), in DMO 0.34 (SD 0.33). There was no statistically significant difference between VA in both groups (P=0.26).
There was statistically significant reduction in CRT (p=0.03) and improvement in VA (p=0.007) when comparing the eyes with CMO at initial assessment and last follow up, however there was no statistically significant difference in eyes with DMO (for CRT P=0.34, for VA P=0.47).
Treatment consisted of oral non-steroidal anti-inflammatory drugs, steroids, immunosuppressive treatment, regional injection of steroids and intravitreal anti-VEGF.
Conclusions:
Poor vision was associated with cystoid pattern and increased central retinal thickness at initial assessment. Treatment resulted in reduction of central retinal thickness and improvement of vision in both CMO and DMO. However, this was statistically significant only in eyes with CMO suggesting that eyes with DMO are more resistant to treatment.

***P56. Long-term Oral Therapy with Ganciclovir in Patients with Posner-Schlossman Syndrome**

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Purpose: To assess the long-term efficacy of oral therapy with ganciclovir in patients with Posner-Schlossman Syndrome (PSS).
Material and Methods: This is a retrospective observational study on eleven patients with PSS, who were treated at our institution from Juli 2003 and January 2012. The PSS was diagnosed clinically on the basis of recurrent episodes of anterior uveitis associated with attacks of elevated intraocular pressure (IOP). The complete ocular examination was repeated in the first week, in the first and third month and thereafter at four-month intervals, with more frequent visits if necessary. As soon as positive CMV PCR analysis of the aqueous humour (6 of 11 patients) or typical presentation of CMV anterior uveitis (5 of 11 patients) with mild anterior chamber inflammation, increased IOP (>30 mmHg) and no response to acyclovir therapy was observed, oral therapy with ganciclovir (Valcyte®) could be started. Initially, the drug was given 900 mg twice daily for three weeks, followed by 450 mg twice daily for a minimum period of three months. Conservative and surgical treatment of glaucoma was performed as required.
Results: Eleven patients (7 male, 4 female) were included in this study. The mean age was 44 years (range 27–60 years). Five of eleven patients are working in a social or medical profession. The mean duration of treatment was thirteen months (range 3-33 months). Before initiation of oral gancicloivir therapy the highest IOP was 60 mmHg (mean 45 mmHg±9 mmHg). In the first week of treatment, the IOP decreased significantly (mean 16 mmHg±10 mmHg, the highest IOP 33 mmHg) and maintained stable during the entire follow-up period (mean 16 mmHg±4 mmHg). Despite that, 36.4% of patients (4 of 11) required a surgical intervention to reduce the IOP. In 91% of patients (10 of 11), oral ganciclovir led to resolution of inflammatory activity and stable IOP. In 4 patients (36.4%), ganciclovir could

be discontinued after a mean of 13.5 months. In 7 patients (63.6%), the treatment was still ongoing at last visit. No side effects of long-term ganciclovir therapy were observed.
Conclusions: Long-term oral therapy with ganciclovir was effective and safe in patients with clinically diagnosed Posner-Schlossman Syndrome who did not respond to acyclovir therapy. Our study shows that PSS might be associated with social and medical occupation.

***P57. Clinical profile and outcome in patients with HIV/AIDS with Immune recovery uveitis**
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Purpose: To describe clinical features and visual outcome in Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS) patients with Immune Recovery Uveitis (IRU)
Methods: Retrospective data of all patients with AIDS seen at the uveitis clinic between 2001 and 2011 and who received Highly Active Anti Retroviral therapy (HAART) were reviewed. Patients with clinical evidence of IRU and with a minimum follow-up of 3 months were included in the study. Patients who were treated with intravitreal cidofovir and other drugs causing intraocular inflammation were excluded from the study. Data was analyzed using SPSS version 15 software.
Results: 42 (72 eyes) patients were included in the study. Mean age was 38.55 (+6.55) years, 10 (23.8%) patients were females and 32 (76.2%) were males. Among them, 71.4% had bilateral presentation and 21.6% had unilateral presentation. Median duration of HIV disease was 24 months (range 0- 133.8 months). Follow-up median- 1 month (range 1day- 60.8months). Commonest systemic association was tuberculosis in 22 patients (26%). Commonest underlying ocular opportunistic infection was CMV retinitis in 56 eyes (77.8%). Mean duration of HAART was 11.9 months (range 1- 60 months). Among patients in our study,IRU was commonly noted when CD4 counts increased to more than 200 cells/cu.mm, as noted in 66.7% patients and 11.1% when it was >150. Mean CD4 counts at the time of IRU was 296.2 (167.4) cells/cu.mm. In 2/3rd of patients, IRU was commonly seen when an increase in CD4 count of 100-150 was noted. Common clinical presentations of IRU included epiretinal Membrane 9(9.52%), anterior uveitis and vitritis 48(66.67%), cystoid macular edema 12(16.67%) and vasculitis 3(4.76%). Topical anti inflammatory drugs were used in 35 patients (59 eyes – 83.1%), oral steroids in 6 patients (8.54%), periocular steroids in 4 patients (6 eyes – 8.54%). Improvement in vision was seen in 22 eyes (30.6%), maintained in 30(41.7%) and deterioration of vision in 20(27.8%). Inflammation was controlled in 30 eyes (81.1%) and recurrent in 4 eyes (10.8%)
Conclusion: IRU can cause significant visual morbidity in patients on HAART. Common cause for visual loss is vitritis and CME. Patients on HAART should be followed up closely for development of IRU. IRU developed commonly in patients post CMV retinitis. Treatment with anti inflammatory therapy such as steroids, reduces the ocular morbidity due to IRU without reactivation of retinitis.

P58. Clinical characteristics of Fuchs uveitis syndrome in childhood
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Introduction: To describe clinical signs and complications of Fuchs' uveitis syndrome (FUS) with onset in childhood.
Methods: Retrospective study at a tertiary referral uveitis center, analyzing ophthalmologic findings and complications in patients with FUS manifesting before the age of 16 years. Inclusion criteria were the presence of pathognomonic FUS findings at any time point and exclusion of any systemic immune-mediated or infectious disease.

Results: A total of 23 patients with juvenile FUS (unilateral n=13, bilateral n=10 patients) were included in the study. Mean ages at uveitis onset and FUS diagnosis were 12.0 ± 4.5 yrs and 23.19 ± 10.9 yrs, respectively. The inflammatory signs were: stellate KPs (n=3 patients), mixed stellate/ mutton fat (n=1), diffuse (n=12) or inferior (n=3) distribution of KPs, moderate AC cell grade (n=23), Koeppe nodules (n=10), vitreous cells (n=13). In 6 patients, these signs were noted at age ≤ 7 years. Iris heterochromia (n=13 patients), cataract (n=18), ocular hypertension (n=4) or glaucomatous disc damage (n=3) were found after a mean uveitis duration of 6.9, 11.9, 25.0 and 20.6 years, respectively.
Conclusion: FUS may begin in early childhood, and the characteristic findings may not be present at disease onset. The diagnosis is often delayed for years, occasionally with the consequence of anti-inflammatory over-treatment.

P59. What do uveitis patients know about uveitis?
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Purpose: Uveitis patient interest groups are becoming more common. Collaboration between doctors and patients is vital for patient adherence to medical recommendations, thus improving clinical outcome. Nevertheless for patients to be involved in decision-making they need to have an understanding of their own disease. We wished to find out how much uveitis patients know about uveitis.
Methods: A self-designed questionnaire comprising 20 questions about uveitis was given to 200 consecutive follow-up patients attending a tertiary referral uveitis clinic. It included questions on definition, epidemiology, causes, symptoms, complications and treatment and used a 3-point Likert scale. It was initially trialled by four uveitis patient groups and modified according to their comments.
Results: 36/200 (18%) patients answered 0-5 questions correctly, 85/200 (42.5%) 6-10 questions, 70/200 (35%) 11-15 questions and only 9/200 (4.5%) patients answered 16 or more questions correctly. No patient answered all questions correctly. Women knew more correct answers (48% vs 41%). 80.5% of patients knew the meaning of uveitis, 56.5% were uncertain if using a computer would make uveitis worse and 33% thought treatment was life long. Patients who had attended the clinic more than 5 years were no more likely to get the correct answer as those who had attended for less than 5 years.
Conclusions: Uveitis encompasses a broad spectrum of symptoms, causes and treatments so it is not unexpected that many patients knew little about the condition. Patient education in uveitis is paramount for the future success of patient interest groups.

P60. Choroidal thickening observation in posterior scleritis using High-Penetration Optical Coherence Tomography
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Purpose: To investigate the choroidal morphological changes of posterior scleritis in vivo by using high-penetration optical coherence tomography (HP-OCT) with long wavelength light source (1060 nm).
Methods: 4 eyes of 2 patients with posterior scleritis were observed with prototype Swept-source HP-OCT (Topcon Corp, Tokyo, Japan) using 1060 nm wavelength light source. It allows us to observe the deep choroid and even sclera, better than usual OCT using 840 nm wavelength light source. Choroidal morphological changes and thickness, defined as a distance between retinal pigment epithelium hyperreflective line and scleral surface, measured by the software.
Results:
Patient 1. Subfoveal choroidal thicknesses were found to be 384 μm OD with a serous retinal detachment and 194 μm OS with unilateral scleritis. The treatment regimen was increased to prednisolone

30 mg/day, and the posterior scleritis again resolved. Follow-up HP-OCT at 35 months revealed choroidal thicknesss of 261 µm at day 13, 227 µm at 2 months and 190 at 7 months OD.
Patient 2. Subfoveal choroidal thicknesses were found to be 300 µm OD and 230 µm OS with bilateral scleritis. Inflamation was severer in OD compared to OS. The posterior scleritis again resolved according to the treatment. Follow-up HP-OCT at 35 months revealed choroidal thicknesss of 260 µm at 1 M, 254 µm at 6 months and 230 at 8 months OD and 235 µm OS. There was no difference in choroidal thickness between the two eyes as measured at 8 months after initial presentation.
Conclusions: Significant choroidal changes underlies in posterior scleritis. This was agreement with past histological studies, however HP-OCT has been disclosed to be useful to observe these deep choroidal pathologies in patients with uveitis. The choroidal thickness was recovered by the treatment.

P61. A case of bilateral idiopathic occlusive vasculitis, aneurysms and neuroretinitis (IRVAN) syndrome. Treatment, management and 12 months follow up.
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We present a case of IRVAN syndrome of a young 26 y.o male patient who attended our eye casualty department with marked deterioration of visual acuity initially in the right eye. Clinical examination revealed established vitreous haemorrhage secondary to occlusive vasculitis complicated by severe ischaemia and neovascularization. Mild vitritis along with spill over anterior uveitis was also present. Examination of the fellow eye revealed extensive occlusive vasculitis with areas of neovascularization and mild vitritis. Blood tests and ancillary testing failed to highlight any causative agent or systemic associations. The patient received a three days course of 1000mg I.V. methyprednisolone followed by prolonged treatment with high doses of oral steroids. Once the inflammation was brought under control the patient underwent 23g PPV in the right eye and extensive Argon laser PRP in both eyes. The initial bilateral visual acuity of counting fingers improved to 6/18 in each eye. Patient remains in remission under a low dose of steroids.

P62. Evidence-Based Analysis for the Medical Treatment of Behçet's Disease
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Purpose: Behçet's disease (BD) is a multisystem, remitting-relapsing disease of unknown aetiology. Typical manifestations are orogenital ulceration, ocular involvement e.g. uveitis and occlusive retinal vasculitis, and skin lesions. The mainstay of treatment is systemic corticosteroid and immunosuppression. We wished to quantify the available levels of evidence for the treatment of BD with regards to the different systems involved.
Methods: We performed a Medline, EMBASE and CENTRAL literature search between 1975 - 2010 for papers on the treatment of BD. All studies written in the English language that reported patients with symptomatic manifestations of BD were eligible for inclusion, this included meta analyses, systematic reviews of RCTs, RCTs, cohort studies, case control studies, case series involving more than 20 patients, and expert opinion. All eligible studies were assessed and categorised in terms of: year published, number of patients in study, system involved, level of evidence according to SIGN (Scottish Intercollegiate Group Network) criteria, and therapy used.
Results: From an initial scope of 2892 papers, 93 fulfilled the criteria and were available for analysis. Only 25% of these could be graded as SIGN 1 (meta-analyses, systematic reviews of RCTs, and RCTs). These included the use of corticosteroids, a variety of immunosuppressants, and biologics. Many of the RCTs were poorly designed with small patient numbers and short follow up times. Just under 50% of the 93 studies included BD patients with ocular disease. Patients with orogenital ulceration and skin lesions were found in 31% and 23% of the 93 studies, respectively. Musculoskeletal, vascular and other systemic features were each mentioned in about 15% of studies, with a paucity of studies on treatment of CNS disease.
Conclusions: BD has potentially sight and life threatening complications but the quality of current evidence for therapy is poor. A myriad of different treatments are being employed for numerous systemic manifestations. Little appears to have changed since a Cochrane Review on pharmacotherapy published over 10 years ago.

P63. Choroidal Mass: From Masquerade to tuberculosis
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Purpose: To report a case of choroidal tuberculoma with disseminated tuberculosis mimicking metastases.
Method: Case report.
Result: A 19-year-old female presented with a large choroidal mass lesion with axillary lymphadenopathy. Fundus fluorescein angiography, Positron emission tomography scan, abdominal ultrasonography and raised biochemical markers like Serum CA-125 level analysis, pointed towards the initial diagnosis of metastases with primary in the ovaries. But, fine needle aspiration cytology of adnexal mass and ascitic fluid revealed granulomatous inflammation with negative AFB stain. Multiplex polymerase chain reaction (multiplex PCR) of ascitic fluid for the sequence MPB64 and IS 6110 was positive for tuberculosis. Final diagnosis of disseminated tuberculosis was made and patient subsequently showed good response to anti-tubercular therapy.
Conclusion: We present a unique case of disseminated tuberculosis presenting in the eye solely as a choroidal mass without any inflammation, mimicking choroidal metastasis diagnosed as tuberculosis on multiplex PCR and showed good response to antitubercular treatment.

P64. Masquerade syndrome in a metastatic disease - case report
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Purpose: To present a patient diagnosed as granulomatous iridocyclitis, in which the nodule in the iris was the first sign of a metastatic disease (prostate adenocarcinoma). 217
Patients and methods: A 43 year old patient, in relatively good physical condition, and complaints of redness and decreased visual acuity in the right eye, and a single iris nodule was diagnosed as iridocyclitis. At follow up examination rapid nodule growth was observed and masquerade syndrome was suspected. Consultations with a pulmonologist and urologist were made. Additional examinations including ultrasonography of the abdomen and the prostate, chest and paranasal sinuses X-ray, laboratory evaluation of PSA (prostate specific antigen), scintigraphy of the bones and NMR (nuclear magnetic resonance) were performed.
Results: The physical condition of the patient deteriorated within a week with symptoms of high body temperature, pain in the bones and the muscles, and subcutaneous hard nodules were observed. The patient was diagnosed with a prostate adenocarcinoma staged T3bN2M1, with multiple metastases to the eye, the lymph nodules, bones and skin.
Conclusions: Metastases from prostate adenocarcinoma to the uveal tract, according to reported cases in the literature, are extremely rare. Ocular metastases have been observed predominately to the orbit or the choroid and the iris consider as the rarest site. The iris metastasis in our case was the first and only sign of metastatic disease at initial exam, without any other suspicions of associated malignant tumor.

P65. Etiology of Uveity in a Referral University Clinic

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Introduction: Uveitis represent a large group of inflammatory intraocular conditions with a diverse etiology. Infectious etiologic agents are more common in developing countries, whereas noninfectous causes predominate in the developed world. Despite better diagnostic modalities nowadays about 30-60 % from all cases remain without proven etiology.
Aim: To demonstrate the etiologic factors for uveitis in a pool of patients referred to our clinic.
Materials and methods: A retrospective study on 151 consecutive patients, treated for uveitis for the period from December 2004 to December 2011. Follow-up varied from 6 months to 7 years. All patients underwent full ophthalmologic exam; specialized laboratory and imaging modalities; and consultations with other specialists.
Results: From a total of 151 patients, in 81 (53.64%) infectious etiologic factors were established, in 20 (13.24%) – noninfectious etiology was presumed, and in 50 cases (33.14%) etiology remained unproven. Anterior uveitis was diagnosed in 100 patients (66.22 %), intermediate - in 7 (4.63%), posterior – in 37 (24.50%), and panuveitis – in 7 (4.63%). In the group of 100 patients with anterior uveitis the presumed infectious etiological fators were: herpetic keratouveitis/iridocyclitis in 51 cases; CMV iridocyclitis in 3, iridocyclitis, associated with ocular toxoplasmosis in 2, and with ocular tuberculosis - 2. Most of the patients with noninfectious anterior uveitis (9%), had iridocyclitis associated with HLA B27 +. In the group of 7 patients with intermediate uveitis, 2 patients had elevated serum antibody titers for Borrelia burgdorferi in, and Chlamydia trachomatis – in 1. In the group of 37 patients with posterior uveitis, 8 patients (21.62%) had elevated serum titers against toxoplasmosis, positive tests for tuberculosis – in 5 (13.51%), VZV – in 5 (13.51%), and in 1 patient sarcoidosis was diagnosed. In majority of panuveitis patients – 6 out of 7 patients (85.71%), we discovered HLA B5 +, and in 1 patients - ocular tuberculosis etiology was presumed.
Conclusion: Uveitis comprises a heterogeneous group of eye disorders. The etiologic factors are divers, often associated with systemic disease and careful consideration of eye exams and specialized laboratory and imaging investigation are nessecary. Interdisciplinary approach is frequently required for the correct etiology to be determined.

P66. Bilateral exudative retinal detachment with subretinal exudates

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Purpose: to report 7 patients that presented with bilateral exudative retinal detachment with subretinal exudates.
Materials: chart review of 7 patients.
Results: there were 5 men and 2 women, mean age 39.6 years-old (range 38-50), 2 of them had systemic lupus, 2 had renal disease, and 3 were otherwise healthy. Visual acuity was worse than 20/200 in 57% of the eyes and after resolution only five eyes (36%) showed improvement while 9 were unchanged or got worse. Five patient’s detachments got worse with corticosteroids, 4 of them got further immunosuppression and 5 patients underwent surgery. Two patients clearly healed after discontinuation of oral corticosteroids. Two eyes had specimens analyzed by a pathologist. Nine eyes resolved after several months (64%). The mean follow up was 42 months (range 10-100).
Conclusion: this form of exudative retinal detachment with subretinal exudates should be recognized to avoid therapy with corticosteroids that can worsen the disease. The mechanism of the detachment and treatment options remain unclear but according to pathology specimens inflammation does not appear to play a role in it.Results: there were 5 men and 2 women, mean age 39.6 years-old (range 38-50), 2 of them had systemic lupus, 2 had renal disease, and 3 were otherwise healthy. Visual acuity was worse than 20/200 in 57% of the eyes and after resolution only five eyes (36%) showed improvement while 9 were unchanged or got worse. Five patient’s detachments got worse with corticosteroids, 4 of them got further immunosuppression and 5 patients underwent surgery. Two patients clearly healed after discontinuation of oral corticosteroids. Two eyes had specimens analyzed by a pathologist. Nine eyes resolved after several months (64%). The mean follow up was 42 months (range 10-100).
Conclusion: this form of exudative retinal detachment with subretinal exudates should be recognized to avoid therapy with corticosteroids that can worsen the disease. The mechanism of the detachment and treatment options remain unclear but according to pathology specimens inflammation does not appear to play a role in it.

P67. Patient’s education for early recognition of recurrences in anterior uveitis

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Introduction: One of the challenges in uveitis is the recurrent course of the disease.
Purpose: To present the recurrences of the anterior uveitis in a group of patients in tertiary hospital.
Materials and methods: 120 consecutive patients for a period of 2 years (January 2008 – January 2010) were treated and followed in a referral uveitis center. For eye exam with etiologic evaluation and therapy were applied. Recurrent episodes and relapses were document ed. Risk factors were analyzed. Detail information of the character of the disease and warning about possible recurrence was given in all patients.
Results: 34 patients (28%) had recurrence of the disease. Symptoms of recurrence were: discomfort (23 pts), photophobia and tearing (20pts), blurred vision (18 pts), redness (12 pts) and pain (10 pts). Most importance clinical signs during relapse were documented: keratic precipitates – 23 pts, corneal edema- 9pts, cells in anterior chamber- 30pts, and increased IOP- 10 pts. Risk factors for recurrences were young age, HLA B-27 associated inflammation and intermediate uveitis. Period of remission was between 3-18 months.
Conclusion: Risk for recurrence in patients with anterior uveitis is high. In order to avoid serious complications patients should be instructed properly regarding signs and symptoms of the relapses, so they can receive timely treatment. Explicit plan for detecting relapses is mandatory for patients with anterior uveitis, mostly to those with known risk factors.

P68. Imaging is mandatory for early diagnosis of macular edema in uveitis

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Purpose: To describe the characteristics of macular edema in patients with uveitis by optical coherence tomography (OCT) and to investigate the correlation between tomographic features and etiology, type of uveitis and visual function.
Patients and methods: 27 patients with macular edema in at least one eye from 124 consecutive patients with uveitis in a university eye hospital with a clinical diagnosis of uveitis were included. Inclusion criteria were presentstion of macular edema by OCT, clear media for fundus visualization and absence of coexisting ocular diseases. All patients underwent complete eye examination: best-corrected VA (BCVA), slit-lamp exam, fundus biomicroscopy, OCT and fluorescein angiography in selected cases. Etiological investigation in patients with uveitis was performed.
Results: 27 patients (40 eyes) of 124 uveitis cases had macular edema. The mean age was 43 (range 14-82 years) and BCVA was between 20/30-20/800. There were 2 main patterns of macular edema: diffuse macular edema (DME)- in 13 patients(48%) and cystoid macular edema (CME)- in 14 patient(52%). 10 patients (37%) the etiology of the uveitis could not be determined, in 6 (22%) - with ocular tuberculosis was diagnosed, in 4(15%) – toxoplasmosis, in 2 (7%) – Morbus Behcet, 2 (7%) – sarcoidosis and by one (3%)- Morbus Bechterew, JRA and Herpes Zoster infection. The mean central

foveal thickness was 420+/-132 micron. Eyes with CME had significantly greater retinal thickness measurements worse BCVA as compared with patients with DME. Most of the patients with macular edema had panuveitis- in 12 patients (45%), with posterior uveitis- 9 patients (33%) and with intermediate uveitis –6 patients (22%). Macular edema was associated most often with ocular tuberculosis and intermediate uveitis
Conclusion: Optical coherence tomography demonstrated 2 patterns of macular edema in patients with uveitis: DME and CME. In patients with uveitis CME correlated with VA, type and etiology of uveitis. Imaging methods are mandatory for early diagnosis and management of macular edema

P69. Pars Plana Vitrectomy as a Treatment Option in Pars Planitis
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Purpose: to report treatment with pars plana vitrectomy in 18 patients with pars planitis.
Methods: indications for surgery were inflammation alone or associated with cataract, vitreous hemorrhage, or retinal detachment. Twenty six eyes had vitrectomy with laser or cryocoagulation, 20 eyes received intraocular triamcinolone, and 17 eyes underwent cataract surgery as well. Results: Twenty eyes (77%) improved their visual acuity. No patients needed further therapy after surgery. Complications included retinal detachment, macular pucker, cataract and band keratopathy. The mean follow up was 44 months.
Conclusion: Pars plana vitrectomy appears to be a useful way to improve visual acuity and induce long term remission of inflammation in patients with idiopathic pars planitis avoiding the need of systemic immunosuppression.

P70. Phacoemulsification with intraocular lens implantation in patients with uveitis
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Purpose: To study the outcome of phacoemulsification with intraocular lens implantation in patients with chronic uveitis.
Methods: Retrospective case series study. The clinical records of 51 patients with uveitis (62 eyes) who underwent phacoemulsification with hydrophobic foldable intraocular lens implantation at Sankara Nethralaya, a tertiary eye care centre in India between September 2004 and June 2012, were analyzed. Optical coherence tomography (OCT) was done at 1 month, 3 month and final follow up.
Results: Our study included 51 patients (62eyes). Males:Females-28:23 and age range was 20 – 67 years.Follow up range was 3 months-7 years. Most common clinical diagnosis was Intermediate uveitis in 22 patients (43%), followed by Fuchs uveitis in 13(25%), Anterior uveitis in 8(16%), Posterior uveitis in 5(10%), Vogt Koyanagi Harada's syndrome in 2 (4%) and Sympathetic ophthalmia in 1 patient(2%). Systemic diseases associated with uveitis were tuberculosis, sarcoidosis, ankylosing spondylitis, leprosy and Reiters disease.
Preoperative steroid cover in the form of oral steroids alone was given for 43 eyes and both oral steroids with periocular triamcinolone acetonide injection was given for 11 eyes. Most common form of cataract was posterior subcapsular (45%), followed by posterior subcapsular and nuclear sclerosis in 41%, and total cataract in 14% eyes. Intraoperative trypan blue for staining the anterior capsule prior to capsulorrhexis was used in 9 eyes. Grieshaber hooks to dilate the pupil were used in nearly 48% (30) eyes. Hydrophobic acrylic foldable intraocular lenses were implanted in all eyes. Pre operative visual acuity ranged from hand movements close to face to 6/9. Final visual acuity post surgery ranged from 6/60 – 6/6. More than two lines visual improvement was seen in >80% eyes.
Post operatively at 1 month followup, OCT proven macular edema was noted in 21eyes which was treated with periocular and oral steroids with or without topical NSAIDS. Other causes of decreased vision were epiretinal membrane and macular scar. Posterior capsular opacification was noted in 15 eyes (29%)although Nd yag laser capsulotomy was done in only 4 eyes.

Conclusion: Phacoemulsification with intraocular lens implantation in patients with uveitis gives good outcome provided there is adequate control of inflammation in the preoperative period and appropriate perioperative steroid cover. OCT is a good tool to diagnose subtle macular edema in the post operative period. Early diagnosis and followup with OCT and treatment with steroids and topical NSAIDS have shown resolution of macular edema with significant clinical improvement in vision.

***P71. Acquired ocular toxoplasmosis – Clinical profile, serological analysis, treatment and visual outcome in 80 patients in India**
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Purpose: To study clinical profile, serological analysis, treatment and visual outcome in 80 patients with acquired ocular toxoplasmosis.
Design: Retrospective noncomparative observational case series.
Methods: 80 patients with active lesions of ocular toxoplasmosis (primary or recurrent) were included. Numerous variables including age, gender, onset and course of infection, clinical features, laboratory data, therapeutic strategies, visual outcome, recurrences and complications were studied.
Results: There were 47 (58.75%) males and 33 (41.25%) females with a mean age of 29.72 years. All patients had unilateral involvement. The chief complaints were blurred vision in 76 (95%) patients and floaters in 57 (71.25%) patients. Active lesions included necrotizing chorioretinitis in all patients and disc hyperemia in 14 (17.5%), macular edema in 28 (35%), phlebitis in 28 (35%) and kyreilies arteriolitis in 13 (16.25%) patients. Central lesions were seen in 70 of 80 eyes (87.5%) and peripheral lesions outside the vascular arcade were present in 16 of 80 eyes (20%). All patients were treated with clindamycin, azithromycin, trimethoprim - sulphamethoxazole in various combinations along with oral steroids.
Conclusion: Ocular toxoplasmosis predominantly affects the macula that strongly influences the visual outcome. Use of corticosteroids alone can exacerbate the infection causing multiple and extensive lesions. Majority of the patients in our series showed complete resolution of the lesion with various treatment regimens which had no effect on the visual outcome.

P72. Neovascularization in Vogt Koyanagi Harada disease
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Purpose: To describe the clinical features and management in six patients of Vogt Koyanagi Harada disease with neovascularisation
Materials and methods: Retrospective chart review of six patients of Vogt Koyanagi Harada disease with neovascularisation.
Results: All six patients were females. Neovascularisation was seen in the cornea, iris, disc and retina. All cases had bilateral presentation of neovascularisation except one who had NVE in one eye only. Patients were treated with oral steroids and immunosuppressives including azathioprine, cyclosporine and cyclophosphamide along with topical and periocular steroids. Neovascularisation regressed in the cornea, iris and retina. A favourable clinical response and visual outcome was seen in all patients.
Conclusion: Severe recalcitrant cases of VKH can present with neovascularisation which regresses with steroids and immunosuppressives.

P73. Anterior uveitis after Keraflex and Collagen Cross linking for Keratoconus
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2. Department of Cornea and Refractive Surgery, Narayana Nethralaya, Bengaluru, India.

PURPOSE: To report a case series of anterior uveitis after keraflex and collagen cross linking for keratoconus
METHODS: Eight eyes of eight cases who had keraflex followed by collagen cross linking developed anterior uveitis. All surgeries were performed by a single surgeon using Avedro's Vedera system and the same technique. Postoperatively, all patients were instructed to use topical antibiotic, topical lubricants and Bandage contact lens till the epithelial defect heals. Anterior chamber cells were assessed pre operatively, first day of anterior uveitis, 7 days, 14 days and final resolution of inflammation in the eyes by slit lamp biomiocroscopy.
RESULTS: Flare and cells increased significantly on the day of inflammation and returned to preoperative levels by day 14 to 21 days. No statistically significant correlation was detected between the amount of inflammation and the energy levels used for the procedure. Two cases had underlying systemic disease predisposition like keloid formation and systemic allergy.
CONCLUSION: Anterior chamber inflammation can occur after keraflex . Inflammation levels were subsided to preoperative levels with topical steroid use.

P74. Use of fundus microperimetry (MAIA) to quantify macular sensitivity and fixation stability in patients with Hydroxy chloroquine therapy (HCQ)

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Purpose: To evaluate the retinal sensitivity in patients with HCQ therapy using the Macular Integrity Assessment (MAIA) microperimeter and to compare it with age and sex-matched controls.
Methods: Patients with HCQ therapy (clinically and with electroretinogram) and with a visual acuity better than 6/60 underwent microperimetry on a relatively new modality, the MAIA. The macular integrity, average threshold, thresholds along the 2°, 4° and outside 4° and the fixation stability were measured. These were compared to age and sex-matched controls.
Results: Mean Macular integrity (MI) was found to be 26.91 among HCQ users. Mean Macular Integrity (MI) among HCQ toxicity cases were 42.4 which got improved to 10.6 after 6 months following discontinuation of the drug. Mean Macular integrity (MI) 17.1 in age matched controls.
Conclusions: Central macular function may be compromised in HCQ toxicity. Microperimetry with MAIA is useful in assessing the functional ability of the macula and the fixation stability. It may be a useful as an ancillary tool to monitor the HCQ toxicity.

***P75. Long-term follow-up of Chikungunya Retinitis**

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PURPOSE: The purpose of this study was to report long-term visual outcome of chikungunya retinitis.
METHODS: Prospective observational case series and patients were followed up for 5 years. Patients were assessed for anatomical and functional visual outcome by snellen visual acuity, optical coherence tomography, visual fields, microperimetry and multifocal ERG.
RESULTS: Eight patients were diagnosed with chikungunya retinitis from 2006 to 2007. All patients were followed up for two years and five year follow up was seen in 5 cases. Four cases were bilateral presentation. Visual acuity was improved to 6/6 in all cases except in one eye of one patient where we noticed thinning of the fovea with central retinal thickness of 189 microns. . Full field ERG and multifocal ERG were normal in all the cases. None of the patient had retinal detachment.
CONCLUSION: Chikungunya retinitis had good visual prognosis in majority of the cases. Patient had good anatomical and functional outcome following systemic steroids with or without antiviral therapy.

P76. Importance of altered iron metabolism in Eale's disease and its role in management

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Purpose: In serum and vitreous samples of Eales' disease patients, a novel 88 kDa-protein was identified, partially sequenced and characterized to have properties of an iron binding proteins. By N terminal sequence, 88-kDa protein obtained from Edman sequencing was found to be ABCB7 iron transporter.To elucidate the role of 88-kDa protein in iron metabolism and its relevance in Eales' disease.
Methodology: Blood samples collected from 20 Eales' disease patients and healthy volunteers between 20-40 years of age. Inclusion criteria being non-smokers, patients who have not received any immunosuppressive or anti inflammatory therapy and did not have any coexisting chronic inflammatory or infectious diseases. This study was approved from Institutional Ethics committee. Free iron level was measured in monocytes and in serum by atomic absorption spectrometry.Western blot analysis was carried out for finding level of expression of ABCB7 in serum. Ferritin and transferrin levels were measured by immunoturbidometric method while heme and heme oxygenase activity by Spectrophotometrical method . Thioredoxin was measured by ELISA.
Results: Increased iron level in monocytes with 2.5 fold increase in ferritin level and 1.2 fold decrease in the transferrin level may result in increased cellular free iron pool. 1.5 fold increase in heme level , 3 fold increase in Heme Oygenase level and also elevated level of ABCB7 transporter and its direct interacting partner thioredoxin was seen in serum of Eales' group compared to control subjects.
Conclusions:. Current report shows there is increased labile free iron pool in cellular level. There could be a possibility of altered iron metabolism in Eales' disease protein and iron chelating agents could be beneficial in getting the adequate response in the treatment.

***P77. Sympathetic Ophthalmia In Pediatric Age Group: Clinical Features and Management**

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Purpose: To study the clinical features and outcomes of sympathetic ophthalmia in pediatric patients attending a tertiary care centre.
Methods: Pediatric patients with a diagnosis of sympathetic ophthalmia seen between 2001 and 2011 at our centre were studied. The diagnosis of sympathetic ophthalmia was made on history of penetrating trauma in the exciting eye, as well as characteristic anterior and posterior segment findings, ultrasound B-scan and fluorescein angiography (in patients with clear media).
Results: During this period 2511 pediatric patients with penetrating trauma were seen of which 14 patients were diagnosed with sympathetic ophthalmia. Ten (71.42%) were males and the mean age at presentation was 13.28± 2.97 years (range7-16). The mean duration of symptoms was 2.67±4.25 weeks (range 0.71-16). Mean duration between trauma and onset of clinical features was 20.53±42.88 weeks (range 2-156). Mean presenting visual acuity was 1.25±1.03 LogMar units in the sympathizing eye. Active AC inflammation was present in 10 (78.57%) eyes. The posterior segment involvement were vitritis in 6 eyes (42.85%), exudative retinal detachment in 8(57.14%) eyes and disc edema in 5 (35.71%) eyes. Ultrasound B scan was done in eyes with hazy media and showed increased choroidal thickness in 7 (50%) eyes. All patients received systemic steroids, with 9 patients receiving intravenous methylprednisolone at presentation. Cyclophosphamide, Methotrexate and Azathioprine was started in 3 patients each. Mean duration of steroid therapy was 4.46±4.46 months. Recurrence was seen in 3 eyes. Mean duration of follow up was 11.57±11.03 months. Mean final visual acuity was 0.56±0.8 LogMar units in the sympathizing eye. Three exciting eyes had to be surgically removed and 2 eyes had a final visual acuity of 0.25±0.35 LogMar units.
Conclusions: Sympathetic ophthalmia is a sight threatening complication of ocular trauma in pediatric age group. Appropriate systemic immunosuppression can lead to favourable outcome in the sympathizing eye.

P78. Fuchs' uveitis syndrome (FUS): easy to treat, difficult to diagnose

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Purpose: Although FUS is easy to diagnose based on typical clinical features the clinician often misses it. This study aims to report the patient characteristics and number of consultations till final diagnosis in Fuchs' uveitis syndrome
Methods: Prospective observational study of all patients who were finally diagnosed as FUS in the uvea clinic, between December 2011 to May 2012. The patients were diagnosed based on predefined typical clinical criteria. Data evaluated included demographic details, presenting symptom and number of consultations required before final diagnosis of the disease. Results: 48 patients were enrolled in the study. There were 37 male and 11 female patients with mean age of 30.97 ± 9.64 (range 18 to 55 years). The predominant presenting symptom was decreased vision: in 39 /48 (80%) followed by floaters in 4 patients. Presenting visual acuity was >20/80 in 26/48 (54%) eyes and <20/400 in 17 (35%). Referral diagnosis included uveitis in 40%, complicated cataract in 25%, FUS in 15% and others in 2%. The diagnosis of FUS was made in the first consultation in 4/48 (8%), second consultation in 32 (67%), third consultation in 11 (23%) and one patient underwent 4 consultations before being diagnosed as FUS.
Conclusions: FUS presents in young patients who report to clinic due to decreased vision due to cataract. Majority required at least two consultations prior to final diagnosis. If detected by the referring ophthalmologist, unnecessary investigations may be avoided and the patient can be managed successfully.

P79. Incidence and prevalence of uveitis in the uninsured population of San Francisco at a General Hospital

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Purpose: To determine the incidence and prevalence of uveitis in the uninsured population of San Francisco and also determine the relative distribution of various types of uveitis in this population.
Methods: We used the patient database of San Francisco General Hospital to search for all the patients who were diagnosed with uveitis from January 1, 2010 through December 31, 2010. Uveitis cases were classified according to the standards from Standardization of Uveitis Nomenclature (SUN) workshop in 2005 and confirmed cases were used to calculate the incidence and prevalence. Definite cases were subdivided into three categories. A case was classified as prevalent if the onset of uveitis was prior to January 1, 2010. Case was classified as a new case if the first episode of uveitis was diagnosed from January 1, 2010 through December 31, 2010. Demographic and clinical data were also collected for all patients meeting the clinical definition of uveitis. Patients with intraocular inflammation associated with bacterial or fungal keratitis, post surgical inflammation with in 3 months of surgery or traumatic iritis were excluded from the study.
Results: Of the 82,000 eligible patients, 55 cases of uveitis were confirmed by medical records review in the year 2010. Mean age of patients was 44 years (range 21-64 years). There were 29 men and 26 women in the study. 51% cases had bilateral disease. Anatomic location was 49% anterior uveitis, 1.81% intermediate, 12.72% anterior/intermediate, 3.63% posterior and 32.72% panuveitis. 38% cases in the study had idiopathic uveitis. Of the 55 definite uveitis cases, 49 had prevalent disease of which 11 were newly diagnosed within the study period (incident cases). 6 patients were found to have inactive prevalent disease. The incidence rate was 13.41 cases/100,000 person years and the period prevalence rate was 59.75 cases per 100,000 persons.
Conclusions: Incidence and prevalence of uveitis in this population is quite comparable to that found in Suhler et al study but it is lower than that found in Gritz and Wong et al study.

P80. Timely diagnostic evaluation for tuberculosis- necessary in many patients with uveitis

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Introduction: Tuberculous uveitis is a potentially blinding disease and may affect both anterior and posterior segment of the eye. Although diagnostic criteria are well known and new laboratory tests facilitate conclusions, it is still difficult in some cases to support the clinical signs with positive investigations especially in cases with no systemic manifestations.
Purpose: To present our approach in the diagnosis of patients with tuberculous uveitis.
Methods: Retrospective analysis of all consecutive patients with tuberculous uveitis for a period of 5 years (January 2007- January 2012) was performed. Diagnostic methods included: history and clinical signs, fluorescein angiography, OCT, radiologic (chest X-ray and CAT) and immunologic tests (tuberculin skin test and interferon-gamma release assays). Anti-tuberculosis treatment was applied in cooperation with pulmonary disease specialist and patients who needed systemic corticosteroid treatment were followed up for adverse reactions together with internal disease specialist or pediatrician depending on the age of the patients and co-morbidities.
Results: Altogether 25 immunocompetent patients, 16 women and 9 men with a mean age of 43 years (range 6- 71 years) were diagnosed with tuberculous uveitis during the 5 years period. Exclusion of other known etiologies of uveitis was performed in all cases. Chest X-ray and CAT were not suggestive for pulmonary changes in all patients with the exception of 2 children aged 6 and 13 years in whom hilar lymphadenopathy was found. Tuberculosis of the kidney was diagnosed in one man (4%). QantiFERON TB Gold test was done in all patients and was positive in 21 (84%). Mantoux test was performed in only 2 patients (8%) but the authors consider its interpretation influenced by BCG vaccination which is obligatory in our country. Good response to empiric antituberculosis treatment was observed in 2 cases (8%). Granulomatous iridocyclitis was detected in 8 patients (32%), chorioretinitis – in 10 (40%), neuroretinitis- in 2 (8%), and panuveitis- in 5 cases (20%). At presentation, visual acuity of the affected eye was less than 0.1 in 5 cases (20%) due to macular edema, complicated cataract, secondary glaucoma and macular scar. Despite treatment in 3 patients (12%) vision did not improve even though inflammation was well controlled.
Conclusions: Timely diagnosis of tuberculous uveitis is sometimes challenging and interdisciplinary approach is helpful in many patients. Local difficulties include: delayed referrals, high cost of some imaging and immunologic tests, and management of children with ocular tuberculosis who need prolonged complementary systemic corticosteroid treatment.

P81. Response of Pediatric Uveitis to TNFα Inhibitors

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Purpose: To evaluate the outcome of TNF-alpha inhibition (anti-TNFα) for pediatric uveitis.
Methods: We retrospectively followed children (≤18 years) with uveitis receiving anti-TNFα at six centers. Incident treatment success was defined as minimal or no activity of uveitis at ≥2 consecutive ophthalmological exams ≥28 days apart while taking no oral and ≤2 eyedrops/day of corticosteroids. Eligible children had active uveitis and/or were taking higher levels of corticosteroids at the outset. Regression analyses assessed time-to-, and factors predictive of, success.
Results: Among 56 eligible children, 52% had juvenile idiopathic arthritis (JIA) and 75% had anterior uveitis (AU). The Kaplan-Meier estimated proportion achieving treatment success within 12 months was 75% (95% Confidence Interval [95% CI]: 62-87%). Complete absence of inflammatory signs after discontinuing all corticosteroids was observed in an estimated 64% by 12 months (95% CI: 51-76%). Diagnoses of JIA or AU were associated with greater incidence of success, as was the oligoarticular subtype amongst JIA cases. In a multivariable model, those with JIA-associated AU, compared to those with neither JIA nor AU, were significantly more likely to achieve quiescence under anti-TNFα (HR=3.66, 95% CI: 1.55-8.68); this effect was independent of the number of immunomodulators previously used or prescribed concomitantly. After achieving quiescence, uveitis re-activated continuing anti-TNFα within 12 months in 14% (95% CI: 6-31%). The incidence of discontinuation for adverse effects was 8%/year.
Conclusion: Treatment with anti-TNFα was successful in a majority of children with non-infectious uveitis and treatment-limiting toxicity was infrequent. JIA-associated AU may be especially responsive to anti-TNFα.

P82. Surgical approach towards ocular complications of rheumatoid arthritis
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Background: Autoimmune disorders affect about 5% of the whole human population and this percentage is increasing. One of most common rheumatic autoimmune diseases is rheumatoid arthritis. Ocular manifestations of this disease are evaluated in more than 20% of patients.
Purpose: To demonstrate surgical approach in most severe ocular complications associated with aggressive rheumatoid arthritis.
Patients and methods: For a period of 3 years 72 patients with rheumatoid arthritis were referred to our hospital for treatment of their ocular manifestations of the general disease. 6 of them had ocular complications impending visual acuity in perspective. We found as follows: 1 eye with marginal corneal perforation, 2 eyes with necrotizing scleritis, 1 complicated cataract in eye with marginal keratitis and 2 eyes with dense chronic vitritis. Our surgical approach included: application of cyanoacrilate tissue glue for corneal perforation; lamellar corneoscleral transplantation in necrotizing scleritis; phacoemulsification and transconjunctival sutureless vitrectomy for removal of cataract and vitreous opacities. All patients were treated in collaboration with rheumatologist and all surgical interventions were performed after preparation with forced systemic immunosuppression.
Results: Marginal corneal perforation was temporary occluded by cyanoacrilate glue. For this period peripheral vascularization led to closure of the small tissue defect. Transplantation of donor corneosclera was the only option for long term scleral support in cases with necrotizing scleritis. Combination of tissue transplantation with systemic immunosuppression stabilized the scleral defects in both patients. Techniques for sutureless ophthalmic surgery ensured good visual rehabilitation and minor operative induced inflammation in patients with cataract and vitritis. Follow-up for a period of 6 to 36 months showed stable visual acuity and absence of severe postoperative inflammation and ocular hypertension.
Conclusions: Less invasive surgical interventions always lead to less intensive postoperative inflammatory reaction. In this aspect all short and minimally invasive ocular manipulations are preferred for patients with autoimmune diseases. Interdisciplinary approach is very important for best results in treatment of ocular complications of rheumatic diseases.

P83. Vogt-Koyanagi-Harada disease: Clinical and demographic characteristics of patients in a Turkish referral center
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Purpose: Vogt-Koyanagi-Harada (VKH) is a rare disease in Turkey. This study aimed to evaluate clinical and demographic features of VKH disease in Turkish patients.
Materials and Methods: Demographic and clinical features of 28 patients diagnosed as VKH disease in a single referral center in Ankara, were retrospectively reviewed. The age, sex, follow-up period, ocular and extraocular findings, complications and treatment choices were noted.
Results: The mean age at presentation was 33.9 ± 11.1 (12-65) years and the mean follow-up period was 36.6± 48.9 (2-180) months. Although the study period was between 1997 and 2012, 17 (60.7%) of patients presented during the last 2 years. Twenty-one patients (75%) were female. All patients were diagnosed as VKH following their presentation with ocular disease. Fourteen patients (50 %) presented in the acute uveitis stage, 10 patients (35.7 %) in chronic recurrent stage and 4 (14.3%) in chronic (convalescent) stage. Of the 14 patients presented with acute uveitis, 11 (78.6%) had bilateral serous retinal detachment(s) and 3 (21.4%) had bilateral hyperemia and edema of optic nerve. According to revised diagnostic criteria, 9 patients (32%) had complete, 14 patients (50%) had incomplete and 5 patients (18%) had probable VKH disease. Among the extraocular findings; headache (71.9%) and auditory problems (tinnitus 64.3% and disacusia 32.1%) were the most common and were coincident with the onset of ocular disease.The rates of eyes having 20/50 or worse visual acuity (VA) at presentation and at last examination were 67.8% and 30.4% respectively. Sunset-glow fundus in 55.3%, retinal pigment epithelial changes of the macula in 53.6%, Dalen-Fuchs nodules in 46.4%, cataract in 23.2%, glaucoma in 14.2%, choroidal neovascular membrane in 5.3% and subretinal fibrosis in 3.6% of eyes have been observed. Intravenous high dose methylprednisolone followed by a long-term oral corticosteroid therapy (CS) ± immunosuppressive therapy was preferred in acute cases. Immunosuppressive ± oral CS therapy was the treatment of choice in chronic recurrent cases. No ocular inflammatory attack in 71.4%, ≥ 2 attacks in 21.5% and one attack in 7.1% of patients have been observed during the follow-up period.
Conclusions: Although rare in Turkey, VKH disease seems to increase during the last few years. It is diagnosed clinically with ocular findings. The disease is incomplete and acute in half of patients and has a quite good visual prognosis with VA ≥20/40 in 70% of patients.

***P84. Serum factors in screening ocular sarcoidosis and monitoring disease activity**
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Purpose: Soluble interleukin 2 receptor (sIL2R), angiotensin converting enzyme (ACE), and neopterin are well known as screening and activity parameters in systemic and pulmonary sarcoidosis. We examined the impact of these factors in ocular sarcoidosis.
Methods: Serum concentrations of sIL2R, ACE and neopterin were measured in patients with uveitis using ELISA technique. Ocular sarcoidosis was diagnosed using criteria of the International Ocular Sarcoidosis Study Group. Uveitis activity was scored according to the uveitis activity score proposed by BenEzra. The data were analyzed by a multifactorial linear model (ANOVA) and by contingency tables.
Results: Six hundred patients with uveitis were screened for sarcoidosis using sIL2R, neopterin, and ACE between January 2008 and November 2011. Fourty patients with ocular sarcoidosis were identified. ACE and neopterin showed high specificity, but just moderate sensitivity in screening for ocular sarcoidosis. Soluble IL2R combines high sensitivity with high specificity. Soluble IL2R values correlated with uveitis activity (p=0.01) when being monitored, while ACE und neopterin values do not.
Conclusion: For screening and monitoring sILR2 was useful, while ACE and neopterin failed as monitoring parameters, and were only moderate screening parameters.

P85. Ocular Manifestations among Hospitalized HIV/AIDS Patients: A cross-sectional study

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AIM: To study the pattern of ocular manifestations in hospitalized patients with HIV/AIDS in a tertiary AIDS care centre
METHODOLOGY: Hospital based single visit study at a tertiary care centre for patients with HIV/AIDS. All hospitalised patients with HIV/AIDS with or without ocular complaints were included in the study. Detailed ocular examination was carried out and findings recorded analyzed using the SPSS version 15.0
RESULTS: A total of 54 HIV/AIDS patients were examined. Mean age was 38.36 (+9.12) years, 42(77.8%) were male, 12(22.2%) were female. Mean duration of HIV disease was 44.2 (+42.33) months, Median Initial CD4 Count 139 (range 17 - 696) and Mean Current CD4 count 107 (+ 75.2). Tuberculosis was the commonest underlying systemic disease 16(29.6%). Others included Oral Candidiasis 5(9.3%), Toxoplasmosis 2(3.7%), Cryptococcosis 2(3.7%), Anemia 2(3.7%), Leptospirosis 1(1.9 %%) and Stevens Johnson Syndrome 1(1.9%). 37(68.5%) patients were on Highly Active Anti Retroviral Therapy (HAART), 12(22.2%) patients were on Highly Active Anti Retroviral Therapy (HAART) and Antituberculosis Therapy (ATT) and 5(9.3%) patients were not on treatment. Out of 108 eyes, 61(56.5%) were normal. Ocular findings attributable to HIV/AIDS were seen in 47(43.51%) patients. Of these, HIV Retinopathy was seen in 13 (12.03%), Cytomegalovirus Retinitis in 13 (12.03%), Choroidal Tubercle in 5(4.62%), Anemic Retinopathy 4(3.7%), Cryptococcus Chorioretinitis in 2(1.85%), Kerato conjunctivitis sicca in 2(1.85%) and others 3(2.77%). Ocular findings were directly related to the severity of the clinical state of the immunosuppression and systemic status
CONCLUSIONS: Current practice in India is to refer patients for an ophthalmic examination only upon ocular complaints or after a physician has noted abnormal ocular signs on medical examination. None of the patients in our study had any ocular symptoms. Ocular lesions were found on routine screening of inpatients. Our findings highlight the need for routine ophthalmic screening of all inpatients in an AIDS care centre. This helps simultaneous management of ocular lesions along with the systemic disease thus facilitating early rehabilitation of the patient.

P86. Histological and clinical features of CRMP 5 paraneoplastic inflammatory disease

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Patients with small cell lung carcinoma can present with a paraneoplastic syndrome which involves the eyes producing an optic neuropathy and 'retinitis', distinct from carcinoma associated retinopathy. This syndrome has been associated with the paraneoplastic autoantibody to collapsin response-mediator protein-5 (CRMP5). This paper describes two patients and emphasises the strange clinical features of pale swollen optic discs, odd sheen on the retinae with diffuse vascular leakage on fluorescein but no cystoid macula oedema. These features are correlated with the pathology which is hitherto unreported and reveals a striking retinal inflammatory process with lymphocytes lining up along the internal limiting membrane in a
perivascular distribution.

P87. Anti tumor-necrosis-factor (TNF) - α agents for refractory cystoid macular edema (CME) related to uveitis

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Purpose: To evaluate the efficacy of anti TNF-α agents, compared to other immunosuppressive therapies for uveitis-related CME.
Methods: A retrospective analysis of patients treated for CME at the uveitis services of two tertiary centers in Israel, between 2006- 2011. Data included demographic details, visual acuity (VA) and OCT measurements at the time of treatment initiation and at 3, 6, and 12 months follow up. Findings were compared between patients CME, treated with an anti-TNF-α agent. Patients who were treated with conventional immunosuppressive therapy prior to anti TNF-α agents were evaluated in both groups.
Results: Eighteen patients (27 eyes) were treated with conventional immunosuppressive therapy (Group A), which included periocular and systemic steroids, methotrexate, azathioprine, cyclosporine, and mycophenolate. Nine patients (15 eyes) were treated with either infliximab or adalimumab (Group B). Mean duration of CME prior to initiation of anti TNF – α therapy was 13±11 months. Mean central macular thickness (CMT) and mean visual acuity (VA) were similar at baseline for both groups. Significant reduction in CMT was evident at all time points for both groups; most significant at 3 months for group A and at 6 months for group B (515±228 µm at baseline vs 236±72 µm, p=0.002), with a slightly reduced effect at 12 months. Mean VA improved in both groups, with maximal improvement at 3 months (group A p=0.013; group B p=0.015), and a reduced effect towards 12 months. Mean VA at 12 months was similar for both groups. Overall, 13 of the 15 eyes treated with anti-TNF-α agents, showed complete resolution of CME and 2 showed partial resolution accompanied by an improvement in VA.
Conclusions: Treatment of uveitis-related CME with anti TNF-α agents is efficient and lasting. Given the fact that anti TNF-α agents were used when conventional immunosuppressive agents failed, it seems that their favorable effect takes action on long standing and refractory CME. The role of anti TNF- α treatment as a first line therapy should be further investigated.

P88. Acute retinal necrosis - when to shift from medical to surgical treatment

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Purpose: To present patient with acute retinal necrosis due to varicella zoster virus who was treated sequentially with antiviral agents and vitrectomy, in late follow-up period cataract surgery with premium intraocular lens was undertaken.
Case: 42 years old female presented with rapid decrease of visual acuity. Typical clinical picture, past medical history for varicella in childhood and elevated serum antibodies helped for establishment of the diagnosis acute retinal necrosis. Treatment was immediately started with intravenous Acyclovir 800 mg 5 times a day. 5 days later oral Prednisolon 1mg/kg/d was added. Although aggressive medical therapy the patient developed tractional retinal detachment 4 months after beginning of the disease. Treatment of choice was bimanual vitrectomy with silicone oil tamponade, which was removed 6 months after primary surgery. 2 years later the patient developed cataract and was operated with implantation of toric intraocular lens.
Raesults: Management of inflammation and necrosis was achieved by the use of high doses of Acyclovir for a period of 8 months. The detachment of the peripheral retina was treated with silicone oil. Surgery of complicated cataract required implantation of toric intraocular lens due to high corneal astigmatism. Final best corrected visual acuity 3 years after first affect is 0.4 and serum antibodies still decrease in absence of any inflammation.
Conclusion: Decision whether to do surgery in acute retinal necrosis or not is always difficult. Optimal choice of the moment for surgical repair combined with systemic antiviral therapy could lead to satisfactory long term results.

P89. Epstein Barr Virus as a cause for uveitis
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Epstein Bar virus has been previously implied to be associated with uveitis. Mostly, PCR positivity has been found but also attributed to a-specific amplification of viral DNA in B-lymphocytes in infected persons. EBV-specific antibodies, however, cannot be thus explained. We sought to determine the role of EBV by studying the incidence of local antibody production against EBV in patients with uveitis.
Methods: In a cohort of 212 patients aqueous samples were analyzed for intraocular antibody production against EBV using he Goldman Wittmer coeffcient in aqueous humor; PCR was performed on all samples also.
Results: A GWC coefficient of greater than 3 was considered positive. 15 samples showed a positive GWC for EBV. None of these 15 patients had a positive PCR for EBV.
The mean age of the patients was 36 (6-77yrs); 5 patients had uveitis anterior, 6 uveitis posterior ,1 intermediate and 2 panuveitis. Only one patient showed posterior synaechiea. In 2 patients also a positive GWC was found for CMV and one a positive GWC for HSV.
Conclusion: In 15 patients with predominantly non-granulomatous uveitis, a positive GWC for EBV was found. Although the role of EBV in uveitis is not established, a positive local antibody production implies a cause for EBV in the pathology of uveitis.

***P90. Spectral-Domain Optical Coherence Tomography Features of Inflammatory Choroidal Neovascular Membrane**
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Purpose: To describe the spectral-domain optical coherence tomography (SD-OCT) features of inflammatory choroidal neovascularization (CNV) and to compare them to those of the acute lesions of chorioretinitis.
Methods: Observational case series. SD-OCT features of seven eyes of 7 patients with inflammatory CNV were reviewed and compared to SD-OCT features of the acute lesions of chorioretinitis. Each patient underwent a comprehensive eye examination, fundus photography, and fluorescein angiography on the initial visit. The patients underwent SD-OCT scanning at baseline and at follow-up visits.
Results: Spectral-domain optical coherence tomography imaging of the inflammatory CNV showed lesions that were irregular in content and contour, located under the retina (type 2) and accompanied by intraretinal and/or subretinal fluid. Additional features included increased reflectivity of the outer nuclear and outer plexiform layers and irregularities of the IS/OS junction. In contrast, SD-OCT in the patients with the acute lesions of chorioretintis showed homogenous dome shaped subretinal lesions, with no intraretinal or subretinal fluid and accompanied by choroidal hyperreflectivity.
Conclusion: The acute lesions of chorioretinitis can be difficult to distinguish from inflammatory CNV based on clinical examination and fluorescein angiography. However, the inflammatory lesions can demonstrate characteristic SD-OCT findings not seen with inflammatory CNV. These SD-OCT findings may help to differentiate these two entities that typically require different treatments.

P91. LX211-11 Study Patient Demographic Characteristics– Assessing Safety and Efficacy of LX211 for the Treatment of Non-infectious Uveitis Involving the Intermediate or Posterior Segment
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Introduction: LX211 is the oral formulation of the next-generation calcineurin inhibitor voclosporin. The LX211-11 study was designed as a pivotal clinical trial to evaluate the safety and efficacy of LX211 as therapy for subjects with active intermediate and/or posterior noninfectious uveitis.
Methods: The LX211-11 study is a global, double-masked, parallel-group, placebo-controlled, randomized multi-center study, ongoing in 59 sites across three regions: North and South America and Europe. 155 patients with active posterior manifestations have been enrolled. The last subject visit in the 24-week study is anticipated in December 2012.
Results: Pooled masked data from the study to date indicate that in Study LX211-11 (N=155) the distribution of patient anatomic diagnoses is: panuveitis (N=68; 44.2%), intermediate uveitis (N=36; 23.4%), anterior + intermediate uveitis (N=25; 16.2 %) and posterior uveitis (N=25; 16.2%). The mean age of subjects is 41.3 years with a predominance of females (65.6%). The mean daily systemic corticosteroid dose (prednisone or equivalent) at baseline is 16.8 mg; overall 70.3% of subjects used systemic corticosteroids at study entry.
Conclusion: The LX211-11study is part of the LUMINATE Clinical Program, the first randomized placebo-controlled set of trials conducted for an immunomodulatory agent in non-infectious uveitis. The wide variety of patient characteristics should allow for the study results to be applied widely across disease categories and patient populations. LX211-11 may also confirm findings from previous trials using voclosporin for non-infectious intermediate and posterior uveitis.

P92. Trabeculectomy in uveitis: long-term follow-up
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Objective: to report the long-term follow-up of trabeculectomy in patients with uveitis
Methods: retrospective data review of 36 patients with uveitis submitted to trabeculectomy with/without the use of amtimetabolites (intraoperative mitomycin or post-operative 5-fluorouracil) with a mean post-surgical follow-up of 41 + 29 months
Main outcome measures: IOP values, number of antiglaucomatous drugs, visual acuity and visual field changes before and after surgery
Results: at the end of follow-up a significant reduction ($p<0.01$) was detected for the mean IOP and the number of antiglaucomatous drugs administered after surgery (IOP: form 30.7 + 8.4 to 18.9 + 8.3 mmHg; number of drugs: from 5.2 to 2.6) while visual acuity and perimetric alterations did not change significantly ($p=0.32$ and $p=0.26$, respectively). Twelve patients (33%) needed additional surgery after trabeculectomy, including revision of the bleb, new trabeculectomy or valve implant. A complete success (IOP < 20 mmHg without any medication) was detected in 47.2% of the patients and a qualified success (IOP < 20 mmHg with medications) in an additional 38% of the cases.
Conclusions: up to 85% of uveitis patients and glaucoma submitted to trabeculectomy can have a IOP control with or without the use of medications, although they might need more than one surgical procedure during long-term follow-up

P93. Posterior segment involvement in Fuchs Heterochromic Iridocyclitis
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Objective: to study the posterior segment involvement in Fuchs Heterochromic Iridocyclitis (FHI)
Methods: fluorescein angiography (FAG), optical coherence tomography (OCT) and computerized perimetry evaluation of retinal and optic nerve lesions were performed in 20 consecutive FHI affected patients, 4 of them previously submitted to cataract surgery
Results: all the patients presented a unilateral involvement. FAG abnormalities were detected in 14 eyes (70%), 12 presenting isolated optic nerve leakage (60%) and two optic nerve leakage associated with retinal staining or vascular leakage (10%). All the operated and 50% of the nonoperated patients

presented FAG abnormalities (p=0.07). Those lesions did not correlate to age at uveitis diagnosis, disease duration and vitreous inflammation (p>0.05). Ten eyes (50%) presented OCT changes (4 macular pucker, 4 posterior vitreous detachment and 2 thickness of retinal fiber layer). These changes also did not correlate to clinical findings. Computerized perimetry was normal in 16 eyes and showed a decreased sensitivity in 4 (25%), unrelated to visual acuity
Conclusions: FAG and OCT abnormalities can be present in patients with FHI but these changes do not affect significantly visual acuity and visual field

P94. Review of 25 Patients With Vogt-Koyanagi-Harada Syndrome In Barcelona
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Introduction: To describe and analyze several cases of Vogt-Koyanagi-Harada (VKH) syndrome, diagnosed between 1995 to 2010, in a reference university hospital in Barcelona, Spain
Materials and Methods: Retrospective review of 25 patient medical records with diagnosis of VKH syndrome. Variables depicted included i) Initial chief complaint; ii) Initial and final best corrected visual acuity (BCVA); iii) Days until diagnosis since initial symptoms; iv) Sorting between Complete and Uveomeningeal type VKH syndrome; v) Complications during clinical course; vi) Treatments strategies; vii) Final clinical course.
Discussion: Of 25 patients diagnosed with VKH syndrome, the most common chief complaint was headache (80%), followed by bilateral vision loss (72%). Initial BCVA ranged from hand motion perception to 20/20, and Final BCVA from 20/400 to 20/20. Average days to diagnosis was 36.9 (Range 1 - 360 days) Lumbar puncture was positive in 6 out of 10 patients. Scalp tenderness was present in 36% of the patients. 21 patients (84%) were diagnosed as Uveomeningeal VKH, and only 4 patients (16%) as Complete VKH. Oral Prednisone treatment was administered to all patients, combined oral Prednisone with another inmunosuppressor drug was prescribed to 6 patients (24%). 9 out of 50 eyes (18%) needed ocular surgery during this period. On follow up, 11 out of 22 patients (50%) were healed, without any new recurrencies, 6 patients (37%) presented a Recurrent form, and 5 patients (23%) a Chronic form.
Conclusion: This series suggests differences between incidence of Complete and Uveomeningeal forms of VKH syndrome, with a higher percentage of the latter. Healed clinical course presented an incidence of 45%, higher than reported in published literature (30%). We might explain these differences in the series due to prompt and proper treatment with very high dose of corticoids (Metilprednisolone EV Megadosis) of acute disease forms.

***P95. Interferon-α is superior to methotrexate in the treatment of intermediate uveitis with associated macular edema: Results of a randomized controlled clinical trial**
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Introduction: intermediate uveitis (IU) is frequently associated with macular edema (ME) which makes treatment additionally challenging. In a retrospective pilot study we could show the efficacy of interferon-beta (IFN-β) in a series of 13 patients. In this first randomized, controlled trial the goal was to compare IFN-β with methotrexate (MTX) in the treatment of IIU with macular edema.
Methods: Local and federal authorities approval has been obtained. Patients with either primary uveitis or uveitis associated with multiple sclerosis were eligible. Main inclusion criteria were reduced visual acuity (VA) of 20/30 or less and ME as measured by OCT with central 1 mm values of at least 250 µm. Patients were randomized into either a therapy with IFN-β 44 µg s.c. 3 weekly or 20 mg MTX s.c weekly. After three months outcome parameters are assessed and efficacy determined. In case of treatment failure switch to the other treatment arm is possible.
Results: 19 patients (5 with MS, 14 primary IU) could be included. Ten were randomized into the MTX, 9 into the IFN-β arm. Treatment was determined successful for the primary outcome parameter VA in 5 of 9 patients (56%) in the IFN-β arm with a mean increase of 0.31 logMAR and in all patients for the secondary outcome decrease in ME (mean decrease in OCT thickness by 206 µm) but only 3 of 10 (33%) for VA in the MTX arm (mean = 0.09 logMAR) and two for ME (thickness increased by a mean 47 µm). Six of the MTX patients decided to switch to IFN-β, which lead to significant improvement. All IFN-β patients stayed on treatment, with further improvement of VA and retinal sensitivity. The mean number of adverse events (AE) in the IFN-β arm was higher with a mean of 5.3 per patient (range 1-11) with one not-drug related serious AE (hypertensive episode) versus 2.7 in the MTX arm (range 0-9). All AE were mild and reversible.
Conclusion: Results of the trial show superiority of IFN-β over MTX in the treatment of IU and ME. Even though the patient group is small a significant effect on VA and thickness of ME was found. IFN-β treatment seems to be safe and effective for this indication.

P96. Vitrectomy for the Treatment of Refractory Uveitic Macular Edema
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Purpose: To evaluate the outcome of vitrectomy for refractory uveitic macular edema.
Methods: Retrospective review of patients that underwent vitrectomy with or without internal limiting membrane peeling and postoperative intravitreal triamcinolone injection for persistent or recurring macular edema despite inflammatory control with local and systemic medication was done.
Results: Mean age was 51±12 years and mean follow up duration was 41±30 months. Significant visual improvement was observed (p<0.001), and 65.7% achieved no recurrence of macular edema during the follow up period. Final visual outcome did not differ with specific type of uveitis. Eyes with retinal vasculitis showed siginificantly worse visual results, but final vision did not differ with the presence of glaucoma, or persistent cystoid macular edema at time of operation. Patients with persistent inflammation requiring systemic medication postoperatively showed worse visual outcome (p=0.026), and eyes with recurrence of macular edema also had worse final vision (p= 0.042). No difference in long-term treatment outcome was observed according to performance of internal membrane peeling, cataract surgery, or postoperative triamcinolone injection.
Conclusion: Refractory uveitic macular edema can be effectively managed with vitrectomy with good visual outcome and inflammatory control. Retinal vasculitis and postoperative persistent inflammation are poor prognostic factors.

P97. Abietane diterpenoids suppress replication of influenza virus by blocking the phosphatidylinositol-3-kinase (PI3K)-Akt signaling pathway and viral RNP nuclear export
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Despite the availability of vaccines and antiviral drugs, influenza remains a major worldwide plague. The emergence of resistance to anti-influenza drugs has prompted a search for new antiviral strategies. In this study, we evaluated anti-influenza activity of abietane diterpenoids, 18-hydroxyferruginol (1) and 18-oxoferruginol (2) isolated by bioassay-guided fractionation of the ethanol extract with 50% effective inhibitory concentration (EC50) of 57.9 mg/mL against A/PR/8/34 (H1N1) of the leaves of Torreya nucifera (T. nucifera). Using time-of-addition experiments—pre-treatment, simultaneous

treatment and post-treatment — compound 1 and 2 exhibited strong anti-influenza virus activity with EC50 values of 13.6 and 18.3 mM against A/PR/8/34 (H1N1), 10.8 and 12.8 mM against A/Chicken/Korea/MS96/96 (H9N2) in post-treatment assay, respectively. Only compound 2 showed antiviral activity with 29.2 mM against A/Hong Kong/8/68 (H3N2). To identify the mechanisms associated with the anti-influenza activity of diterpenoids, we evaluated changes in signaling pathways in virus-infected MDCK cell. During the virus replication steps, compounds 1 and 2 exhibited stronger viral RNA inhibition in late stages (12 and 18 h) than in early stages (3 and 6 h). Moreover, compounds 1 and 2 inhibited the phosphoinositide 3-kinase (PI3K)-Akt signaling pathway involved in the influenza virus replication step at late stage (10 h). Extracellular signal-regulated kinase (ERK) phosphorylation and NF-κB signaling pathways related to viral replication were also notably inhibited by compounds 1 and 2. In particular, blockade of PI3K-Akt signaling by these compounds inhibited viral replication via sabotage of influenza ribonucleoprotein nucleus-to-cytoplasm export. These results suggest that compounds 1 and 2 may be potent antiviral agents that act by inhibiting the PI3K-Akt signaling pathway, and as such could be developed into natural therapeutic drugs against influenza virus infection.

P98. Interobserver agreement in live grading of vitreous haze using the NEI (6-step) and Davis (9-step) grading scales

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Purpose: Vitreous haze is the main outcome for posterior uveitis drug-licensing trials. Few cases have enough haze on the existing 6-step scale to meet enrollment criteria. Here we evaluate the reliability of live grading using existing and new (9-step) scales.

Methods: Five pairs of uveitis specialists graded 44-81 uveitic eyes. Agreement was evaluated by the κ statistic.

Results: The scales correlated well (Spearman's ρ=0.84). Exact agreement was modest, but agreement within 1 grade for the 6-level NEI scale ($0.62<\kappa<0.94$) and within 2 grades for the 9-level Davis scale ($0.79<\kappa<0.91$) was favorable.

Conclusion: Both scales are sufficiently reproducible for clinical and research use with the appropriate threshold (2 steps for NEI, 3 steps for Davis). More eyes may meet eligibility criteria for trials using the Davis scale. The Davis scale appears to require a larger threshold to provide reproducible results with clinical grading (3 step threshold) than with reading center grading (2 step threshold).

P99. Autoreactive Memory CD4+T lymphocytes that mediate chronic uveitis reside in the bone marrow through STAT3-dependent mechanisms

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Organ-specific autoimmune diseases are usually characterized by repeated cycles of remission and recurrent inflammation. However, where the autoreactive memory T cells reside in between episodes of recurrent inflammation is largely unknown. In this study,
we have established a mouse model of chronic uveitis characterized by progressive photoreceptor cell loss, retinal degeneration, focal retinitis, retinal vasculitis, multifocal choroiditis, and choroidal neovascularization, providing for the first time to our
knowledge a useful model for studying long-term pathological consequences of chronic inflammation of the neuroretina. We show that several months after inception of acute uveitis, autoreactive memory T cells specific to retinal autoantigen, interphotoreceptor
retinoid-binding protein (IRBP), relocated to bone marrow (BM). The IRBP-specific memory T cells (IL-7RaHighLy6CHighCD4+) resided in BM in resting state but upon restimulation converted to IL-17/IFN-g–expressing effectors (IL-7RaLowLy6CLowCD4+) that mediated uveitis. We further show that T cells from STAT3-deficient (CD4-STAT3KO) mice are defective in a4b1 and osteopontin expression, defects that correlated with inability of IRBP-specific memory CD4-STAT3KO T cells to traffic into BM. We adoptively transferred uveitis to naive mice using BM cells from wild-type mice with chronic uveitis but not BM cells
from CD4-STAT3KO, providing direct evidence that memory T cells that mediate uveitis reside in BM and that STAT3-dependent mechanism may be required for migration into and retention of memory T cells in BM. Identifying BM as a survival niche for T cells that cause uveitis suggests that BM stromal cells that provide survival signals to autoreactive memory T cells and STAT3-dependent mechanisms that mediate their relocation into BM are attractive therapeutic targets that can be exploited to selectively deplete memory T cells that drive chronic inflammation.

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