277 Uveitis: Diagnosis, Epidemiology, Quality of Life
Monday, May 08, 2017 3:45 PM–5:30 PM
Exhibit/Poster Hall Poster Session
Program #/Board # Range: 2143–2190/A0249–A0296
Organizing Section: Immunology/Microbiology

Program Number: 2143 **Poster Board Number:** A0249
Presentation Time: 3:45 PM–5:30 PM
Association of gut microbiome composition with Vogt Koyanagi Harada disease
Peizeng Yang, Zi Ye, Ni Zhang. The First Affiliated Hospital of Chongqing Medical University, Chongqing, China.
Purpose: The gut microbiome has been shown to be involved in the pathogenesis of a number of immune or inflammatory diseases. Whether the composition and function of the gut microbiome is altered in Vogt-Koyanagi-Harada (VKH) disease is not yet known and was therefore the purpose of our study.
Methods: Fecal DNA were extracted from 82 active VKH patients without any treatment, 11 paired inactive VKH patients receiving corticosteroids combined with immunosuppressive agent treatment and 95 sex-, age- and BMI matched normal controls. The 16S rRNA sequencing, metagenomic shotgun sequencing and metagenome-wide association study on these DNA samples were carried out. The metagenomics gene catalogue was annotated to eggNOG 3.0 database and KEGG database. Genomic DNA were extracted from 54 VKH patients and then genotyped according to 6 major SNPs for 3 susceptibility loci. The relationship of gut microbiome and the risk genotype, clinical manifestation and medication were analysised.
Results: Abundance of 11,720 microbial genes in VKH disease was different from the control group. Up to 736 species as well as 1,418 KEGG orthologues (KO)/eggNOG orthologues (OG) markers were found enriched or depleted in VKH. Immunosuppressive treatment could partly restore the disturbance of the gut microbiome in association with resolution of the intraocular inflammation. The presence of extraocular manifestations as well as disease susceptibility genotypes were associated with certain VKH microbiome profiles. A microbial marker profile was established and showed a high specificity in VKH identification.
Conclusions: Our findings are the first step in the study of the microbiome in VKH disease. The characteristic of gut microbiome in VKH patients were establish and the relationship of microbiome composition with clinical manifastations, suspective genotype and disease status were identified. We also suggest the potential role of gut microbiome in disease diagnosis.
Commercial Relationships: Peizeng Yang; **Zi Ye**, None; **Ni Zhang**, None
Support: This work was supported by Natural Science Foundation Major International (Regional) Joint Research Project (81320108009), Key Project of Natural Science Foundation (81130019),National Natural Science Foundation Project (31370893),Basic Research program of Chongqing(cstc2013jcyjC10001), Chongqing Key Laboratory of Ophthalmology (CSTC, 2008CA5003), National Key Clinical Specialties Construction Program of China, Key Project of Health Bureau of Chongqing (2012-1-003),Chongqing Science & Technology Platform and Base Construction Program (cstc2014pt-sy10002).

Program Number: 2144 **Poster Board Number:** A0250
Presentation Time: 3:45 PM–5:30 PM
Correlation between visual function and clinical/subclinical disease activity parameters in Vogt-Koyanagi-Harada disease (VKHD)
Marcelo M. Lavezzo, Viviane M. Sakata, Ever E. Rodriguez, Smairah F. Abdallah, Celso Morita, Maria Kiyoko Oyamada, Carlos Eduardo Hirata, Joyce H. Yamamoto. Ophthalmology, University of Sao Paulo Medical School, Sao Paulo, Brazil.
Purpose: To evaluate the impact of subclinical inflammation over visual function in VKHD patients.
Methods: Patients diagnosed with VKHD in the acute phase were prospectively included, with a minimum 24-mo follow-up. They were initially treated with methylprednisolone pulsetherapy followed by oral prednisone (1mg/kg/d) only (CS group) or by oral prednisone associated with immunosuppressant (IS group). Oral prednisone had a slow tapering (12-15 mo). Patients were evaluated every 3 mo clinically, with indocyanine green (ICGA) and fluorescein (FA) angiographies, and, with enhanced depth optical coherence tomography (EDI-OCT)] (Spectralis HRA+OCT, Heidelberg). Full-field electroretinogram (ffERG) was carried out at inclusion and every 6 mo. Subclinical signs were defined as: optic disc or perivascular leakage (FA); dark dots (DD)(ICGA) and/or choroidal thickness increase (CTI) on EDI-OCT. Clinical signs were defined as: cells in anterior chamber; choroidal neovascularization and/or macular edema. Immunosuppressants were associated to CS on the presence of clinical signs or clinical intolerance to prednisone. Descriptive statistics, Fisher's exact test and generalized estimating equations were used to analyze data. This study was approved by the Ethics Committee and follows the Helsinki declaration.
Results: Eight patients (6W) were included, with median age at diagnosis of 27 y and median time from symptoms till treatment of 15 d. During follow-up, 7 eyes (44%) had clinical signs; all eyes persisted with DD, 6 (37%) had CTI and 2 eyes (12%) had FA signs. CS (n=4) and IS (n=4) groups did not differ demographically and clinically. During the follow-up, after an initial recovery of ffERG parameters, they tend to decrease in 6 eyes (3 p) or to ascend or stabilize in 10 eyes (5 p). Among patients with ascending or stable ffERG, 80% belonged to IS group and none to CS group (p=0.007, Fisher's exact test). Furthermore, DD score decreased during follow-up in IS group only (p=0.001).
Conclusions: In this limited sample of patients, an indirect correlation between subclinical inflammation (represented by DD) and worse visual function could be observed. DD persisted in all patients after 24-mo follow-up, however they decreased in IS group, which had a better visual function performance during this follow-up.

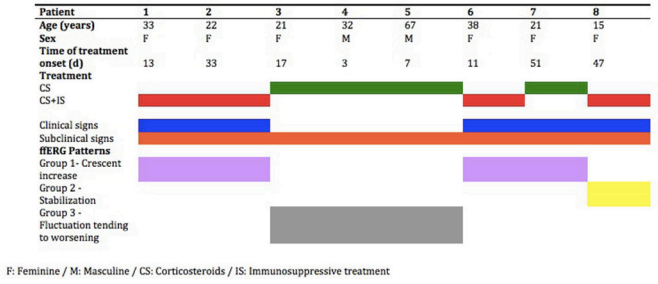

Figure 1 - Characterization of patients with VKHD during 24-month follow-up.
Commercial Relationships: Marcelo M. Lavezzo, None; **Viviane M. Sakata**, None; **Ever E. Rodriguez**, None; **Smairah F. Abdallah**, None; **Celso Morita**, None; **Maria**

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Program Number: 2145 **Poster Board Number:** A0251
Presentation Time: 3:45 PM–5:30 PM
Comparison of efficacy of vitrectomy and internal limiting membrane peeling for maculopathy involved in proliferative diabetic retinopathy
Hideaki Someya[1], Yoshihiro Takamura[2], Masakazu Morioka[2], Hiroshi Yokoyama[3], Takeshi Kimura[3], Seiji Sameshima[4], Taiji Sakamoto[4], Masaru Takeuchi[1]. [1]Ophthalmology, National Defence Medical College, Tokorozawa, Japan; [2]Ophthalmology, Fukui University, Eiheiji Yoshida, Japan; [3]Ophthalmology, Hyogo College of Medicine, Nishinomiya, Japan; [4]Ophthalmology, Kagoshima University, Kagoshima, Japan.
Purpose: To compare efficacy of vitrectomy and internal limiting membrane (ILM) peeling for tractional maculopathy (TM) and non-tractional macular edema (ME) involved in proliferative diabetic retinopathy (PDR).
Methods: Retrospective multicenter observational study. Medical records of patients with PDR and TM or ME, who underwent 25 gauge pars plana vitrectomy with ILM peeling between April 2011 and September 2015 and was followed-up more than 12 months without re-vitrectomy, were reviewed. Visual acuity (VA) in decimal notion converted to minimal-angle-of-resolution scores and central subfield macular thickness (CSMT) before and at 6 and 12 months after surgery were investigated. Mean pre- and postoperative VA and CSMT were compared within each group, and the mean changes in VA and CSMT of TM group were compared to those of ME group.
Results: Seventy-two eyes from 65 patients (41 males and 24 females) with a mean age of 56.8 ± 11.4 years were included, and 47 eyes were classified to TM group and 25 eyes were ME group. VA before and at 6 and 12 months after surgery were 0.91 ± 0.72, 0.51 ± 0.53, and 0.50 ± 0.63 in TM group, and 1.12 ± 0.51, 0.43 ± 0.40, and 0.37 ± 0.34 in ME group. CSMT before and at 6 and 12 months after surgery were 451 ± 154, 302 ±135, and 256 ± 121μm in TM group, and 449 ± 154, 313 ± 117, and 289 ± 118μm in ME group. BCVA and CSMT were significantly decreased at 6 and 12 months in both TM and ME groups. Although there was no statistical difference in the mean change of CSMT between two groups, the mean change of VA in TM group was significantly lower than that of ME group.
Conclusions: The present results indicate that vitrectomy with ILM peeling is effective for tractional maculopathy and non-tractional macular edema involved in PDR, but would be more favorable to non-tractional macular edema.
Commercial Relationships: Hideaki Someya, None; **Yoshihiro Takamura**, None; **Masakazu Morioka**, None; **Hiroshi Yokoyama**, None; **Takeshi Kimura**, None; **Seiji Sameshima**, None; **Taiji Sakamoto**, None; **Masaru Takeuchi**, None

Program Number: 2146 **Poster Board Number:** A0252
Presentation Time: 3:45 PM–5:30 PM
Human Leukocyte Antigen Risk Alleles among Chinese with Cytomegalovirus Anterior Uveitis
Jay J. Siak[1, 2], Nobuyo Yawata[2, 1], Xinru Lim[2], Kaing Woon[2], Anne Jansen[1], Samanthila Waduthantri[1], Soon-Phaik Chee[1, 2]. [1]Ocular Inflammation and Immunology, Singapore National Eye Centre, Singapore, Singapore; [2]Ocular Inflammation and Immunology, Singapore Eye Research Institute, Singapore, Singapore.
Purpose: Cytomegalovirus (CMV) infection is associated with recurrent acute or chronic anterior uveitis (AU) in immunocompetent individuals, especially among Chinese populations. Major Histocompatibility Complex Class I restricted CD8 T-cell response is a major immune defense against CMV reactivation, and different human leukocyte antigen (HLA) class I alleles can confer different levels of CD8+T-cell protection against CMV-associated diseases. To test our hypothesis that recurrent CMV AU might be related to an impaired immune defense, we compared HLA class I alleles of immunocompetent Chinese individuals with CMV AU against the reported allele frequencies of Chinese population controls to identify HLA allelic associations.
Methods: Genomic DNA was isolated from venous blood samples of 104 immunocompetent Singaporean Chinese individuals with aqueous humor PCR proven CMV AU. HLA class I A, B, C typing was performed by Next Generation Sequencing on a MiSeq using Conexio's Capture HLA™ protocol and Assign MPS (Conexio Genomics PTE LTD, Perth, Australia). Haplotype inference was performed using Arlequin V3.5 and haplotype frequencies were compared with that of Chinese population controls on Database using Pearson's Chi-square test with Bonferroni correction.
Results: HLA-B*3501, B*5101, B*5401, C*0403 and C*1402 were more frequent among CMV AU patients compared to population controls (3.8 vs 0%, 11.4 vs 3.4%, 7.1 vs 0%, 2.9 vs 0%, 8.7 vs 2.9%; Pc-values after Bonferroni correction=0.009, 0.004, <0.001, 0.031, 0.036 respectively). A significant difference was not found between CMV AU patients and controls for frequencies of HLA-A (P>0.05). A1101-B5101-C1402, the fourth most frequent haplotype in CMV-AU, showed a strong association with CMV-AU compared to the database (4.3 versus 1.1%, Pc-value=0.0004).
Conclusions: Conclusion: Our data suggests that HLA-B*3501, B*5101, B*5401, C*0403, C*1402 and, A1101-B5101-C1402 haplotypes are associated with CMV AU, and these are more dominant among Chinese compared to Caucasians. Considering that B5101-C1402 is also associated with Posner Schlossman syndrome, the haplotype may have significant impact on the immune response of the disease entity. Further studies are needed to validate our observation.
Commercial Relationships: Jay J. Siak, None; **Nobuyo Yawata**, None; **Xinru Lim**, None; **Kaing Woon**, None; **Anne Jansen**, None; **Samanthila Waduthantri**, None; **Soon-Phaik Chee**, None
Support: National Medical Research Council Grant (NMRC/CNIG/1113/2013), SNEC Health Research Endowment Fund (R1043/58/2013)

Program Number: 2147 **Poster Board Number:** A0253
Presentation Time: 3:45 PM–5:30 PM
Assessment of structure function correlation and response to treatment in uveitic cystoid macula edema using non-invasive Optical Coherence Tomography Angiography
Sophia L. Zagora[1], Dilraj S. Grewal[1], Susan Lightman[1, 2], Oren Tomkins-Netzer[1, 2]. [1]Uveitis, Moorfields Eye Hospital, North Bondi, NSW, Australia; [2]Institute of Ophthalmology, UCL, England, United Kingdom.
Purpose: We conducted a cross sectional cohort study to investigate whether the structural integrity of the superficial capillary plexus (SCP) and deep capillary plexus (DCP) and the size of the largest intraretinal cyst and the preserved retinal tissue on en face imaging using optical coherence tomography angiography (OCTA) correlates with vision and is predictive of visual recovery after treatment in eyes with uveitic cystoid macular edema (CME).
Methods: Patients with non-infectious uveitic CME (>320 microns) who underwent local steroid treatment had baseline and follow up

en face OCTA images (Zeiss Angioplex, Carl Zeiss Meditec) with a scanning area of 3×3-mm centered on the fovea. The SCP in the ganglion cell layer and the DCP beneath the inner plexiform layer (IPL) were measured. The FAZ area (3×3mm) of each vascular layer was calculated after conversion to 8-bit grayscale images using ImageJ software (NIH, Bethesda, MD). The border of the FAZ was manually drawn by two retinal specialists. The preserved retinal tissue on baseline en face OCT imaging, FAZ area in the SCP and DCP and disorganization of retinal inner layers (DRIL) in the central 1000 microns were correlated with best-corrected logMAR VA.
Results: Thirty-five eyes of 30 patients (14 female, 16 male) with a mean age of 52 and vision of 38 ETDRS letters were included. Mean vascular density in the SCP was 13.50±4.67% and DCP was 10.57±2.64%. Mean FAZ in the SCP was 0.28±0.12mm2 and DCP was 1.09±0.47. Correlation coefficients for baseline VA (ETDRS letters) correlated with the vessel density in the SCP (0.64, p=0.08) and DCP (r=0.78, p=0.019). There was also a negative correlation with the area of the FAZ in the SCP (r=-0.33, p=0.24) and DCP (r=-0.40, p=0.19) with vision. DRIL in the central 1000 microns correlated negatively with vision. (r=-0.37, p=0.21). Area of largest cyst at baseline on en face OCT correlated with vision (r=-0.66, p=0.1).
Conclusions: Using OCTA, vessel density in the SCP and DCP, correlated with VA. Similarly there was a negative correlation of FAZ area in the SCP and DCP with vision. Structural integrity of the layers and preserved retinal tissue on en face OCTA negatively correlated with vision indicating that the vascular and structural changes in the DCP and SCP on OCTA could serve as a non invasive surrogate biomarker for VA.
Commercial Relationships: Sophia L. Zagora, None; **Dilraj S. Grewal**, None; **Susan Lightman**, None; **Oren Tomkins-Netzer**, None

Program Number: 2148 **Poster Board Number:** A0254
Presentation Time: 3:45 PM–5:30 PM
Examination of optic nerve peripapillary vasculature in uveitic disease through optical coherence tomography angiography
Preethi S. Ganapathy, Francesco Pichi, Kimberly Baynes, Sunil K. Srivastava. Ophthalmology, Cleveland Clinic Cole Eye Institute, Cleveland, OH.
Purpose: Optical coherence tomography angiography (OCTA) noninvasively provides information about optic nerve health. Previous studies have shown that optical coherence tomography (OCT) alone is unreliable when assessing optic nerve health in uveitis, due to edematous changes during inflammation [Moore et al, Ophthalmology. 2015;122(3):511-7]. The primary aim of this study was to analyze optic nerve peripapillary vasculature in uveitic disease using OCTA.
Methods: Optic nerve images of 21 patients (35 eyes) were imaged using optical coherence tomography angiography (Optovue, Inc., Fremont, CA). Descriptive data including gender, visual acuity, and intraocular pressure was obtained. The peripapillary region of the optic nerve in each image was segmented into nasal, inferonasal, inferotemporal, superotemporal, superonasal, and temporal regions and the density of peripapillary vessels was measured. Comparative analysis amongst peripapillary vascular density in various regions was performed statistically via analysis of variance (ANOVA).
Results: Eighteen female eyes were imaged, and visual acuity was 20/60 or worse in 2 eyes. Mean peripapillary vascular density in all regions was 58.71%. Peripapillary vascular density in the superonasal region of all optic nerves in uveitic patients was found to be significantly decreased to 54.25% compared to other regions ($p = 0.0005$). There was no significant difference in vascular density in any region when comparing eyes with active uveitic disease versus quiescent uveitis.
Conclusions: OCTA provides useful information about optic nerve health in uveitic disease. Future studies aim to compare peripapillary vascular density in known uveitic eyes with glaucoma and non-glaucomatous uveitic eyes, and to determine whether OCTA can used reliably to assess optic nerve health as an alternate method to OCT in uveitic disease.
Commercial Relationships: Preethi S. Ganapathy, None; **Francesco Pichi**, None; **Kimberly Baynes**, None; **Sunil K. Srivastava**, None

Program Number: 2149 **Poster Board Number:** A0255
Presentation Time: 3:45 PM–5:30 PM
Distribution of noninfectious uveitis and its complications in the four US regions using the National Inpatient Sample
Krati Chauhan[1], Steven Scaife[2], James T. Rosenbaum[3, 4].
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Purpose: There is lack of national data to compare the distribution of uveitis for the four US regions (northeast, midwest, south and west). We performed a retrospective, observational study to understand the epidemiology of non-infectious uveitis (NIU) and its complications according to the four US regions, income level and the insurance type using the National Inpatient Sample (NIS) for the years 2002-2013
Methods: The NIS is a de-identified, 20% sample of U.S. community hospitals. We used the (ICD-9) codes to identify NIU cases and ocular complications. We collected information on age, sex, race, US regions (northeast, midwest, west and south), income quartile (< $ 38,999, $ 39,000-$ 47,999, $ 48,000-$ 62,999 and > $ 63,000), and ocular complications. Statistical analysis was done using SAS version 9.4. Continuous variables were summarized as mean ± SD and categorical variables as frequencies and percentages. Groups (the four US regions, uveitis patients with and without ocular complications) were compare using chi square and t tests.
Results: There were a total of 94,143,978, discharges from 2002-2013, out of these 15,296 (.016%) had NIU. Of 22 possible subsets of uveitis, birdshot chorioretinopathy (39.2%) and Behcets (36.7%) were the most common NIU etiologies. For the entire US, NIU patients were younger (mean age 45±18 vs 48±28, p<.0.0001), higher percentage of African American (23 vs 10%, p <.0001) and belong to lowest income < $38,999 (29 vs 26%, p <.001), than the total NIS population. Examining the four US regions separately, NIU patients in all four US regions individually, were more likely to be African American, have the lowest income quartile and insured by Medicaid, (Table 1). NIU patients with ocular complications were younger (43.9 ±17.6 vs 45 ±18) and majority resided in the south (35%, p value: 0.3). Blindness was most frequent in south (43%, p value:0.3) and legal blindness in northeast (33%, p=.001), (Table 2).
Conclusions: NIU patients with and without ocular complications are younger, African American, have low income and have Medicaid as the primary insurance.

	Northeast		Midwest		South		West	
	Uveitis	NIS	Uveitis	NIS	Uveitis	NIS	Uveitis	NIS
N (% of total)	3,373 (22)	17,866,154 (19)	3,110 (20)	21,155,782 (22)	5,708 (37)	36,726,543 (39)	3,105 (20)	18,395,499 (20)
African American (% of total)	975 (29)	2,449,290 (14)	461 (15)	1,581,622 (7)	1,796 (32)	5,818,609 (16)	317 (10)	969,480 (5)
Income: '$38,999 or less' (% of total)	892 (26)	3,578,816 (20)	846 (27)	4,764,288 (23)	2,176 (38)	13,240,670 (36)	549 (18)	3,246,067 (18)
Medicaid	1,066 (32)	3,321,099 (19)	620 (20)	3,515,145 (17)	1,370 (24)	7,393,109 (20)	698 (23)	4,170,231 (23)

Distribution of non-infectious uveitis cases, percentage of Aftrican America, lowest income quartile and Medicaid for the four US regions.

	Ocular Complications	Blindness	Legal Blindness
Total: N	613	245	257
Northeast: N (%)	153 (25%)	47 (20%)	86 (33%)
Midwest: N (%)	119 (19%)	44 (17%)	49 (19)
South: N (%)	212 (35%)	105 (43%)	74 (29%)
West: N (%)	129 (21%)	49 (20%)	48 (19%)
	P value=0.3	P value=0.3	P value=.001

Ocular complications, blindness and legal blindness for the four US regions

Commercial Relationships: Krati Chauhan, None; **Steven Scaife**, None; **James T. Rosenbaum**, None

Support: Nowatski eye foundation grant

Program Number: 2150 **Poster Board Number:** A0256
Presentation Time: 3:45 PM–5:30 PM

Frequency of Uveitis in the Central Tokyo area (2013-2015)

Shintaro Shirahama[1, 2], Toshikatsu Kaburaki[2], Hisae Nakahara[2], Rie Tanaka[2], Mitsuko Takamoto[2], Ayako Karakawa[2], Yujiro Fujino[2], Makoto Aihara[2]. [1]Opthalmology, JR Tokyo General Hospital, Tokyo, Japan; [2]Ophthalmology, The University of Tokyo Graduate School of Medicine, Tokyo, Japan.

Purpose: To investigate the frequency of newly arrived patients with uveitis (including scleritis) in central Tokyo area between January 2013 and December 2015 and compare them with those from 2004-2012.

Methods: We retrospectively surveyed the records of patients with uveitis who first visited the Uveitis Clinic of the University of Tokyo Hospital located in central Tokyo between January 2013 and December 2015. Clinical data obtained included age, gender, diagnosis, anatomic location of inflammation (anterior, intermediate, posterior, pan), laboratory test results of blood and aqueous, chest X-ray and fluorescein fundus angiography findings.

Results: From January 2013 to December 2015, 798 new patients (384 men, 414women) with uveitis visited Tokyo University Hospital. Mean age was 56.5 ± 18.3 years (men 57.0 years, women 56.1 years, respectively). Definite diagnoses were made in 505 cases (63.1%). The most common diagnoses were herpetic iridocyclitis (7.0%, positive detection of herpes simplex virus, varicella zoster virus, and cytomegalovirus-DNA by polymerase chain reaction of aqueous humor was obtained in 0.6%, 2.1% and 4.3%, respectively), sarcoidosis (5.8%), scleritis (5.0%), Behçet disease (4.1%), Vogt-Koyanagi-Harada disease (3.9%), intraocular malignant lymphoma (3.9%), Posner-Schlossman syndrome (3.1%), bacterial endophthalmitis (2.9%), Fuchs heterochronic iridocyclitis(2.5%), Chronic iridocylitis in young girls(2.1%). The most frequent unclassified uveitis was sarcoidosis-suspected (21.1%). The frequency of anterior uveitis, intermediate uveitis, posterior uveitis, and panuveitis are respectively 41.4%, 1.5%, 12.2%, 45.0%. When compared with our former findings of the year 2004-2012, the present series showed increasing trend of herpetic iridocyclitis (especially cytomegalovirus iridocyclitis), intraocular malignant lymphoma, bacterial endophthalmitis, Fuchs heterochronic iridocyclitis, Chronic iridocylitis in young girls. On the other hand, they showed decreasing trend of sarcoidosis, scleritis, Behçet disease, Vogt-Koyanagi-Harada disease. The frequency of anatomic localization of uveitis was not different among the studies conducted in 2004-2015.

Conclusions: Increasing trend of herpetic iridocyclitis, intraocular malignant lymphoma, bacterial endophthalmitis might be connected with the recent progression of laboratory examinations such as polymerase chain reaction.

Commercial Relationships: Shintaro Shirahama; **Toshikatsu Kaburaki**, None; **Hisae Nakahara**, None; **Rie Tanaka**, None; **Mitsuko Takamoto**, None; **Ayako Karakawa**, None; **Yujiro Fujino**, None; **Makoto Aihara**, None

Program Number: 2151 **Poster Board Number:** A0257
Presentation Time: 3:45 PM–5:30 PM

Epidemiology of Uveitis in Metropolitan Melbourne

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Purpose: There are very few, if any, prior studies describing the epidemiology of uveitis in the Australian population. The aim of our research project is to determine the incidence and prevalence of uveitis in a large, well-defined population of metropolitan Melbourne through a retrospective, cross-sectional study.

Methods: The Royal Victorian Eye and Ear Hospital (RVEEH) is a quaternary referral hospital with the only dedicated Ophthalmology Emergency Department (ED) in the State of Victoria. Data regarding all patients who presented to the RVEEH ED with a diagnostic code related to uveitis, and all patients who attended a specialist uveitis clinic at the RVEEH, from November 2014 through to October 2015 were collected. Detailed gender- and age-stratified population data were obtained from the 2015 Government census. Medical records were reviewed by two health professionals to confirm the date of diagnosis, sub-type of uveitis and underlying aetiology. Incidence rates were calculated by using a dynamic population model. Prevalence rates were based on the census population of metropolitan Melbourne during the study period.

Results: The adult population of metropolitan Melbourne used for the study was 1 174 302 people. During the study period, 685 new cases of uveitis were diagnosed and 528 cases of pre-existing uveitis requiring ongoing treatment were identified. These data yielded an incidence of 58.3/100 000 person years and a period prevalence of 103.3/100 000 persons. Of the 1213 cases identified, anterior uveitis was diagnosed in 850 patients (70%), intermediate uveitis in 82 patients (6.8%), posterior uveitis in 201 patients (16.6%) and panuveitis in 80 patients (6.6%). At the time of presentation, 254 patients (20.9%) had a diagnosed autoimmune condition and 195 patients (16.1%) had an infective aetiology. There was no statistically significant difference in incidence or prevalence of uveitis between males and females (P>0.05).

Conclusions: In this first uveitis epidemiology study in an Australian population, the incidence and prevalence values of uveitis were similar to those rates reported in recent U.S. studies. In our population, uveitis more commonly affected the elderly and did not affect females significantly more than males.

Commercial Relationships: Colby Hart, None; **Elena Zhu**, None; **Lyndell L. Lim**, Abbvie, Bayer, Allergan (C), Abbvie, Bayer (F)

Program Number: 2152 **Poster Board Number:** A0258
Presentation Time: 3:45 PM–5:30 PM
Coping strategies in adult patients with uveitis in Colombia
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Purpose: Uveitis is an inflammatory ocular disease, with a high proportion of chronicity, a high rate of ocular morbidity and an important psychological component. The purpose was to describe coping strategies that intervene in the course of uveitis, which are crucial in this illness, in order to build and / or strengthen aspects that help patients to obtain adequate adaptation to this disease.
Methods: A descriptive, cross-sectional case series study was performed in volunteer adult patients with active or non-active uveitis who consulted to an Ophthalmological Center in Bogotá, Colombia, between July-November 2016, and who agreed to enter the study by signing informed consent. This study was approved by the Institutional Review Board and Ethics Committee at Universidad del Rosario. All study conduct adhered to the tenets of the Declaration of Helsinki.
The variables under study were psychosocial, demographic and ophthalmological. The Modified Coping Strategies Scale (EEC-M) was used.
Results: There were 66 patients, 43 women, mean age 43.6 ± 14.8 yo, 54.5% of the patients were in an acute episode of the disease. Bilateral eye involvement was found in 59.1%, some degree of inflammation in the anterior chamber in 40%, 9.23% presented BCVA between 20/60 and 20/200, 16 patients had unilateral legal blindness (BCVA <20/200), none of the patients presented bilateral legal blindness, 40.9% presented panuveitis, 28.8% posterior uveitis, 19.7% anterior uveitis and 10.6% intermediate uveitis.
40.9% of patients referred that the first episode of uveitis appeared after a stressful event, being general stress the most frequent event in 74.1%, followed by family problems and depression, both in 29.6%. The most used coping strategies were: Professional Support 63.6%, Religion: 54.5% and Problem Solving: 48.5%, while the least used were Autonomy: 80.3%, Waiting: 66.7% and Aggressive reaction 9.1%.
Conclusions: The most commonly used coping with illness strategies in patients with uveitis were professional support, religion and problem solving, and the least used were autonomy, aggressive reaction and waiting.
It is recommended to direct actions aimed at designing education strategies, psychological management and support guides, focused on directly benefiting the patient with uveitis, in order to strengthen support networks, which will improve their quality of life, their family, labor and social environment.
Commercial Relationships: Alejandra De-La-Torre Cifuentes, None; **Clara López de Mesa**, None; **León A. Facio Lince**, None; **Eveling Criollo-Porras**, None; **Ximena Palacios-Espinosa**, None; **Felpe Duran**, None

Program Number: 2153 **Poster Board Number:** A0259
Presentation Time: 3:45 PM–5:30 PM
Seasonal variation in ocular attack in Japanese patients with Behçet's disease
Takuto Sakono[1], Akira Meguro[1], Shigeaki Ohno[2], Nobuhisa Mizuki[1].
[1]Ophthalmology, Yokohama City University Of Medicine, Yokohama, Japan; [2]Ophthalmology, Hokkaido University of Medicine, Sapporo, Japan.
Purpose: Behçet's disease (BD) is a chronic, systemic, inflammatory disorder characterized by four major symptoms consisting of recurrent ocular, oral and genital ulcers, and skin lesions. Ocular involvement occurs in approximately 50-70% of patients with BD and repeated ocular attacks can cause blindness. Seasonal variation in ocular attack in patients with BD has been suggested in Japan since long before, however, there are very few studies which assessed the correlation between season and BD ocular attack. In this study, we retrospectively investigated the seasonal pattern of ocular attack of BD in a Japanese population.
Methods: We enrolled a total of 145 Japanese patients with BD who were diagnosed and treated between March 1998 and November 2016 at the Uveitis Survey Clinic of Yokohama City University Hospital. The Rogers' method was used to assess seasonal variation in ocular attack of BD.
Results: A total of 830 ocular attacks occurred in the BD patients. The highest frequency of ocular attack was observed in November, followed by December and March. The lowest frequency was in the summer months of June, July and August. This seasonal variation in BD ocular attack was statistically significant ($P < 0.05$).
Conclusions: We found that ocular attack of BD shows a significant seasonal variation in Japanese patients. This finding suggests that environmental factors associated with seasonality may be responsible for triggering ocular attack of BD.
Commercial Relationships: Takuto Sakono, None; **Akira Meguro**, None; **Shigeaki Ohno**, None; **Nobuhisa Mizuki**, None

Program Number: 2154 **Poster Board Number:** A0260
Presentation Time: 3:45 PM–5:30 PM
Laboratory analysis and predictive characteristics of infectious panuveitis sampling in the Pacific Northwest
Kaivon Pakzad-Vaezi[1], Macklin Nguyen[1], Cecilia Lee[1], Andrew Bryan[2], Kathryn L. Pepple[1]. [1]Ophthalmology, University of Washington, Seattle, WA; [2]Laboratory Medicine, University of Washington, Seattle, WA.
Purpose: To evaluate the results, yield, and prognostic characteristics of infectious etiological testing in panuveitis cases
Methods: Endophthalmitis/panuveitis reference laboratory database results were retrieved from 2007-2014. Polymerase chain reaction (PCR) for HSV, VZV, CMV, EBV, 16S and 28S rRNA, and bacterial and fungal culture results were recorded. Logistic regression analyses identified characteristics predicting positive results, and an algorithm for specimen handling was created in consultation with laboratory experts in light of modern detection thresholds
Results: Of 85 patient samples sent for bacterial and fungal testing, 16 (19%) were dual positive by culture and PCR, 43 (51%) were dual negative, 10 (12%) were culture positive only, and 16 (19%) were PCR positive only. Univariate analysis of PCR samples demonstrated that surgical specimens were associated with a positive result (OR 3.34, 95% CI 1.12-10.51; p=0.03), with a trend towards positivity from vitreous taps (OR 0.37, 95% CI 0.12-1.08; p=0.08), pre-sample antibiotic use (OR 2.57, 95% CI 0.85-8.45, p=0.10), and prior eye surgery (OR 2.44, 95% CI 0.82-7.57; p=0.11). Multivariate analysis showed an association of prior eye surgery with PCR positivity (OR 4.06, 95% CI 1.12-17.25; p=0.04), and a trend for

surgical samples (OR 6.19, 95% CI 0.78-62.97; p=0.09). Parameters associated with culture positivity were surgical samples (OR 2.93, 95% CI 0.99-9.08; p=0.05) and vitreous taps (OR 0.40, 95% CI 0.13-1.17; p=0.10) by univariate analysis, and surgical samples by multivariate analysis (OR 6.12, 95% CI 0.84-61.31; p=0.09). Of 112 samples sent for viral PCR, 37 (33%) were positive. Aqueous, vitreous, and vitrectomy samples were positive in 35% (18/51), 27% (10/37), and 33% (8/24), respectively. Most viral titers were very high and could be detected with low sample volumes without significant miss-rates. An algorithm for specimen handling based on infectious clinical suspicion and sample volume is presented
Conclusions: PCR is more likely to be positive than culture, although the importance of culture is still apparent. There is a higher likelihood of positive results in post-operative endophthalmitis cases and from surgical samples. Low sample volumes are adequate for viral PCR testing. The clinician should play an active role in guiding sample handling for PCR versus culture in light of sample volume and clinical suspicion
Commercial Relationships: Kaivon Pakzad-Vaezi, None; **Macklin Nguyen**, None; **Cecilia Lee**, None; **Andrew Bryan**, None; **Kathryn L. Pepple**, None

Program Number: 2155 **Poster Board Number:** A0261
Presentation Time: 3:45 PM–5:30 PM
Tear Proteomics in Pediatric Chronic Non-infectious Uveitis
Sheila T. Angeles-Han[1], Steven Yeh[2], Purnima Patel[2], Duc Duong[2], Kirsten Jenkins[3], Sampath Prahalad[2, 3], Gary N. Holland[4]. [1]Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH; [2]Emory University School of Medicine, Atlanta, GA; [3]Children's Healthcare of Atlanta, Atlanta, GA; [4]UCLA, Los Angeles, CA.
Purpose: Children with juvenile idiopathic arthritis (JIA) have increased uveitis risk. ANA guides the uveitis screening schedule, but there are no definitive predictors. Potential biomarkers were found in serum and aqueous humor. Tear proteomics may better identify JIA children at greatest risk for uveitis. Collection is less invasive, easily accessible and better tolerated. We examined the tear profile of JIA-associated uveitis (JIAU), idiopathic chronic anterior uveitis (CAU) and other forms of idiopathic uveitis (other U) to identify potential biomarkers.
Methods: We collected tear samples from JIAU, CAU and other U children who were >10 years old (Table 1). We placed a Schirmer strip 6mm from the lateral canthus of the anesthesized eye for 2-5 minutes. Then, 50 ug of proteins were extracted for TMT labeling. TMT pool was loaded onto an offline electrostatic repulsion interaction chromatography (ERLIC) fractionation HPLC system and 20 fractions were collected. LC-MS/MS analysis was done on all 20 fractions. Proteome Discoverer 2.1 (ThermoFisher Scientific, San Jose, CA) was used to search all the MS/MS spectra against a Uniprot human reference protein database (retrieved April 20, 2015; 90,411 target sequences) and TMT reporter quantitation was done.
We compared 1) JIAU to CAU and other U; 2) JIAU to CAU using ANOVA.
Results: We quantified 1483 unique protein groups and 120 proteins had statistically significant differences in expression. Of those proteins, 12 were significant across JIAU vs. CAU and other U. Most significant were PTK7 (p=0.004), GART (p=0.008), IGFBP6 (p=0.011), TM9SF1 (p=0.014), FTH1 (p=0.024), PSMB6 (p=0.034), and CDKN2C (p=0.04). Gene ontology showed pathways related to amylase activity, growth regulation and response to stimulus.
When we restricted analysis to JIAU vs. CAU, SAA1 (p=0.002), DPP3 (p=0.022), ALDH9A1 (p=0.035), and CDKN2C (p=0.043) were significant. Gene ontology showed pathways related to amylase activity, proteolysis and peptidase activity. CDKN2 was increased in CAU and other U compared to JIAU. SAA1 was increased in JIAU compared to CAU, but not other U. SAA1 gene polymorphisms are reported in rheumatoid arthritis.
Conclusions: We identified potential biomarkers for JIAU using tear proteomics. Tear collection is a non-invasive, easily accessible and well-tolerated method which allows study in JIA alone. Biomarker discovery in JIAU will aid early detection of uveitis in JIA children at highest risk.

Table 1. Demographics and Clinical Characteristics of Children with JIA-associated uveitis (JIAU), idiopathic chronic anterior uveitis (CAU), and other forms of idiopathic uveitis (other U), N (%)

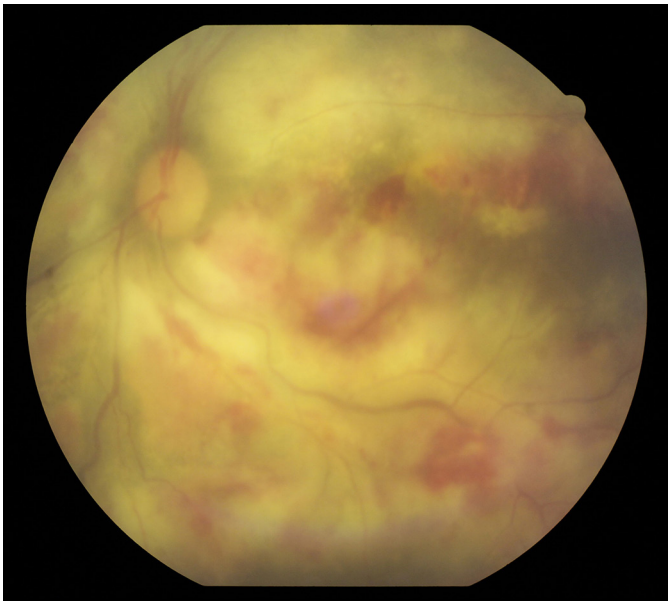
	ALL N = 8	JIAU N = 2	CAU and other U N = 6
Female	6 (75)	2 (100)	4 (67)
Race			
Caucasian	5 (62)	2 (100)	3 (50)
African American	3 (38)	0 (0)	3 (50)
Non-Hispanic	8 (100)	2 (100)	6 (100)
JIA type (JIAU only)			
Oligoarticular JIA		1 (50)	
Polyarticular rheumatoid factor negative JIA		1 (50)	
Uveitis location			
Anterior	5 (62)	2 (100)	3 (50)
Anterior and Intermediate	1 (12)	0 (0)	1 (16)
Intermediate	1 (12)	0 (0)	1 (16)
Posterior	1 (12)	0 (0)	1 (16)
Bilateral	6 (75)	2 (100)	4 (67)
Active uveitis	4 (50)	0 (0)	4 (67)
Medication use			
Methotrexate	5 (62)	0 (0)	4 (67)
Infliximab	3 (38)	1 (50)	2 (33)
Adalimumab	2 (25)	1 (50)	1 (16)

Commercial Relationships: Sheila T. Angeles-Han, None; **Steven Yeh**, AGTC (not related) (C), Santen (not related) (C), Clearside Biomedical (not related) (C); **Purnima Patel**, None; **Duc Duong**, None; **Kirsten Jenkins**, None; **Sampath Prahalad**, Novartis (not related) (S), UCB (not related) (S), Medac Pharma (not related) (S); **Gary N. Holland**, Genentech, Inc (not related) (S), XOMA (US) LLC (not related) (S), Santen (not related) (S), Novartis International AG (not related) (S)
Support: Rheumatology Research Foundation and NIH Grant K23 EY021760

Program Number: 2156 **Poster Board Number:** A0262
Presentation Time: 3:45 PM–5:30 PM
Ocular Manifestations of HIV/AIDS in Children and Adults
Shanti Gurung, Prof. DN Shah, Prof AK Sharma, Prof Dr Laxman Shrestha, Dr Madhu Thapa, Dr Manita Godar. Pediatrics, Institute of Medicine, Kathmandu, Nepal.
Purpose: Ocular involvement in HIV/AIDS cases occurs in about 70% of patients leading to various ocualr morbidity and blindness. In Nepal burden of HIV disese is high but there is paucity of information and knowledge concerning ocular manifestations in both chidren and adults. We performed a cross-sectional descriptive study to document different ocular manifestations in both children and adults.
Methods: We analyzed 18 months data from a cross-sectional descriptive hospital based study. Children and adults living with HIV and AIDS were examined for ocualr disease and its complications. We had excluded those patients without CD4 count and who were very sick and not able to perform detailed examination. Detailed history and examination datas were recorded in a proforma designed for the study analyzed using SPSS version 19.
Results: Of 114 cases (54 children and 60 adults),24% of children and 61.9% of the adults had developed ocular manifestations. Anterior segment and external ocular disorders comprised 21%

of the cases in this study. The most common finding was herpes simplex blepharoconjunctivitis (11.1%) in 7 children and dry eye (8.3%) and herpes zoster ophthalmicus (2.6%) in adults. Posterior segment manifestations comprised 34% of the cases in this study, (HIV retinopathy-13.5%, CMV retinits-10.8%, Retinal detachment-8.1%, Mulitifocal Choroiditis (with PTB)-2.7% and ocular Toxoplasmosis-2.7%) were seen in adults. Among children, one each case of CMV Retinitis, optic atrophy, macular edema, ocular toxoplasmosis, and herpes zoster ophthalimicus and disc edema were seen. No cases of HIV Retinopathy seen in pediatric age groups. Regarding neuro-ophthalmic manifestation it comprises 18.9% in adult and 15.3% in children.

Conclusions: The pattern of ocular involvement seen in HIV infected cases is similar to what we see in this subcontinent but different from that in developed countries. Our data, in agreement with other series reported in the literature, indicate that cotton-wool spots (HIV Retinopathy) and CMV retinitis, the most common ocular manifestations of HIV/AIDS in adults, are much less prevalent in children. Instead blepharoconjunctivitis was commonest ocular findings in our patients; ocular opportunistic disease and neuro-ophthalmic manifestation were seen in our pediatric cases.



CMV Retinitis in 18 years male with CD4+ count of 23cells/ul.

Diagnosis	Absolute CD4 Count						Total
	less than 50	51-200	201-350	351-499	500-750	>750	
Blepharoconjunctivitis(HSV)	0	1	1	3	1	0	6
Cataract	0	0	0	1	0	0	1
CMV retinitis	0	1	0	0	0	0	1
Disc edema	0	0	0	1	0	0	1
HZO	0	0	0	1	0	0	1
Macular edema	0	0	1	0	0	0	1
Optic atrophy	0	0	1	0	0	0	1
Toxoplasmosis	0	0	0	1	0		1
Total	0	2	3	7	1	0	13

Distribution according to ocular disease and CD4+ count in children.

Commercial Relationships: Shanti Gurung, None; **Prof. DN Shah**, None; **Prof AK Sharma**, None; **Prof Dr Laxman Shrestha**, None; **Dr Madhu Thapa**, None; **Dr Manita Godar**, None

Program Number: 2157 **Poster Board Number:** A0263
Presentation Time: 3:45 PM–5:30 PM

Risk for uveitis occurrence in juvenile idiopathic arthritis (JIA) and predictive factors for the 2-years outcome: Data from the Inception Cohort of Newly diagnosed patients with JIA (ICON-JIA) study

Karoline Walscheid[1, 2], Christoph Tappeiner[1, 3], Jens Klotsche[4], Sandra Schenck[4], Martina Niewerth[4], Ina Liedmann[4], Miha Lavric[5], Dirk Foell[5], Arnd Heiligenhaus[1, 2], Kirsten Minden[4]. [1]Department of Ophthalmology at St. Franziskus-Hospital, Muenster, Germany; [2]Department of Ophthalmology, University of Duisburg-Essen, Essen, Germany; [3]Department of Ophthalmology, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland; [4]German Rheumatism Research Center (DRFZ), Leibnitz Institute, Berlin, Germany; [5]Clinic for Pediatric Rheumatology and Immunology, University of Muenster, Muenster, Germany.

Purpose: To prospectively analyze predictors for occurrence and clinical course of uveitis in newly diagnosed juvenile idiopathic arthritis (JIA).

Methods: Patients with JIA (n=957) were enrolled in the Inception Cohort of Newly diagnosed patients with JIA (ICON-JIA) study within the first year after JIA diagnosis. Demographic and clinical parameters were documented at baseline, 3-monthly during the first year and 6-monthly afterwards. Serum samples were collected at each visit, and serum S100A12 levels were measured by ELISA. Multivariate Cox-regression analysis was performed to evaluate the impact of demographic, clinical, laboratory and therapeutic parameters on onset and two-years uveitis outcome.

Results: Mean age at JIA onset was 7.1 ± 4.6 years, 67.1% of patients were female and 56.6% ANA positive. In 61 patients, uveitis was present before JIA diagnosis, and occurred in another 60 patients during follow up (FU; mean 39 months). Risk factors for uveitis onset were young age at JIA onset (HR 1.19, p<0.0001), oligoarthritis (HR 1.22, p<0.0001) and ANA positivity (HR 2.34, p=0.004). Predictors for uveitis onset during FU were high cJADAS10 scores (HR 1.05, p=0.031), S100A12 levels >250ng/ml (HR 2.74, p=0.001) and ESR >20 mm/h (HR 2.32, p=0.005) at baseline. Uveitis inactivity was achieved in 78.9% and 89.5% of patients at 1- and 2-years FU, respectively. Predictors for uveitis quiescence (≥6 months) were uveitis onset after age of 5 years (OR 3.00; p=0.02), lower

cJADAS10 (OR 0.78; p<0.0001), low anterior chamber (AC) cell-grade (OR 2.50; p=0.001), and adalimumab treatment (OR 5.10; p=0.001) at visit before attaining uveitis inactivity. Age <5 years at uveitis onset (OR 12.5, p=0.03) and cJADAS10 >4.5 (OR 5.54; p<0.03) were predictors for subsequent uveitis reactivation (n=13, 23%). Ocular complications were present in 27.8% at baseline, and in 28.2% and 34.0% at 1- and 2-year FU, respectively. AC cell grades ≥1+ (HR 4.00; p=0.086) and AC tyndall ≥1+ (HR 6.73; p=0.041) correlated with presence of uveitis-related complications.

Conclusions: Beside demographic risk factors, JIA disease activity scores and biomarkers can help to identify patients at risk for uveitis onset. Clinical characteristics and treatment are additional predictors for the 2-years outcome of uveitis.

Commercial Relationships: Karoline Walscheid; **Christoph Tappeiner**, None; **Jens Klotsche**, None; **Sandra Schenck**, None; **Martina Niewerth**, None; **Ina Liedmann**, None; **Miha Lavric**, None; **Dirk Foell**, Pfizer (R), Pfizer (F), Novartis (R), Novartis (F); **Arnd Heiligenhaus**, Xoma (R), AbbVie (R), Santen (R), MSD Sharp and Dohme (R), Pfizer (F), Novartis (F), Alimera Sciences (R), Allergan (R), Pfizer (R); **Kirsten Minden**, Roche/Chugai (R), Abbvie (F), Pfizer (R), Pfizer (F), Roche (F), Pharm-Allergan (R)

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Program Number: 2158 **Poster Board Number:** A0264
Presentation Time: 3:45 PM–5:30 PM

Fractal analysis in birdshot chorioretinopathy using optical coherence tomography angiography

Edmund Tsui[1], Sivan Elyashiv[2], C M. Samson[2], Sarwar Zahid[1], Richard B. Rosen[2], Joshua A. Young[1]. [1]Ophthalmology, New York University School of Medicine, New York, NY; [2]Ophthalmology, New York Eye and Ear Infirmary of Mount Sinai, New York, NY.

Purpose: Optical coherence tomography angiography (OCTA) permits non-invasive evaluation of the retinal vasculature. We aim to quantify the fractal dimension (FD) of eyes with birdshot chorioretinopathy compared with control eyes using OCTA.

Methods: A retrospective study was performed on 49 eyes from 26 control patients and 12 eyes from 6 patients with birdshot chorioretinopathy from a previously established database. OCTA images were obtained using the RTVue XR Avanti (Optovue Inc., Fremont, CA, USA). Automated 3mm x 3mm macular scans were obtained through both the superficial and deep capillary plexuses for each eye. Grayscale OCTA images were standardized and binarized using ImageJ (National Institutes of Health, Bethesda, Maryland, USA). Fractal box-counting analyses were performed using Fractalyse (ThéMA, Besançon Cedex, France). The FD of the deep and superficial plexuses of eyes with birdshot chorioretinopathy was compared with control eyes. Statistical analysis was performed using two-tailed t-tests and one-way analysis of variance with post-hoc Tukey's multiple comparisons test with statistical significance at P<0.05.

Results: The mean FD in the superficial capillary plexus of eyes with birdshot chorioretinopathy (1.481, SD=0.082) was significantly lower (P<0.0001) than control eyes (1.651, SD=0.0539). The mean FD in the deep capillary plexus of eyes with birdshot chorioretinopathy (1.512, SD=0.0904) was significantly lower (P<0.0001) than control eyes (1.677, SD=0.0533). There was no difference between the superficial and deep capillary plexuses of eyes with birdshot chorioretinopathy.

Conclusions: The fractal dimension in OCTA of birdshot chorioretinopathy is significantly lower compared to control eyes. Since fractal geometry models the branching in the parafoveal microvasculature, this may correlate with a lower density of capillaries with above-threshold flow and provide further insight into pathogenesis of birdshot chorioretinopathy. Utilizing fractal analysis in OCTA imaging has the potential to establish quantitative parameters for parafoveal microvascular pathology in birdshot chorioretinopathy.

Commercial Relationships: Edmund Tsui; **Sivan Elyashiv**, None; **C M. Samson**, None; **Sarwar Zahid**, None; **Richard B. Rosen**, Optovue (C); **Joshua A. Young**, None

Program Number: 2159 **Poster Board Number:** A0265
Presentation Time: 3:45 PM–5:30 PM

Hypoactive endoplasmic reticulum aminopeptidase (ERAP)-1 and ERAP2 are strong risk factors for HLA-A29-associated Birdshot Uveitis.

Jonas Kuiper. Ophthalmology, University Medical Center Utrecht, Utrecht, Netherlands.

Purpose: Adaptive immunity builds on the specialized enzymes ERAP1 and ERAP2 that jointly orchestrate the final check-point for processing thousands of peptides that are presented on the cell surface by HLA molecules. Emerging studies revealed that polymorphisms in *ERAP1* and *ERAP2* genes affect their enzymatic activities and predispose to autoimmune diseases that commonly manifest with - or as - uveitis. We hypothesize that combinations of functionally distinct ERAP1 and previously reported ERAP2 allotypes confer risk for the development of the prototypic HLA-disease Birdshot Uveitis (BU), which exclusively manifests in HLA-A*29-positive individuals.

Methods: Genotypes of all reported missense *ERAP1* and *ERAP2* variants were determined in 89 Dutch BU cases and 890 controls from the Netherlands to map the protein allotypes of ERAP1 and ERAP2 and their contributions to BU disease risk. Protein expression of ERAP allotypes was evaluated by Western blot. Fluorogenic and cell-based assays were used to measure enzymatic activities.

Results: Almost all BU cases (>96%) had at least one copy of the *ERAP2*-coding protein allotype compared to 71% of controls. Considering 10 amino acid positions in ERAP1 together, we identified 8 common (>1%) protein allotypes in cases and controls. After accounting for *ERAP2*, we observed an independent strong association for a single ERAP1 allotype with BU (OR = 2.3, $P = 8.3 \times 10^{-6}$). Increase in this ERAP1 allotype count was significantly associated with a progressive increased risk for BU (odds ratio for heterozygotes and homozygotes were 2.5 [95% CI 1.6-4.1] and 5.6 [95% CI 2.4–12.8], respectively). 61.4 % of BU cases had at least one copy of this ERAP1 allotype compared to 35.8% of controls. The associated ERAP1 allotype revealed significant reduction in protein expression and aminopeptidase activity.

Conclusions: A functionally distinct combination of ERAP2 and hypoactive ERAP1 are key pathogenic factors for developing BU. These results suggest that risk ERAP allotypes may affect adaptive immunity by changing the available peptides presented by HLA-A*29 and provide rational for targeting ERAPs for treatment of BU and genetically related autoimmune diseases.

Commercial Relationships: Jonas Kuiper

Support: F.P Fischer stichting

Program Number: 2160 **Poster Board Number:** A0266
Presentation Time: 3:45 PM–5:30 PM
Birdshot Chorioretinopathy: Disease Severity and HLA-A29 Subtype
Lisa Zhang, Harrish Nithianandan, Rahul Sharma, Chloe Gottlieb. University of Ottawa Eye Insitute, Ottawa, ON, Canada.
Purpose: To investigate an association between human leukocyte antigen genotype A29 (HLA-A29) subtypes and birdshot chorioretinopathy (BSCR) disease severity. Additionally, we investigated the possible association of patient demographics, including place of birth and upbringing, with BSCR subtypes. This was a combined prospective/retrospective chart review of patients with BSCR at the University of Ottawa Eye Institute.
Methods: HLA-A29 subtyping was done through high resolution DNA sequencing using DNA samples from a blood draw. Mean best-corrected visual acuity (BCVA) was used as a surrogate marker for disease severity, with worse mean BCVA indicating advanced BSCR disease. BCVA was converted from Snellen Chart into logarithm of the minimum angle of resolution (logMAR). Demographic and geographic data was obtained through a patient survey.
Results: 24 patients with BSCR were identified through a retrospective chart review and 10 patients participated. All 10 research participants were of subtype HLA-A*29:02. No other subtypes were found in the study patient population. 35% of patients were of French background, 6% English, 29% Irish, 24% Scottish, and 6% Ukrainian. Differences in mean BCVA were not statistically significant for correlation with ethnic background, city of birth, city of upbringing, city of birth of the patient's mother or city of birth of the patient's father.
Conclusions: As only HLA-A*29:02 subtypes were identified, no conclusions can be drawn about HLA-A29 subtype and disease severity. However, our findings strengthen the observation that HLA-A29 is predominantly found in the Caucasian population. Additionally, it was determined that there is no difference in disease severity for ethnic background, city of birth, city of upbringing, city of birth of the patient's mother, and city of birth of the patient's father. Future steps may include acquisition of additional data from a geographically distant second eye clinic to increase the sample size and identify alternate HLA-A*29:02 subtypes.
Commercial Relationships: Lisa Zhang, None; **Harrish Nithianandan**, None; **Rahul Sharma**, None; **Chloe Gottlieb**, None
Support: The Ottawa Hospital Department of Ophthalmology Research Funding

Program Number: 2161 **Poster Board Number:** A0267
Presentation Time: 3:45 PM–5:30 PM
Retinal Microvasculature changes in Birdshot Retinochoroiditis (BRC) detected by Optical Coherence Tomography Angiography
Chrysoula Koutsiouki, Angela L. Rees, Carlos Pavesio, Mark C. Westcott. Medical Retina, Moorfileds Eye Hospital, London, London, United Kingdom.
Purpose: To investigate microvasculature changes of the superficial (SCP) and deep (DCP) capillary plexus in patient with BRC using Optical Coherence Tomography Angiogra (OCTA).
Methods: Retrospective study of 22 eyes of 11 patients (7 females, 4 males) diagnosed with BRC compared with 10 control eyes attending a tertiary referral centre (Moorfields Eye Hospital, London, UK). All the BRC patients were HLA-A29 positive and underwent imaging using Angio Vue OCTA device (Optovue, Inc, Freemont, CA) with a 3X3mm and 6x6mm OCTA images of the posterior pole. Spectral domain optical coherence tomography (Topcon or Spectralis) was performed concurrently.
Results: The mean age was 58 years (range: 42 to 71years). 10 patients were treated with systemic immunosuppression or intraocular steroid implants (Dexamethasone and Fluocinolone Acetonide). One patient was not on immunosuppressive treatment. 10 eyes had active disease. Widening of intercapillary spaces, compared with control eyes, in both SCP and DCP was observed in all BRC eyes. This was more pronounced in the DCP compared with the SCP. In 3 eyes black oblong areas of flow voids were observed in areas corresponding to the cystoid macular oedema (CMO) on the B-scan. In BRC, CMO was mostly located on the DCP and enFace structural OCT image showed the distribution of the oedema. Enface of the SCP showed the presence of retinal vessel traction corresponding to the presence of epiretinal membrane on the SD-OCT in 3 eyes. OCTA of SCP showed capillary dilations in 18 eyes and capillary loops in 2 eyes. In one eye, OCTA identified blood flow at the level of the outer retina and a hyperreflective lesion at the choriocapillary level, consistent with choroidal neovascularization
Conclusions: This study characterises OCTA changes on the SCP and on the DCP in the BRC patients. The microvasculature changes on the BRC could be secondary to the inflammatory process along with the ischemic changes noticed on the SCP and DCP. It remains to be seen if the OCTA findings could be used as prognostic factors and for the monitoring of BRC
Commercial Relationships: Chrysoula Koutsiouki, None; **Angela L. Rees**, None; **Carlos Pavesio**, None; **Mark C. Westcott**, None

Program Number: 2162 **Poster Board Number:** A0268
Presentation Time: 3:45 PM–5:30 PM
Punctate Inner Choroidopathy: a topographic study
Stefano Erba[1], Alba Xhepa[1], Alessandro Invernizzi[1, 2], Giovanni Staurenghi[1]. [1]Eye Clinic - Luigi Sacco Hospital, Sacco Hosp Univ of Milan, Milan, Italy; [2]University of Sydney, xSave Sight Institute, Sydney, NSW, Australia.
Purpose: Most of the inflammatory lesions of punctate inner chroidopathy(PIC) are located at the posterior pole and many cases of PIC are complicated with a choroidal neovascularization(CNV). Because these lesions may lead to severe visual loss if close to the fovea we made a topographic assessment.
Methods: Patients with a diagnosis of PIC were retrospectively reviewed. For each visit a SD-OCT volume, fundus autofluorescence(FAF) and FA+ICG when needed were recorded with Heidelberg Spectralis. Location of CNV was classified as subfoveal(SF), iuxtafoveal(IF) or extrafoveal(EF). Then we evaluated the growth of the CNV during the follow up. Furthermore we analyzed the distribution of chorioretinal scars at the posterior pole comparing the FAF at baseline to the FAF of the last visit overlapping the standard ETDRS grid overlay available on the Heidelberg Eye Explorer software.
Results: 21 patients(27 eyes), 19 female and 2 male, with a diagnosis of PIC were included. Mean age at presentation was 40,2 years (range 20-75). Mean BCVA at baseline was 0,5 while at the last visit was 0,6. We enrolled patients with average follow up of 40,5 months (range 6-120). 26 eyes (96,2%) were complicated with a CNV. At baseline 11 CNV were SF(42,3%), 7 IF(30,8%) and 8 EF(26,9%). 11 out of 26 CNV enlarged during the follow up and 6 CNV previously located out of fovea became SF. At the last visit 65,4% of CNV were SF while 19,2 % were IF and 15,4% were EF (p=0,045). At baseline 157 out of 243 subfields of ETDRS grid (64,6%) showed the typical chorioretinal scars while at the last visit 200 out of 243 subfields of ETDRS grid were involved (82,3%). At presentation the central and *inner nasal* subfields were the most frequently involved (81% and 76,9% respectively). All of the central subfields showed

a lesion at the last visit. During the follow up the *inner* and *outer temporal* subfields showed the highest rates of new lesions (23,1% and 26,9% respectively) while the *outer inferior* sector was the less commonly affected at baseline as well as at the last visit.
Conclusions: In our case series nearly half of the CNV involved the fovea at baseline and some of the other CNV (iuxtafoveal and extrafoveal) grew towards the fovea during the follow up. Moreover the typical atrophic scars at the posterior pole tended to enlarge with time and also increase in number involving previously disease free regions of the macula, in particular expanding to the temporal side.
Commercial Relationships: Stefano Erba, None; **Alba Xhepa**, None; **Alessandro Invernizzi**, Allergan (R); **Giovanni Staurenghi**, Alcon (R), Alcon (C), Optovue (F), Zeiss (F), Ocular Instruments (P), Boehringer Ingelheim (C), Novartis (C), Optos (C), Roche (C), Novartis (R), Bayer (C), Heidelberg Engineering (C), Bayer (R), Novartis (F), Genentech (C), Heidelberg Engineering (R), Zeiss (C), Allergan (C)

Program Number: 2163 **Poster Board Number:** A0269
Presentation Time: 3:45 PM–5:30 PM
Health related quality of life in patients with Punctate Inner Choroidopathy (PIC)
Archana Pradeep, sreekanth sreekantam, Rob Carmichael, Sarah Graves, Sue Southworth, Erika Damato, Philip I. Murray, Alastair K. Denniston. Ophthalmology, University of Birmingham, Leicester, United Kingdom.
Purpose: Punctate inner choroidopathy (PIC) is an uncommon, inflammatory multifocal chorioretinopathy affecting predominantly young myopic women characterized by the presence of multiple, yellow-white fundus lesions, in the absence of intraocular inflammation. Clinical course is highly variable with prognosis ranging from spontaneous recovery to bilateral sight loss. Quality of life (QoL)impact of this disease has not been investigated. Aim of our study was to evaluate the Health Related Quality of Life (HRQoL) measured using the European Quality of Life-5 Dimensions Questionnaire (EQ-5D).
Methods: 17 patients with PIC attending our supra-regional multidisciplinary clinic from May 2015 were included in this prospective observational study. QoL data was collected using EQ-5D questionnaire. EQ-5D a five-dimension instrument, and measures the influence of a health state on mobility, self-care, usual activities, pain/discomfort, and depression/anxiety. Each dimension is given one of three levels of severity.
Results: Median age of our patient cohort was 43.6 years with a female preponderance of 82.4%. 10/17 patients had visual acuity of less than 6/48 in either / both eyes. The median EQ5D index score was 0.837 (SD 0.15) and the median EQ5D Vas was 82 (SD19.5). 64.7% patients reported no problems with mobility and 88.2% had no difficulties with self- care. Over half of the patients (58.8%) reported some problems with usual activities. A similar proportion of patients reported some problems with anxiety/depression. Clinic staff noted that the questionnaire was frequently helpful in highlighting issues around health-related quality of life that were not picked up at any other point during the consultation.
Conclusions: This pilot study found EQ-5D to be relatively insensitive for visual disability in PIC, which is in line with studies in a number of other ophthalmic conditions. This study is now being extended in combination with the National Eye Institute Visual Function Questionnaire (NEI-VFQ)-25 to provide longitudinal assessments of the whole PIC cohort to detect of this sensitive over time to progression of disease and response to treatment.
Commercial Relationships: Archana Pradeep, None; **sreekanth sreekantam**, None; **Rob Carmichael**, None; **Sarah Graves**, None; **Sue Southworth**, None; **Erika Damato**, None; **Philip I. Murray**, None; **Alastair K. Denniston**, None

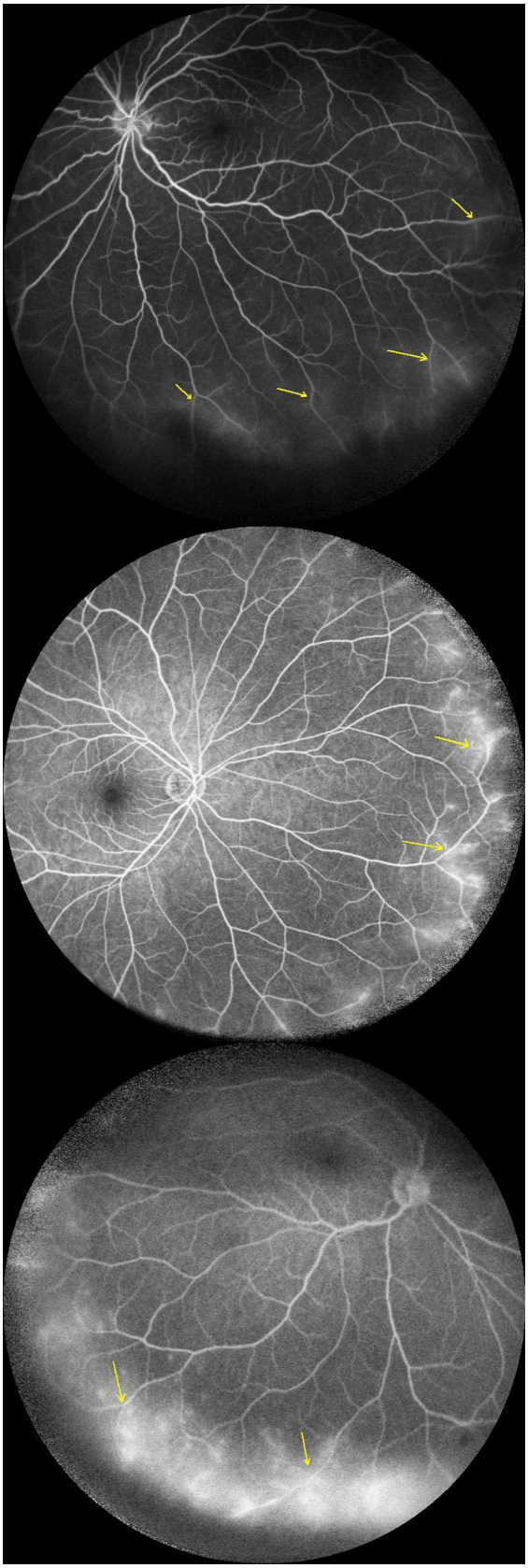
Program Number: 2164 **Poster Board Number:** A0270
Presentation Time: 3:45 PM–5:30 PM
Two years outcomes in eyes receiving aflibercept according to fixed 2 month interval for neovascular age-related macular degeneration: observational study dataTwo years outcomes in eyes receiving aflibercept according to fixed 2 month interval for neovascular age-related macular degeneration: observational study data
Koji Kanda, Tomohito Sato, Manzo Taguchi, Hideaki Someya, Toshihiko Murata, Masaru Takeuchi. National Defense Medical Collage, Tokorozawa-shi, Japan.
Purpose: Purpose: To investigate 2-year visual and anatomic outcomes of eyes with intravitreal aflibercept injection according to fixed 2 month interval for neovascular age-related macular degeneration (nAMD).
Methods: Methods: Retrospective, single-practice data analysis from a medical record system. A total of 12 eyes (12 patients) with treatment-naive nAMD receiving aflibercept every-2-months for 2 years were reviewed. The primary study outcome was VA in decimal notation converted to minimal angle of resolution scores, and the secondary outcomes were optical coherence tomography (OCT) findings including: central retinal thickness (CRT) and subretinal/ intraretinal fluid (SRF/IRF)
Results: Results: Mean age of patients was 71.2 years (median: 71.5, min: 55, max 86) at baseline. Occult with no classic CNV was 3 eyes (25%), predominantly classic lesions was 5 eyes (42%), and indocyanine-green angiography revealed polypoidal choroidal vasculopathy was 4 eyes (33%). Mean VA was 0.73 at baseline, 0.58 at 3 months, 0.58 at 6 months, 0.55 at 1 year, and 0.40 at 2 years ($P < .05$). CRT decreased from 322.3 μm at baseline to 282.8 μm at 3 months, 298.9 μm at 6 months, 248.3 μm at 1 year, and 261.8 μm at 2 years ($P < .01$). At 2 years, 7 eyes (58%) were considered as inactive by absence of intraretinal or subretinal fluid on OCT, however 5 eyes (42%) remained active with the presence of SRF, IRF, intraretinal cysts, or macular haemorrhage. Mean VA at 2 years in the active and inactive groups were 0.52 and 0.31, respectively ($P = .59$). Mean CRT at 2 years in the active and inactive groups were 321.8 μm and 290.0 μm ($P = .14$).
Conclusions: Conclusions: Intravitreal aflibercept administration with fixed 2 month interval for 2 years improved both visual acuity and macular morphology, although number of eyes with nAMD investigated in the present study was small. In addition, eyes with active lesions at 2 years do not have worse visual acuity compared with those with inactive lesions.
Commercial Relationships: Koji Kanda, None; **Tomohito Sato**, None; **Manzo Taguchi**, None; **Hideaki Someya**, None; **Toshihiko Murata**, None; **Masaru Takeuchi**, None

Program Number: 2165 **Poster Board Number:** A0271
Presentation Time: 3:45 PM–5:30 PM
Peripheral retinal and choroidal changes in anterior uveitis
ying chi, chunying guo, Liu Yang. Ophthalmology, Peking university first hospital, Beijing, China.
Purpose: Clinical examinations and conventional fluorescein angiography may not provide enough details for patients with anterior uveitis. We performed a retrospective, observational clinical study to learn about the peripheral retinal and choroidal changes in anterior uveitis using ultra-wide-field angiography(UWFA) and EDI-OCT.
Methods: We analyzed one year retrospective data at an academic medical center in china. A total of 83 eyes of 83 patients (right eye)

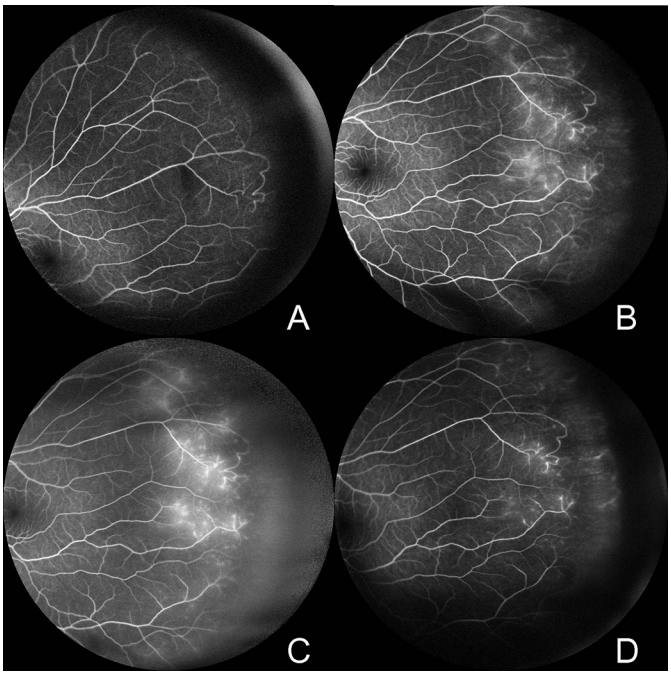
corresponded with the research criteria of anterior uveitis through clinical examination and conventional fluorescein angiography (30−55°) were included. UWFA and EDI-OCT were also obtained in each patient at the same visit. Eyes with peripheral retinal changes displayed UWFA and EDI-OCT at 1 month later and 1 year later. The key observed indexes were score of peripheral vessel leakage(PVL), retinal vessel diameter(RVD) and choroidal thickness(CT). Eyes which were given different kind of treatment were analyzed to suggest which one is the best for improving these indexes and reducing the recurrence frequency.

Results: PVL was detected in 50 eyes by UWFA(64%). The score of PVL was significantly higher in eyes displayed active anterior inflammation than which was inactive($P<0.05$). Large vessel layer of the choroid were dilated remarkably in eyes with PVL. Mean CT was significantly more in eyes with PVL(357.1±96.7um) compared to which without PVL(308.9±68.1um); but were not significantly between eyes with and without active anterior inflammation. RVD(Parr-Hubbard method) did not differ between eyes with and without PVL(Artery:138.3±19.4 vs 138.1±22.9;Vein:196.4±18.6 vs 176.1±25.0). CT and score of PVL were significantly decreased 1 month later in eyes which were given Oral prednisone or retrobulbar injection of triamcinolone acetonide(TA)($P<0.05$). The recurrence frequency was significant reduced in patients who were given oral prednisone for at least 1 month from the first visit($p<0.05$).

Conclusions: There were changes at the peripheral retina and the choroid in anterior uveitis. PVL was found in eyes with anterior uveitis, no matter with or without active anterior inflammation. CT thickening was displayed in eyes with PVL. Oral prednisone and retrobulbar injection of TA were good for PVL and CT. And oral prednisone may be associated with reduced risk of recurrence.



mild,moderate,severe PVL



PVL change of one eye(A.previously;B.first visit;C.1 month;D.1 year)

Commercial Relationships: ying chi, None; **chunying guo**, None; **Liu Yang**, None

Program Number: 2166 **Poster Board Number:** A0272
Presentation Time: 3:45 PM–5:30 PM

Alternation of gut microbiota composition in patients with acute anterior uveitis

Xinyue Huang[1], Zi Ye[1], Aize Kijlstra[2], Peizeng Yang[1]. [1]ophthalmology, The First Affiliated Hospital of Chongqing Medical University, Chongqing, China; [2]University Eye Clinic Maastricht, Maastricht, Netherlands.

Purpose: To identified the characteristics of gut microbiota in patients with acute anterior uveitis.

Methods: Fecal DNA were extracted from 78 fecal samples (17 acute anterior uveitis (AAU) patients with ankylosing spondylitis (AS)(AAU^+AS^+ patients), 21 AAU patients without AS (AAU^+AS^- patients) and 40 sex- and gender matched healthy controls) and then sequencing by high-throughput 16S rRNA gene.

Results: There was a significant decrease in annotated species numbers and bacterial diversity between AAU^+AS^+ patients and healthy-controls. There was a significant distance as beta diversity between AAU^+AS^+ patients and healthy controls. A linear discriminant analysis of bacterial taxa showed that the abundance of *Lachnospiracea_incertae_sedis*, *Blautia* and *Roseburia* were significant decrease in AAU^+AS^- patients as compared with healthy controls.

Conclusions: Composition of gut microbiota in AAU patients was totally different from healthy controls.

Commercial Relationships: Xinyue Huang; **Zi Ye**, None; **Aize Kijlstra**, None; **Peizeng Yang**, None

Program Number: 2167 **Poster Board Number:** A0273
Presentation Time: 3:45 PM–5:30 PM

miRNAs copy number variants confer susceptibility to Acute Anterior Uveitis (AAU) with or without Ankylosing Spondylitis (AS)

SHENGPING HOU[1], Aize Kijlstra[2], Peizeng Yang[1]. [1]The First Affiliated Hospital of Chongqing Medical University, Chongqing, China, Chongqing, China; [2]University Eye Clinic Maastricht, Maastricht, Netherlands.

Purpose: This study aimed to investigate the association of miRNAs copy number variants (CNVs) with acute anterior uveitis (AAU) with or without ankylosing spondylitis (AS) and to assess underlying disease mechanisms.

Methods: This study included 384 patients with AAU^+AS^+, 384 patients with AAU^+AS^- and 660 unrelated healthy controls from a Chinese Han population. Genotyping of CNVs was performed by TaqMan PCR. The expression of miRNAs, transfection efficiency of miR-9-3 and cytokine production were measured by real-time PCR, flow cytometry or ELISA.

Results: The frequency of low copy numbers of miR-143, miR-146a, miR-9-3 and miR-205, and high copy numbers of miR-301a and miR-23a was increased in patients with AAU^+AS^+ compared with controls ($P = 3.725\times10^{-5}$ to 8.033×10^{-9}). Additionally, we also found that the frequency of a low copy number of miR-146a and a high copy number of miR-23a and miR-205 was significantly increased in AAU^+AS^- compared with controls ($P = 0.002$ to 0.001). The frequency of low copy number of miR-205 was increased in patients with AAU^+AS^+ compared with AAU^+AS^- (miR-205: P= 0.001). Further studies showed that the mRNA expression of miR-9-3 and miR-143 in peripheral blood mononuclear cells (PBMCs) was significantly decreased in AAU^+AS^+ or AAU^+AS^- patients compared with healthy controls. A significantly decreased expression of miR-146a was found in AAU^+AS^+ patients compared to controls. Additionally, individuals with a low copy number of miR-9-3 showed a decreased production of IL-1β and IL-6 by stimulated PBMCs. The production of IL-1β and IL-6 was modulated by miR-9-3 transfected human primary retinal pigment epithelial (hRPE) cells.

Conclusions: Low gene copy numbers of miR-143, miR-146a, miR-9-3, miR-205 and high gene copy numbers of 301a, miR-23a are associated with susceptibility to AAU^+AS^+. A low copy number of miR-146a and a high copy number of miR-23a and miR-205 are associated with AAU^+AS^-. miR-9-3 may provide protection against AAU^+AS^+ possibly through downregulating production of IL-1β and IL-6.

Commercial Relationships: SHENGPING HOU; **Aize Kijlstra**, None; **Peizeng Yang**, None

Support: National Natural Science Foundation Project (81522013, 31370893,81270990)

Program Number: 2168 **Poster Board Number:** A0274
Presentation Time: 3:45 PM–5:30 PM

Qualitative and Automated Quantitative analysis of the Choriocapillaris on OCTA in Uveitis

Shilpa Kodati, Marib Akanda, Sapna Gangaputra, H Nida Sen. Laboratory of Immunology, National Eye Institute, Bethesda, MD.

Purpose: To evaluate the choriocapillaris (CC) in patients with uveitis using Optical Coherence Tomography Angiography (OCTA), including comparing CC flow voids on OCTA with areas of hypocyanescence on indocyanine angiography (ICGA), and deriving an automated quantitative method of determining total CC flow void area on OCTA.

Methods: In order to assess if the CC flow voids on OCTA correlate with (ICGA) we conducted a retrospective review of uveitis patients

with CC involving flow voids and compared these flow deficits to hypocyanescent areas on ICGA. On patients with follow-up OCTA scans, automated quantitative analysis of the CC flow voids was performed using Image J software. Intervisit variability was minimized through standardization of images prior to analysis. After determination of a threshold intensity value, the total areas of CC flow void were calculated (in mm^2) using Image J.
Results: 10 patients (15 eyes) were identified (mean age 36.5 years; 6 female and 4 male), which included 5 patients with Ampiginous choroiditis (AC), 2 with Serpiginous choroiditis (SC) and 3 with either infectious or non-infectious chorioretinitis (CR). 6/10 patients had either a new diagnosis or active disease. In 9/10 patients, the areas of CC flow voids correlated well with areas of hypocyanescence on ICGA. In the remaining 1 patient, small areas of flow deficits were visualized with OCTA but not apparent on ICGA. Automated quantitative analysis of total flow void area was performed on 7 eyes from 4 patients (2 AC, 1 SC, 1 CR) with 2 or more follow-up OCTA scans. Of these 4 patients, the 2 with active disease had a reduction (mean 79.1%; range 53.6%-95.3%) in total flow void area. Of the 2 patients with clinically inactive disease and clinically unchanged disease status on follow-up, the mean percentage difference in flow deficits between 2 consecutive visits was 15.6% (range 10.3-23.7%).
Conclusions: Given that CC flow voids detected on OCTA were comparable to areas of hypocyanescence on ICGA, our results suggest that OCTA can be an effective method to visualize the choriocapillaris in uveitis. Furthermore, automated quantitative analysis of CC flow deficits on OCTA can be useful and non-invasive method to help monitor disease activity as well as the response to therapy. Longitudinal studies to validate this correlation are underway.
Commercial Relationships: Shilpa Kodati, None; **Marib Akanda**, None; **Sapna Gangaputra**, None; **H Nida Sen**, None
Support: National Eye Institute Intramural Research Program

Program Number: 2169 **Poster Board Number:** A0275
Presentation Time: 3:45 PM–5:30 PM
Epigenome-wide association study identifies Vogt-Koyanagi-Harada syndrome-specific methylation loci in Han Chinese
Liping Du, Hongsong Yu, Yiguo Qiu, Peizeng Yang. Department of Ophthalmology, The First Affiliated Hospital of Chongqing Medical University, Chongqing, China.
Purpose: Vogt-Koyanagi-Harada (VKH) syndrome is a rare multisystemic autoimmune disease caused by the interplay of genetic and environmental factors. Although associations between several genetic variants and VKH syndrome have been identified, little is known about epigenetic changes related to VKH syndrome. The present study aims to identify VKH-associated methylated sites.
Methods: A two-stage epigenome-wide association study (EWAS) was performed in 160 VKH syndrome patients and 160 healthy controls. In the first stage, we typed the whole-blood DNA samples of 60 VKH syndrome patients and 60 healthy controls with the Infinium Human Methylation 450k array. After quality control, methylation levels were tested for association with VKH syndrome. Nine sites in this primary cohort were tested in a second replication cohort of 160 VKH syndrome patients and 160 healthy controls using pyrosequencing. Real-time PCR was performed to examine the association of methylation at VKH syndrome-associated sites with the gene expression.
Results: Our results showed that significant association between methylation at nine probes across five different genes and VKH syndrome ($p<10^{-8}$). We also observed a significant inverse correlation between these methylation site and expression of the genes they located.
Conclusions: In conclusion, this is the first genome-wide DNA methylation profiling study on VKH syndrome to date, and we identified that regulation of DNA methylation of BTNL2, NOTCH4, RIBC2, TNXB, and AGPAT2 genes might contribute to VKH syndrome.
Commercial Relationships: Liping Du, None; **Hongsong Yu**, None; **Yiguo Qiu**, None; **Peizeng Yang**, None
Support: CSTC(2008CA5003); National Key Clinical Specialties Construction Program of China, Key Project of Health Bureau of Chongqing (2012-1-003); Chongqing Science & Technology Platform and Base Construction Program (cstc2014pt-sy10002); Major Research Development Program of China (2016YFC0904000); Natural Science Foundation Project (81470620)

Program Number: 2170 **Poster Board Number:** A0276
Presentation Time: 3:45 PM–5:30 PM
Retinoschisis in Intermediate Uveitis: clinical characteristics and outcomes
Marib Akanda, Shilpa Kodati, Sapna Gangaputra, H Nida Sen. Laboratory of Immunology, National Eye Institute, Bethesda, MD.
Purpose: Retinoschisis is an uncommon reported finding in intermediate uveitis, however, the prevalence and course of retinoschisis in this setting is unclear. We investigate the prevalence of retinoschisis in a cohort of patients with intermediate uveitis, and describe the clinical features and outcomes of this presentation.
Methods: Patients with intermediate uveitis, as well as both intermediate uveitis and retinoschisis, who were evaluated at the National Eye Institute (NEI) uveitis clinic from 2005 to 2016 were identified. A retrospective chart review was conducted in order to determine the prevalence, features and outcomes of retinoschisis in intermediate uveitis.
Results: A total of 261 patients with intermediate uveitis were identified. Of these 261 patients, 9 patients (3.4%) or 11 eyes were observed to have retinoschisis (6 male, 3 female, mean age 27.4 years). Of the subtypes of intermediate uveitis, idiopathic intermediate uveitis was the most commonly noted diagnosis (88.9%). The retinoschisis was bilateral in 2 patients (22.2%). The most common anatomical location of retinoschisis was the inferotemporal quadrant (72.7% eyes). 7 of the 11 eyes affected by schisis (63.6%) had a history of snowballs or snowbanks in the affected eye. Of the 4 patients who developed retinoschisis during the course of their follow-up at the NEI, their mean age at diagnosis of the schisis was 19.5 years and the onset of schisis occurred on average 9 years after the diagnosis of intermediate uveitis (range 2-24 years). All 4 patients were quiet preceding the identification of schisis. Only 1 of the 11 eyes (9.1%) had inner retinal holes at the site of the retinoschisis. Progression of the retinoschisis was not observed in any patient, and no patient developed a retinal detachment or required pars plana vitrectomy for the retinoschisis.
Conclusions: Retinoschisis represents an uncommon but important complication of intermediate uveitis. Careful fundus examination, especially of the inferotemporal periphery, should be performed in all patients with intermediate uveitis in order to identify this complication.
Commercial Relationships: Marib Akanda, None; **Shilpa Kodati**, None; **Sapna Gangaputra**, None; **H Nida Sen**, None
Support: National Eye Institute Intramural Research Program

Program Number: 2171 **Poster Board Number:** A0277
Presentation Time: 3:45 PM–5:30 PM
Ocular Manifestations of transbronchial biopsy-proven sarcoidosis in Korean
Seung Yong Choi[1], Jae Yon Won[1], Young- Hoon park[1, 2]. [1]Department Ophthalmology and Visual science, College of medicine, The Catholic university of Korea, Seoul, Korea (the Republic of); [2]Catholic Institute for Visual Science, College of Medicine, The Catholic University of Korea, Seoul, Korea (the Republic of).
Purpose: To investigate the clinical features of transbronchial biopsy-proven pulmonary sarcoidosis compared with other biopsy proven sarcoidosis
Methods: Patients who were diagnosed as sarcoidosis by endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) were included. (n=38) All patients were referred to ophthalmology department and had comprehensive ophthalmologic examinations. The patients, who had an evidence of other granulomatous disease, or other cause of uveitis, were excluded. By retrospective clinical chart review, we investigated demographic data, an episode of uveitis attack, type of uveitis, serum angiotensin converting enzyme (ACE) assay, chest radiography, pulmonary function test any event of ocular complication, or treatment. For a comparison, other biopsy confirmed sarcoidosis patients who was diagnosed by excisional biopsy of hilar lesion (n=8), or extrapulmonary lesion (n=9) were investigated as control.
Results: EBUS-TBNA biopsy group showed mean age of 53.8 years and female dominance (31 out of 38). 21 patients (65.8%) were found ocular manifestations with 81.0% of bilaterality. Mean age, Female dominance, serum ACE level, systemic treatment rate were higher in ocular involvement group (54.4, 0.88, 79.4, 0.68, respectively) than that of uveitis free group (49.3, 0.69, 64.1, 0.31) and only systemic treatment rate, especially immunomodulation (0.36 compared with 0) was showed statistical significance. (p=0.03) Age, sex ratio, ocular involvement, bilaterality, bihilar lymphadenopathy, serum ACE level, systemic treatment rate were not showed significant difference by type of biopsy confirmation, but ocular involvement and systemic treatment rate were slightly higher in extrapulmonary biopsy group.
Conclusions: In patients with transbronchial biopsy-proven sarcoidosis, 65.8% of ocular manifestations were found with insignificantly higher age, female ratio, serum ACE level. Ocular involvement was a significant factor associated with systemic treatment, especially immunosuppressive agents. Type of biopsy was not a significant factors associated with clinical features, but patients with extrapulmonary lesion showed more ocular involvement and aggressive treatment.
Commercial Relationships: Seung Yong Choi, None; **Jae Yon Won**, None; **Young- Hoon park**, None
Support: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2016R1A6A1A03010528)

Program Number: 2172 **Poster Board Number:** A0278
Presentation Time: 3:45 PM–5:30 PM
Should patients with sarcoidosis be screened for asymptomatic ocular inflammation?
Sarah Sunshine, Dmitry Pyatetsky, Andrea D. Birnbaum, Debra A. Goldstein. Ophthalmology, Northwestern University Feinberg School of Medicine, Chicago, IL.
Purpose: (1) Determine the utility of screening examinations in asymptomatic patients with systemic sarcoidosis (2) Determine the proportion of sarcoidosis patients with conjunctival lesions that could serve as a potential biopsy site.
Methods: IRB approval was obtained for this prospective study. Patients with biopsy proven systemic sarcoidosis and no history of uveitis who were referred for ocular screening underwent review of systems, medical history, complete ocular examination. Patients with symptoms consistent with uveitis were excluded. Signs of ocular inflammation including conjunctival granulomas, anterior chamber or vitreous cell, retinal vasculitis, choroiditis, macular edema were recorded.
Results: 42 patients were included. 60% were female; mean age was 52.5 years (range 32-69); 24% self-reported as African American, 26% Caucasian, 4.8% Asian; 45% were of unknown race. 40 patients (95%) had no signs of ocular inflammation. Two patients had mild ocular inflammation requiring no additional treatment. One had rare anterior chamber cell and the other a solitary vitreous snowball. 43% were on systemic immunomodulatory therapy (IMT). 54% had conjunctival nodules in the inferior fornix, 33% of patients on IMT had conjunctival nodules and 70.8% of patients not on IMT had conjunctival nodules.
Conclusions: No patient with biopsy proven systemic sarcoidosis in this series had asymptomatic intraocular inflammation requiring therapy. Patients with systemic sarcoidosis should be advised of symptoms of ocular inflammation but, based on this small series, there is no evidence to suggest that they need routine screening for uveitis. Previous data from our group has suggested a diagnostic yield of 63% when conjunctival lesions are biopsied and multi-planar sectioning performed ([i]). More than half the patients in this series had conjunctival nodules, and these were more likely to be seen in patients not on anti-inflammatory therapy. Patients with suspected systemic sarcoidosis and no easily accessible site for biopsy may be referred for ophthalmic examination to look for conjunctival nodules that can be biopsied for pathologic diagnosis.
[i] KM Bui, JM Garcia-Gonzalez, SS Patel, AY Lin, DP Edward, DA Goldstein. Directed Conjunctival Biopsy and Impact of Histologic Sectioning Methodology on the Diagnosis of Ocular Sarcoidosis. *J Ophthalmic Inflamm Infect.* 2014 Mar 18;4(1):8.
Commercial Relationships: Sarah Sunshine, None; **Dmitry Pyatetsky**, None; **Andrea D. Birnbaum**, None; **Debra A. Goldstein**, Abbvie (C), Psivida (C), Xoma (C), Clearside (C), Santen (C)
Support: Research to Prevent Blindness, Debra Goldstein

Program Number: 2173 **Poster Board Number:** A0279
Presentation Time: 3:45 PM–5:30 PM
Ocular Examinations for Uveitis in S1 Sinclair Swine in Response to HSP70i$_{Q435A}$
Benjamin Reiss[1], Shannon Hunt[2], Steven Henning[2], Charles S. Bouchard[2], Caroline Le Poole[2], Veena R. Raiji[1]. [1]Ophthalmology, John H Stroger, Jr Hospital of Cook County, Chicago, IL; [2]Loyola University Medical Center, Chicago, IL.
Purpose: A subset of S1 Sinclair swine who develop cutaneous melanoma and spontaneous tumor regression may develop depigmentation of the skin, hair, and eyes (thought to be due to T cell mediated destruction of melanocytes) and uveal inflammation (due to immunologic cross reaction). Heat shock protein 70 (HSP70i) plays an important role in vitiligo development, and an HSP70i$_{Q435A}$ construct has been shown to support repigmentation. Ocular examinations were conducted to detect any pigmentary or inflammatory changes that may occur during observation or treatment of vitiligo lesions.
Methods: The treatment group (n=3) underwent jet injection of HSP70i$_{Q435A}$ encoding DNA into vitiligo lesions weekly for 4 weeks, and vitiligo lesions in the control group (n=3) were injected with phosphate-buffered saline. Ocular exams, blood draws (to monitor

anti-HSP70i titers), and peri-lesional skin biopsies were conducted under isoflurane anesthesia. Examinations were performed at 4-week intervals during each swine's 26-week observation cycle and included videos of each eye and external, anterior segment, and funduscopic examinations. The observing ophthalmologist was blinded to the swine's treatment randomization but was aware of which swine was being examined.

Results: The presence of conjunctival plaques (2 controls), dilated iris vessels (2 treatment, 1 control), and hypopigmented retinal lesions (2 treatment) were deemed normal variants. A round, bluish lesion (choroidal nevus) was noted in the retina of one swine (treatment). One swine (control) exhibited dilated conjunctival vessels on initial examination that significantly increased in size at the 24-week examination and then stabilized. Another swine (treatment) developed multiple nummular perivascular areas of retinal hypopigmentation in both eyes at the 4-week examination (6 examinations remaining). A significant reduction in cutaneous depigmentation was observed in $HSP70i_{Q435A}$-treated lesions: +2.8 cm^2 in untreated lesions compared to -6.2 cm^2 in DNA treated lesions at 26 weeks.

Conclusions: $HSP70i_{Q435A}$–treated vitiligo lesions in S1 Sinclair swine showed cutaneous repigmentation without ocular inflammatory side effects or changes in tumor growth, suggesting that $HSP70i_{Q435A}$ may suppress autoimmunity without impacting anti-tumor responses. Numerous ocular normal variants were observed, and the significance of nummular perivascular hypopigmentation remains to be elucidated.

Commercial Relationships: Benjamin Reiss, None; **Shannon Hunt**, None; **Steven Henning**, None; **Charles S. Bouchard**, None; **Caroline Le Poole**, patent application 14/127,579 (I); **Veena R. Raiji**, None

Support: RO1 Separating Tumor Immunity and Autoimmunity

Program Number: 2174 **Poster Board Number:** A0280
Presentation Time: 3:45 PM–5:30 PM

Quality of Life Outcomes from a Randomized Controlled Trial Comparing Methotrexate to Mycophenolate Mofetil for Noninfectious Uveitis

Katherine M. Niemeyer[1, 2], John A. Gonzales[1, 3], Sivakumar R. Rathinam[4], Manohar Babu[5], Radhika Thundikandy[4], Anuradha Kanakath[5], Travis C. Porco[1, 6], Erica Browne[1], Maya M. Rao[1], Nisha Acharya[1, 3]. [1]F. I. Proctor Foundation, University of California, San Francisco, San Francisco, CA; [2]Icahn School of Medicine at Mount Sinai, New York, NY; [3]Department of Ophthalmology, University of California, San Francisco, San Francisco, CA; [4]Aravind Eye Care System, Madurai, India; [5]Aravind Eye Care System, Coimbatore, India; [6]Department of Epidemiology & Biostatistics, University of California, San Francisco, San Francisco, CA.

Purpose: To evaluate the changes in quality of life in noninfectious uveitis patients treated with two of the most commonly prescribed antimetabolite treatments.

Methods: Secondary analysis of a multicenter, block-randomized, observer-masked clinical trial (ClinicalTrials.gov NCT01232920). Eighty patients at Aravind Eye Hospitals in Madurai and Coimbatore, India, with noninfectious intermediate, posterior, or panuveitis were randomized to receive oral methotrexate, 25 mg weekly, or oral mycophenolate mofetil, 1 g twice daily, and were followed up monthly for 6 months. Best-corrected visual acuity, IND-VFQ, and SF-36 were obtained at enrollment and at 6 months (or prior in the event of early treatment failure). Changes in quality of life scores were compared using Wilcoxon signed-rank testing. The associations with visual acuity, treatment arm, and treatment outcome, as defined by corticosteroid-sparing control of inflammation, were assessed using linear regression models.

Results: IND-VFQ scores, on average, increased by 9.2 points from trial enrollment to 6 months (95% CI: 4.9, 13.5, P <0.001). While the SF-36 physical component summary score did not significantly differ over the course of the trial, the mental component summary score decreased by 2.3 points (95% CI: -4.4, -0.1, P=0.04) and the vitality subscale decreased by 3.5 points (95% CI: -5.6, -1.4, P=0.001). Patients that achieved corticosteroid sparing control of inflammation had an average 4.3 point higher increase in general health scores than patients who did not (95% CI: 0.3, 8.2, P=0.04). Quality of life scores did not differ between treatment arms. Linear regression modeling showed a 3.2 point improvement in IND-VFQ score for every 5 letter improvement in visual acuity (95% CI: 1.9, 4.3; P<0.001).

Conclusions: Although uveitis treatment was associated with a significant increase in vision and vision-related quality of life, patient-reported physical health did not change after 6 months of treatment and mental health decreased. Despite improved visual outcomes, uveitis patients receiving systemic immunosuppressive therapy may experience a deterioration in overall health-related quality of life.

Commercial Relationships: Katherine M. Niemeyer, None; **John A. Gonzales**, None; **Sivakumar R. Rathinam**, None; **Manohar Babu**, None; **Radhika Thundikandy**, None; **Anuradha Kanakath**, None; **Travis C. Porco**, None; **Erica Browne**, None; **Maya M. Rao**, None; **Nisha Acharya**, AbbVie Inc. (F), Santen Pharmaceutical Co., Ltd. (F)

Support: Funding for this trial was provided by That Man May See Foundation and The South Asia Research Fund at UCSF. Dr. Acharya is currently supported by an NEI U10 EY021125-01 grant. The UCSF Department of Ophthalmology is supported by the National Eye Institute and Research to Prevent Blindness Foundation grants.

Clinical Trial: NCT01232920

Program Number: 2175 **Poster Board Number:** A0281
Presentation Time: 3:45 PM–5:30 PM

Clinical manifestations and visual prognosis of ocular toxoplasmosis

Joao M. Furtado[1], Sigrid Arruda[1], Milena Simões[1], Denny M. Garcia[1], Michelle Araújo[1], Bárbara Vieira[1], Murilo W. Rodrigues[1], Justine Smith[2]. [1]Ophthalmology, University of Sao Paulo, Ribeirao Preto, Brazil; [2]Flinders University, Adelaide, SA, Australia.

Purpose: To describe clinical aspects and visual outcomes in individuals with ocular toxoplasmosis in Brazil.

Methods: Individuals resident in Ribeirão Preto, Brazil who had serological evidence and clinical signs of ocular toxoplasmosis were included in this study. A uveitis specialist made the diagnosis of ocular toxoplasmosis from serological evidence of infection (*T. gondii* IgG and/or IgM positivity) and the presence of either focal retinitis or hyperpigmented retinochoroidal scars. The disease was defined as primary (active lesion in the absence of scars), recurrent active (active lesion in the presence of scars) or inactive (scars only). Atypical disease was included only when polymerase chain reaction revealed the presence of *T. gondii* DNA in aqueous humor. Subjects were examined by slit lamp and indirect ophthalmoscopy, and best corrected visual acuity (BCVA) was tested at all visits.

Results: One hundred sixty-three subjects (51% men and 49% women) were included in the study (n=212 eyes). Twenty-two subjects (13.5%) were ≤ 17 years of age; 125 subjects were 18-64 years of age; and 16 subjects (9.8%) were ≥65 years of age. The form of ocular toxoplasmosis was primary active in 23 subjects (14.1%), recurrent active in 42 subjects (25.8%) and inactive in 98 subjects

(60.1%). Most subjects presented with a single lesion (n=110; 51.9%), but 75 individuals (35.4%) had 2-4 lesions, and 27 had ≥5 lesions (12.7%). Lesions were central in 74 eyes (35%), peripheral in 101 eyes (47.6%%), and central and peripheral in 37 eyes (17.5%). Only 3 individuals (1.8%) presented with atypical ocular disease. Most subjects had *T. gondii* IgG+ IgM- serology (n=153; 93.9%);10 subjects (6.1%) had *T. gondii* IgG+ IgM+ serology. From the total of 198 affected eyes in which visual acuity could be measured, most (n=111; 56%) had final BCVA ≤20/40, and 40.5% of eyes (n= 45) were legally blind (BCVA <20/200). Visual acuity could not be measured in 14 eyes (6.6%) of infants. Three individuals presented bilateral BCVA <20/200.

Conclusions: Ocular toxoplasmosis resulted in reduced vision in a significant number of individuals examined in this study. Prophylactic measures should be implemented for persons at high risk of vision loss from the disease, and the development of new therapeutic modalities should be a goal of future studies.

Commercial Relationships: Joao M. Furtado, None; **Sigrid Arruda**, None; **Milena Simões**, None; **Denny M. Garcia**, None; **Michelle Araújo**, None; **Bárbara Vieira**, None; **Murilo W. Rodrigues**, None; **Justine Smith**, None
Support: Fundação de Apoio ao Ensino, Pesquisa e Assistência do Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo (FAEPA)

Program Number: 2176 **Poster Board Number:** A0282
Presentation Time: 3:45 PM–5:30 PM

Patient specific predictions of visual acuity and inflammation in uveitis

Mia Klinten Grand[1, 2], Hein Putter[2], Tom Missotten[3], Koenraad A. Vermeer[1]. [1]Rotterdam Ophthalmic Institute, Rotterdam Ophthalmic Institute, Rotterdam, Netherlands; [2]Department of Medical statistics and Bioinformatics, Leiden University Medical Center, Leiden, Netherlands; [3]Rotterdam Eye Hospital, Rotterdam, Netherlands.

Purpose: Accurate prediction of VA is highly relevant for uveitis patients as uveitis is the leading cause of legal blindness in the working population in the western world. To this end, we developed an interactive tool for patient specific predictions of visual acuity (VA) and inflammation (IN).

Methods: Data consisted of both eyes from 366 uveitis patients who visited the Rotterdam Eye Hospital in the period from 2000 to 2015. Mean follow-up (FU) time and mean number of visits were 2.5 years and 15 visits, respectively. A statistical model that jointly models the IN process (multi-state model with random effects for each patient and eye) and the VA (linear mixed model) was employed. The model provides predictions of VA and IN episodes after entering the patient's disease and treatment history. The model was evaluated using the mean absolute error (MAE) of observed vs predicted VA. MAE was calculated for all patients at different FU times and at different time points in the future.

Results: Figure 1 shows an example of the prediction model applied to a patient with 1 year of FU, consisting of 11 visits after onset and almost all with an active IN. Decreasing vision was predicted for both eyes and OD was expected to be below driving level (Snellen<0.6) within a year. In general, the probability of IN was high (around 0.45) for both eyes.

MAEs for the VA predictions were approximately 0.10-0.15 (LogMAR). With longer FU, and thus more data on each patient, the MAE decreased, while it mostly increased when predicting further into the future (Figure 2). The predictions were considerably better than assuming no change in VA, although the difference decreased with longer FU.

Conclusions: Prediction models are useful tools to help support clinical decision making and inform the patient about the disease prognosis. Our model showed good predictive ability of VA, but a more extensive validation is needed before applying it in a clinical setting.

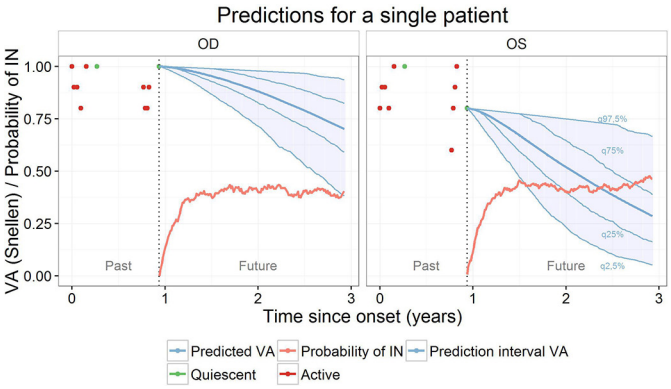


Figure 1: The vertical dotted line indicates the current visit. Past: Observed VA and IN status (dots). Future: Predictions of VA (blue line), their prediction intervals (shaded blue area) and the probability of IN (red line).

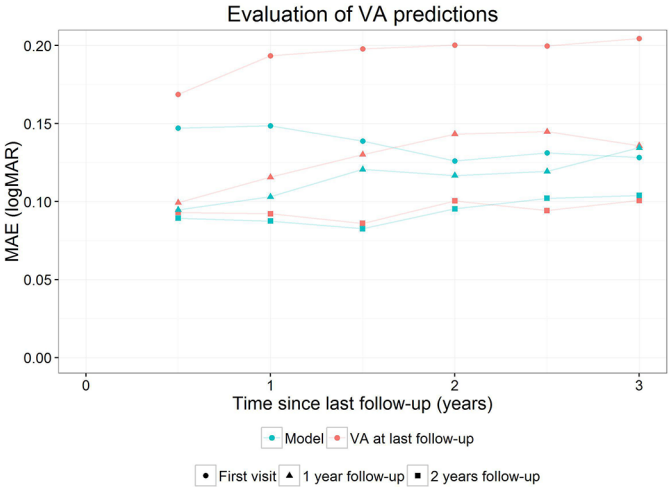


Figure 2: MAE of predicted vs observed VA at different time points during FU (shape) and into the future. The colours indicate the model predictions (blue) vs VA at the last FU visit (red).

Commercial Relationships: Mia Klinten Grand, None; **Hein Putter**, None; **Tom Missotten**, None; **Koenraad A. Vermeer**, None
Support: ZonMw TopZorg grant 842005005

Program Number: 2177 **Poster Board Number:** A0283
Presentation Time: 3:45 PM–5:30 PM

Necrotizing scleritis. Clinical characteristics and ethiology

Carlos A. Muller Morales, Miguel Pedroza-Seres, Deisy Diarte, Karla Zuñiga. Instituto de Oftalmologia Conde de Valenciana, Ciudad de Mexico, Mexico.

Purpose: To describe the clinical and epidemiological features, association with systemic disorders and the outcomes in cases of necrotizing scleritis with inflamation.

Methods: Retrospective chart review of all patients with infectious scleritis examined from 2007 to 2015 in the Uveitis and Ocular Inmunology Department of Institute of Ophthalmology, "Conde

de Valenciana," Mexico City, Mexico. Information including epidemiological and clinical data were abstracted from the records.
Results: A total of 3122 patients with diagnosis of anterior scleritis were reviewed and only 50 were included. Among them, mean age was 56.38 years (19-85 yo), with sex predominance for woman 58%. Mean time since onset was 11.6 months, with clinical features characterized by hiperemia (92%), ocular pain (82%) and decrease in vision (74%). Average initial visual acuity was .70 ± .63 logMAR (0.00 a 3.00) with 3.54% of the patients worse than 1.3 logMAR. Average final visual acuity .60 ± .83 logMAR (0.00 a 3.00) with 4.54% of the patients worse than 1.3 logMAR. Peripheral ulcerative keratitis with scleritis was observed in 12% and uveitis in 18% of patients. We divided the etiologies in three groups: autoimmune 62%, infectious 20% and idiopathic 18%. Among the autoimmune group we found granulomatosis with polyangitis in 45.16%, rheumatoid arthritis in 38.71%, ankylosing spondylitis 3.2%. For he infectious group we found tuberculosis 60%, herpes simplex 10% and syphilis in 30%. Surgery was practiced in 13 (26%) of the patients; 5 cataract surgery (30%), 3 evisceration (23%), 2 amniotic membrane transplant (2), 1 glaucoma drainage device (7.6%), 1 penetrating keratoplasty (7.6%) and 1 patch and cyanoacrylate glue (7.6%). Within the complications more frequently reported were: cataract 30%, glaucoma 26%, perforation 6%, and painful blind eye 6%.
Conclusions: Necrotizing scleritis represents a clinical and challenge due to its bad prognosis if diagnose or treated wrongly. The ocular findings for our population suggest initial studies for granulomatosis with polyangitis should be performed. Follow up. Early recognition and appropriate treatment improve visual outcome.
Commercial Relationships: Carlos A. Muller Morales, None; **Miguel Pedroza-Seres**, None; **Deisy Diarte**, None; **Karla Zuñiga**, None

Program Number: 2178 **Poster Board Number:** A0284
Presentation Time: 3:45 PM–5:30 PM
Factors associated with uveitis among Ebola survivors in the PREVAIL III study
Allen O. Eghrari[1, 2], Bryn Burkholder[1], Robin Ross[2], Kirsten Tawse[2], Sasapin G. Prakalapakorn[5], Cavan Reilly[3, 2], Mosoka Fallah[2], Michael Sneller[6], Rachel Bishop[4]. [1]Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore, MD; [2]Partnership for Research on Ebola Virus in Liberia, Monrovia, Liberia; [3]Biostatistics, University of Minnesota, Minneapolis, MN; [4]National Eye Institute, Bethesda, MD; [5]Duke University, Durham, NC; [6]National Institutes of Health, Bethesda, MD.
Purpose: Survivors of Ebola virus disease frequently experience intraocular inflammation in the months following systemic infection. Little is known regarding the factors associated with uveitis in a comprehensive population of survivors.
Methods: The PREVAIL III study is the only study of Ebola survivors with enrollment of close contacts and serology confirmation of disease. All survivors were referred for comprehensive ophthalmic evaluation including slit-lamp biomicroscopy, dilated indirect ophthalmoscopy and optical coherence tomography imaging of the macula and optic nerve. Demographic information was collected at the time of enrollment. Uveitis, active or inactive, was diagnosed based on the presence of keratic precipitates, anterior chamber cell, posterior synechiae, vitreous cell or signs of retinal inflammation.
Results: A total of 789 serology-confirmed Ebola survivors underwent baseline eye examination. Uveitis was diagnosed in 68 participants. Increased time spent in the Ebola treatment unit was associated with presence of uveitis (19 vs. 15 days, p=0.002). Younger age was marginally associated with the presence of uveitis (p=0.05). The presence at baseline of HIV (p=0.80) or syphilis (p=0.48) was not associated with uveitis among survivors, nor was the presence of antibody level (p=0.66) or at least one positive semen result (p=0.16).
Conclusions: In this largest sample of Ebola survivors to date, the time spent in the Ebola unit, perhaps associated with severity of disease, was associated with long-term risk of uveitis. However, uveitis does not appear to correlate with a more robust antibody response or with viral persistence in testes. The public health ramifications of these findings will be discussed.
Commercial Relationships: Allen O. Eghrari, None; **Bryn Burkholder**, None; **Robin Ross**, None; **Kirsten Tawse**, None; **Sasapin G. Prakalapakorn**, None; **Cavan Reilly**, None; **Mosoka Fallah**, None; **Michael Sneller**, None; **Rachel Bishop**, None
Support: NIH K12 EY015025-10, NIH L30 EY024746

Program Number: 2179 **Poster Board Number:** A0285
Presentation Time: 3:45 PM–5:30 PM
Neuroretinitis: Causes, clinical presentation and outcomes in an ophthalmology-specialized hospital in Mexico in 9 years
MARIA FERNANDA REBOLLO RAMIREZ, Miguel Pedroza-Seres, Deisy Diarte. Instituto de Oftalmología Fundación Conde de Vaencianal, Mexico city, Mexico.
Purpose: Due to the small amount of investigations with the purpose of finding all the causes of neuroretinitis, the aim of this study is to look for all de causes of Neurorretinitis, the clinical manifestations and the outcomes in an ophthalmology-specialized hospital in Mexico from 2007 to 2016.
Methods: Descriptive, retrospective and longitudinal study. We included all the patients who attended to the *Instituto de Oftalmología Fundación Conde de Valenciana* from January 2007 to November 2016, whose diagnosis was Neuroretinitis.
Results: There were 63 patients with the diagnosis of Neuroretinitis (1.07% of all de patients seen in the Uvea department in that period of time). We excluded 17 patients who only attended to one consultation. The age range of the 46 patients was 9-64 years (mean 34.04 years, median 29.5 years). The male:female ratio was 1:1. The cause of neuroretinitis was unknown in 20 patients (43.47%). 16 (34.78%) had a proven infectious cause: 6 patients *had Toxoplasma gondii*, 3 had syphilis, 2 had *Borrelia burdorferi*, 2 had *Bartonella henselae*, 1 had *Brucella abortus*, 1 had tuberculosis and 1 developed acute retinal necrosis by herpes simplex virus. In 6 patients (13.04%) the cause was autoimmune: Vogt-Konayagi-Harada syndrome (VKH) in 3 patients, systemic lupus erythematosus (SLE) in 1 patient, Eales disease in 1 patient, 1 patient had Takayasu arteritis. 3 patients had hypertensive retinopathy, and one had a neovascular membrane. Unilateral affection was present in 65.21% of the general group, 75% of infectious group, 33.33% of the autoimmune group and 75% of the group of unknown cause. Inflammatory cells in anterior chamber and vitreous, papillary hemorrhages, initial and final visual acuitiy were also studied and compared between the groups.
Conclusions: Cat scratch disease (CSD) is by far not the only cause of neuroretinitis. The most common infectious cause in our population is toxoplasmosis. VKH, Takayasu arteritis, LES and Eales disease can present initially with neuroretinitis. Affection of only one eye is the most common presentarion. When the cause is infectious it's more probable the affection of only one eye, when the cause is autoimmune it's more common that both eyes are involved. There are no sex or age predilection.
Commercial Relationships: MARIA FERNANDA REBOLLO RAMIREZ; **Miguel Pedroza-Seres**, None; **Deisy Diarte**, None

Program Number: 2180 **Poster Board Number:** A0286
Presentation Time: 3:45 PM–5:30 PM
Analysis of IL-10 in the intraocular fluids of patients with infectious uveitis
Ryosuke Matsushima, Yoshihiko Usui, Takeshi Kezuka, Kinya Tsubota, Akihiko Umazume, Naoyuki Yamakawa, Yoshihiro Wakabayashi, Hiroshi Goto. tokyo medical university hospital, Tokyo, Japan.
Purpose: The measurement of vitreous interleukin-10 (IL-10) is critical for the diagnosis of intraocular lymphoma. On the other hand, IL-10 may have an inhibitory effect in infectious immunity. In this study, we measured and analyzed the concentration of IL-10 in the intraocular fluids obtained from various patients with infectious uveitis.
Methods: Aqueous humor or vitreous humor were collected from 31 eyes of acute retinal necrosis (ARN), 13 eyes of bacterial endophthalmitis, 6 eyes of fungal endophthalmitis, 9 eyes of VZV-related iridocyclitis, 3 eyes of toxoplasma chorioretinitis, 30 eyes of intraocular lymphoma, 26 eyes of patients with epiretinal membrane or macular hole, and 22 eyes of cataract,. The concentration of IL-10 was measured by Cytometric Bead Array Flex kit^{R}.
Results: The concentration of IL-10 collected from vitreous humor in bacterial endophthalmitis, fungal endophthalmitis, ARN and toxoplasma chorioretinitis were significantly higher than that of patients with epiretinal membrane or macular hole, and significantly lower than that of intraocular lymphoma. The concentration of IL-10 collected from aqueous humor in ARN and VZV-related iridocyclitis were significantly higher than that of cataract. IL-10 in the aqueous humor collected from patients with cataract and that in the vitreous humor collected from patients with epiretinal membrane and macular hole were undetactable.
Conclusions: A certain concentration of IL-10 was detected in infectious uveitis irrespectively of causative microorganism. It is suggested that IL-10 is related to the infectious immunity.
Commercial Relationships: Ryosuke Matsushima, None; **Yoshihiko Usui**, None; **Takeshi Kezuka**, None; **Kinya Tsubota**, None; **Akihiko Umazume**, None; **Naoyuki Yamakawa**, None; **Yoshihiro Wakabayashi**, None; **Hiroshi Goto**, None

Program Number: 2181 **Poster Board Number:** A0287
Presentation Time: 3:45 PM–5:30 PM
The relationship between uveitis in patients with arthritis and demographic and clinical characteristics: A population-based study
Marta Mora, Shan Lin, Marisse Masis, Travis C. Porco, Catherine Oldenburg. UCSF, San Francisco, CA.
Purpose: To assess the relationship between self-reported uveitis in patients with diagnosed arthritis and purported demographic and clinical risk factors, of a population extracted from the National Health and Nutrition Examination Survey (NHANES).
Methods: For our study we used the NHANES database of the Centers for Disease Control and Prevention (CDC) for the year 2009-2010. A national representative sample of 5,106 subjects diagnosed with arthritis, extracted from a pool of 10,537 patients, were asked if they had ever been diagnosed with uveitis. The demographic analysis included age, gender and ethnicity. The main outcome was the presence of uveitis. Potential predictors were type of arthritis, history of smoking and mental health measures. Univariate and multivariate analyses were conducted using RStudio (Version 0.99.903, RStudio, Inc., Boston, MA).
Results: Of the 5,106 participants with arthritis, 27 had reported a diagnosis of uveitis and 19 received ophthalmological treatment. Among those patients with self-reported uveitis, 73% were female and 37% male, and the mean age was 52.8 ± 13 years. The distribution of ethnicity was 29.6% Hispanic, 37.1% non-Hispanic white, 22.2% non-Hispanic black and 11.1% others. Positive smoking history was reported in 59.2% of the patients, the univariate analysis comparing smoking with the presence of uveitis in the arthritis population showed an OR of 1.82 (95% CI 1.11-2.96; p=0.02) and the multivariate analysis adjusting for age and gender showed an OR of 3.18 (95% CI 1.59-6.37; p=0.003). A greater age was correlated with higher uveitis prevalence (OR = 1.04, 95% CI 1.01-1.07; p=0.02). Additional analyses were performed regarding different types of arthritis (rheumatoid arthritis, osteoarthritis and psoriatic arthritis) and mental health status (anxiety and depression) and there was no correlation with uveitis.
Conclusions: Our study has found that smoking and age are positively correlated with the diagnosis of uveitis in the arthritis cohort of a population-based study and that may be risk factors for the prevalence of this disease, which can have clinical relevance since smoking is a modifiable habit.
Commercial Relationships: Marta Mora, None; **Shan Lin**, None; **Marisse Masis**, None; **Travis C. Porco**, None; **Catherine Oldenburg**, None

Program Number: 2182 **Poster Board Number:** A0288
Presentation Time: 3:45 PM–5:30 PM
Perceived Stress Levels in Adult Patients with Uveitis
Rafael S. Grajewski[1], Anna C. Boelke[1], Claus Cursiefen[1], Christian Albus[2], Frank Vitinius[2], Ludwig M. Heindl[1].
[1]Ophthalmology, University Eye Clinic Cologne, Cologne, Germany; [2]Department of Psychosomatic Medicine and Psychotherapy, University of Cologne, Cologne, Germany.
Purpose: To examine the perceived stress in adult patients with uveitis, a sight-threatening ocular disease, and its association with anatomic location, etiology, age, and visual acuity.
Methods: 173 adult uveitis patients were asked for the perceived stress according to the perceived stress questionnaire (PSQ-20 J2: past two years and PSQ-20 W4: past four weeks). Stress levels were classified into normal stress, moderate stress, and high stress.
Results: Most uveitis patients had a normal stress level (82%). 16-18% were moderately stressed and 1-2% were highly stressed. Perceived stress was not associated with the anatomic location and the etiology of uveitis (p=0.667 and p=0.436, respectively). It was significantly associated with the age of uveitis patients (p<0.001) and was highest at ages between 25 and 64 years, followed by 18-24 years. Significantly lowest perceived stress was found in the oldest age group (≥65 years). The external perceived stress parameter "demands" was significantly associated with visual acuity (p<0.001).
Conclusions: 18% of the uveitis patient had raised perceived stress, especially in younger patients and independently of anatomic location and etiology. Therefore, psychosomatic aspects may be important in the therapy of uveitis patients.
Commercial Relationships: Rafael S. Grajewski, None; **Anna C. Boelke**, None; **Claus Cursiefen**, None; **Christian Albus**, None; **Frank Vitinius**, None; **Ludwig M. Heindl**, None
Support: DFG (German Research Foundation) grant (GR 2647/5-1)

Program Number: 2183 **Poster Board Number:** A0289
Presentation Time: 3:45 PM–5:30 PM
Clinical findings in immunocompetent patients diagnosed with Ocular Syphilis
Ruben Espino Icazbalceta, Alejandro Zermeno, Deisy Diarte, Miguel Pedroza-Seres. Instituto de Oftalmología Conde de Valenciana, México City, Mexico.

Purpose: Syphilis is consider one of the great imitators of inflammatory ocular diseases. The purpose of this study it's to describe the epidemiological data, systemic associations and clinical findings in patients later diagnosed with any form of Ocular Syphilis in the department of uveitis and ocular immunology at Instituto de Oftalmologia Conde de Valenciana, in Mexico City.
Methods: Retrospective study evaluating electronic database of the last 10 years (2007-2016), searching for patients with ocular syphilis with diagnosis confirmed by laboratory test. We correlated the variables: age, gender, suspected diagnosis at the time of the first visit, best corrected visual acuity at first and last visit, conjunctival and ocular surface signs, anterior and posterior segment findings, associated systemic diseases, IOP, complications, initial treatment and final diagnosis.
We excluded patients with other systemic diseases that could potentially cause immunosuppression, like HIV, autoimmune diseases and tuberculosis.
Results: We evaluated a total 89 eyes of 54 patients, 5 patients were excluded, 4 with diagnosis of HIV and 1 with tuberculosis. A total of 49 patients were included in this study, 33 female (67.3%) and 16 male (32.6%). The mean age was 56 years. The diagnosis was confirmed in all the patients with positive FTA-ABS analysis in two separate samples. The patient main complain at the first visit was blurred vision an visual impairment in 53% of the cases, the most common ocular finding was panuveitis in 51% of the cases, with an initial treatment with topic corticosteroids and tropicamide/phenylephrine in 55.1% of the patients. The clinical findings were conjunctival hyperemia in 38.7% of the cases, anterior chamber reaction in 65.3% of the patients and vitreous cells in 28.5%. The visual acuity was measured with a Snellen chart, 42.8% of the patients presented an improvement in visual acuity (defined as gaining 2 or more lines in the Snellen chart) after antibiotic treatment. 14 patients presented glaucoma associated with uveitis, only 2 required filtrating surgery.
Conclusions: Ocular Syphilis can present itself with a wide variety of ocular manifestations. It's important for the ophthalmologist to suspect the diagnosis and always consider the use of laboratory tests in the event of a patient with uveitis or ocular inflammation.
Commercial Relationships: Ruben Espino Icazbalceta, None; **Alejandro Zermeno**, None; **Deisy Diarte**, None; **Miguel Pedroza-Seres**, None

Program Number: 2184 **Poster Board Number:** A0290
Presentation Time: 3:45 PM–5:30 PM
Ocular Syphilis in Oregon, 2014 to 2016
Meryl Sundy[1], Irina Kasarskis[2], Sean Schafer[2], Winthrop Kevin[1, 3]. [1]Ophthalmology, OHSU, Portland, OR; [2]Public Health Division, Oregon Health Authority, Portland, OR; [3]Infectious Disease, OHSU, Portland, OR.
Purpose: Recently San Francisco and Seattle reported an increase in syphilis cases with ocular involvement. Little is known about the incidence of syphilis with ocular involvement in Oregon, its natural history, molecular epidemiology related ocular morbidity, or associated characteristics of people affected. The purpose of this study is to estimate the current incidence of syphilis with ocular morbidity in Oregon and describe its epidemiology.
Methods: We queried Oregon Health Authority's (OHA) comprehensive disease reporting system for all syphilis cases reported to OHA for which the public health case report included any of the terms "ophthal, opthal, ocular, vision, visual, uveitis, retinitis, blurred, eye, floater" between Jan 1, 2014 and March 21, 2016. We identified 79 occurrences suggestive of pertinent ocular symptoms. We collected serology and other syphilis-related laboratory results, clinical stage, treatment, sexual history and demographics from the public health case reports and reviewed medical records to further describe ophthalmologic and medical aspects of the clinical course. We defined probable cases as those that in our judgment had "clinical symptoms or signs consistent with ocular disease" with a confirmed or presumptive syphilis case. We used Oregon Health Authority criteria to stage syphilis cases.
We recorded case onsets as the date of the first reported ocular symptom, or in the absence of symptom onset date, 6 weeks, 10 weeks or one year prior to the date of the first positive serology for primary, secondary and latent syphilis respectively. Follow-up intervals began with the collection date of the first positive syphilis serology and ended with the last available syphilis related chart annotation for ophthalmologic and infectious disease follow-up.
Results: We identified 63 probable cases after exclusion for equivocal laboratory testing, loss to follow up and other identified etiologies for ocular inflammation. The population was 74% male, 33% HIV positive and 22% had prior diagnoses of syphilis. Of the 63, there were 2 considered early syphilis, 17 secondary, 18 latent and 20 late with symptomatic manifestations. 44% of cases has additional systemic manifestations and 46% had other neurologic complications.
Conclusions: Identifying and referring patients with ocular complaints may help reduce spread of the disease and ultimately reduce ocular morbidity.
Commercial Relationships: Meryl Sundy, None; **Irina Kasarskis**, None; **Sean Schafer**, None; **Winthrop Kevin**, None
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Program Number: 2185 **Poster Board Number:** A0291
Presentation Time: 3:45 PM–5:30 PM
Association between eye diagnosis and positive syphilis test results in a sexually transmitted infection/primary care clinic population
Ann-Marie Lobo[1], Laura Rusie[2], Yan Gao[3], Magda Houlberg[2], Supriya Mehta[4]. [1]Department of Ophthalmology and Visual Sciences, Illinois Eye and Ear Infirmary, University of Illinois at Chicago, Chicago, IL; [2]Howard Brown Health, Chicago, IL; [3]Biostatistics, University of Illinois at Chicago School of Public Health, Chicago, IL; [4]Epidemiology, University of Illinois at Chicago School of Public Health, Chicago, IL.
Purpose: In October 2015, the CDC released a clinical advisory on rising cases of ocular syphilis, and in November 2015, the American Academy of Ophthalmology (AAO) released a clinical update on ocular syphilis. We examined the association between eye disease and syphilis infection among primary and sexually transmitted infection (STI) clinic patients attending an urban LGBTQ health center.
Methods: We conducted a retrospective medical record review of all patients who underwent syphilis testing at Howard Brown Health between January 1, 2010 and December 31, 2015. Confirmed eye diagnosis was based on ICD-9 diagnosis codes for conjunctivitis, uveitis, keratitis, retinitis, and red eye. Demographic information, syphilis treatment, HIV status and high-risk behaviors were abstracted. Syphilis diagnosis was defined by available laboratory data (EIA, RPR titer, FTA-Abs, *Treponema pallidum* Ab). Multivariable logistic regression with robust variance was used to identify independent associations.
Results: During the study period, 71,299 syphilis tests were performed on 30,422 patients. There were 2,288 (7.5%) positive syphilis tests. Seventy-seven patients had a confirmed eye diagnosis (0.25%). Patients with eye disease had a higher probability of at

least one positive syphilis test (33%) compared to those without eye disease (8%) in the bivariate analysis (Chi-square p<0.001). Of patients with eye disease, 77% were men who had sex with men (MSM) and 65% were HIV positive. Patients with eye disease had 2.15 (95% CI: 0.99,4.68) higher odds of having syphilis compared to patients without eye disease. When adjusted for age, race, gender identity/sexual orientation (MSM, Male not MSM, Female, Transgender), insurance, and HIV status, there was no association between positive syphilis test and eye disease (OR 0.82, 95% CI 0.37, 1.84).
Conclusions: Patients who present with an eye diagnosis to STI/primary care clinic have a higher probability of positive syphilis tests. These results are confounded by risk factors for syphilis. High-risk patients with eye symptoms should have routine STI testing and in keeping with CDC and AAO recommendations, full ophthalmologic examination.
Commercial Relationships: Ann-Marie Lobo, None; **Laura Rusie**, None; **Yan Gao**, None; **Magda Houlberg**, None; **Supriya Mehta**, None
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Program Number: 2186 **Poster Board Number:** A0292
Presentation Time: 3:45 PM–5:30 PM
Discontinuation and Nonpublication of Interventional Clinical Trials Conducted in Uveitis Patients
Taygan Yilmaz[1], Miguel Cordero-Coma[2, 3], Michael E. Migliori[1]. [1]Ophthalmology, Warren Alpert Medical School at Brown University, Providence, RI; [2]Ophthalmology, Uveitis Unit, University Hospital of León, Leon, Spain; [3]Instituto de Biomedicina (IBIOMED), Leon, Spain.
Purpose: Discontinuation of interventional clinical trials and nonpublication of completed trials represent a waste of already scarce resources. They also contribute to publication bias and, by being censored from the medical literature, diminish the quality of the overall body of evidence. We sought to identify the prevalence of discontinuation and nonpublication of interventional clinical trials conducted in uveitis patients.
Methods: We conducted a retrospective, cross-sectional study of uveitis-based interventional clinical trials in ClinicalTrials.gov dating back to 1990. Data were collected from the registry and associated publications were identified (final search on December 5, 2016).
Results: Of 115 trials, 32 (28%) were discontinued early with only four of these studies being published. This represents a considerable number of participants who accepted the potential risks and inconveniences of taking part in a clinical trial but whose contribution ultimately played no role in the advancement of medical evidence. Half of the trials had unclear or no reported reasons for trial discontinuation. The odds of discontinuation were greater among industry-sponsored trials than among academic-sponsored trials (odds ratio [OR] 2.75, 95% confidence interval [CI] 0.84–9.01). Of the 83 completed trials, 62 (75%) were not published, representing approximately 218 participants. Only eight unpublished trials posted results on ClinicalTrials.gov. Trials funded by industry were more than three times as likely as trials funded by academic centers to result in nonpublication (OR 3.73, 95% CI 1.12–12.38).
Conclusions: The non-publication of many completed trials, and of preliminary results of trials that are discontinued early, dilutes the quality and decreases the comprehensive nature of the medical literature. This occurs in both industry and academic-sponsored trials though the odds of discontinuation and non-publication are greater among industry-sponsored trials. Greater transparency through the publication of clinical trials with negative results as well as those that are terminated early could minimize publication bias and thus lead to a more robust medical literature.
Commercial Relationships: Taygan Yilmaz; **Miguel Cordero-Coma**, None; **Michael E. Migliori**, None

Program Number: 2187 **Poster Board Number:** A0293
Presentation Time: 3:45 PM–5:30 PM
Assessment of Changes in Quality of Life Among Subjects in the STOP-Uveitis Study
Lisa C. Greer[1], Muhammad Fayez Jawed[1], Kathleen Caldwell[1], Ryan Wilson[1], Muhammad S. Halim[2], Muhammad Hassan[2], Mohammad A. Sadiq[2], Rubbia Afridi[2], Diana V. Do[2, 3], Yasir Jamal J. Sepah[2, 3], Quan D. Nguyen[2, 3]. [1]Ophthalmology, University of Nebraska Medical Center, Omaha, NE; [2]Byers Eye Institute, Stanford University, Palo Alto, CA; [3]Ocular Imaging Research and Reading Center, Menlo Park, CA.
Purpose: To examine the effects of Tocilizumab treatment on quality of life as assessed by visual function questionnaire among subjects in the STOP-Uveitis study.
Methods: STOP-Uveitis study is a randomized, open-label safety, efficacy and bioactivity clinical study evaluating the role of tocilizumab (TCZ) in subjects with non-infectious uveitis (NIU). Subjects with NIU were randomized in a 1:1 to receive monthly IV infusions of either 4mg/kg or 8 mg/kg TCZ, until month 6 (M6; primary endpoint). Starting at M6, subjects were treated based on a retreatment criteria until month 12 (M12). Primary outcome measures were mean change in visual acuity, vitreous haze and foveal thickness at M6. Out of 37 subjects in STOP-Uveitis, 27 were analyzed and the rest were excluded due to absence of quality of life data. The NEI visual function questionnaire (VFQ-25) was administered at baseline (BL), M6, and M12 to measure self-reported vision health status and the effects of visual impairment on visual function and general health. The NEI VFQ-25 manual was used to calculate scale conversions, and calculations of subscale and composite scores. Wilcoxon signed-ranked test was used to identify changes across the self-rated domains of the VFQ.
Results: 27 subjects completed the VFQ-25 at BL, while 21 subjects completed it at M6 and M12. Mean age of the study population was 44 ±18.4 years. 15 (55.6%) subjects were females. 21(77.8%) study subjects were diagnosed with Idiopathic uveitis at BL. Majority of the cases had panuveitis (59.2%). 11(40.7%) subjects were receiving treatment at the study enrollment; 5(18.5%) were receiving corticosteroid while 7(25.9%) were receiving immunomodulators. Overall, subjects showed a significant improvement in composite scores across the domains from BL to M6 and M12. The results from Wilcoxon ranked-sum showed a significant improvement from baseline to M6 in general vision (p=0.03) and mental health (p=0.03). At M12, significant improvement was seen in distance activities (p=0.04) and role difficulties (p=0.03) from BL (Table 1).
Conclusions: Treatment with Tocilizumab shows improvement in overall general vision, mental health, distance activities and vision specific role difficulties in subjects with non-infectious uveitis. Significant improvements are observed as early as month 6.
(Lisa Greer and Fayez Jawed contributed equally towards the abstract and serve as co-first authors.)

Table 1 - Pooled NEI VFQ-25 Composite and Subscale Scores					
	Median			P value	
VFQ-25 subscales	BL (n=27)	M6 (n=21)	M12 (n= 21)	BL-M6	BL-M12
General health	75.0	75.0	75.0	0.43	0.76
General vision	60.0	80.0	60.0	0.03	0.20
Ocular pain	75.0	75.0	87.5	0.78	0.38
Near activities	58.3	75.0	75.0	0.42	0.20
Distance activities	75.0	75.0	83.3	0.38	0.04
Vision-specific social functioning	87.5	87.5	100.0	0.28	0.35
Vision-specific mental health	87.5	81.3	81.3	0.02	0.50
Vision-specific role difficulties	87.5	87.5	50.0	0.10	0.03
Vision-specific dependency	83.3	91.7	91.7	0.72	0.09
Driving	66.7	75.0	66.7	0.42	0.42
Color vision	100.0	100.0	100.0	0.08	0.89
Peripheral vision	100.0	100.0	100.0	0.92	0.30
Composite score for VFQ-25	69.4	77.3	72.9	0.13	0.13

Table 1

Commercial Relationships: Lisa C. Greer, None; **Muhammad Fayez Jawed**, None; **Kathleen Caldwell**, None; **Ryan Wilson**, None; **Muhammad S. Halim**, None; **Muhammad Hassan**, None; **Mohammad A. Sadiq**, None; **Rubbia Afridi**, None; **Diana V. Do**, Genentech (C), Regeneron (F), Regeneron (C), Genentech (F), Allergan (C), Santen (C); **Yasir Jamal J. Sepah**, None; **Quan D. Nguyen**, Santen (F), Regeneron (F), Bausch and Lomb (C), Santen (C), MacuSight (F), L-Path (F), Ophthotech (F), Genentech (F)

Program Number: 2188 **Poster Board Number:** A0294
Presentation Time: 3:45 PM–5:30 PM

Investigating the clinical value of urine β2-microglobulin (Uβ2M) in patients with tubulointerstitial nephritis and uveitis (TINU) syndrome

Lorraine M. Provencher, Aaron Fairbanks, Nasreen A. Syed. Ophthalmology, University of Iowa, Iowa City, IA.

Purpose: Uβ2M has emerged as a potential screening tool for TINU syndrome, but it is unknown whether Uβ2M could predict the course of uveitis in TINU, which is often chronic and relapsing. We seek to determine whether Uβ2M provides information on the course of the uveitis, i.e. disease activity, duration, or relapse.

Methods: IRB-approved, retrospective review of patients with TINU syndrome treated at the University of Iowa from 2009-2016. Inclusion criteria: clinical diagnosis of TINU based on anterior uveitis, elevated UB2M, and otherwise negative systemic workup. A uveitis score was used to quantify the degree of inflammation (sum of both eyes). Also evaluated: patient demographics, disease presentation and course, and duration.

Results: Eleven patients were identified. Mean age was 35y (range 4-81y); 7 female. Common presenting ocular complaints: redness (91%), photophobia (82%), and decreased vision (73%). All cases were eventually bilateral; 55% had unilateral onset with rapid, sequential involvement of the fellow eye. Of 22 eyes, initial visual acuity (VA) was ≥ 20/25 in 55% and ≥ 20/50 in 95%. Mean Uβ2M (normal < 160 μg/L) for all subjects was 6121 μg/L, (range 340-17494 μg/L). Mean Uβ2M for adults was 9761 μg/L and 1754 μg/L for those < 18y. Presenting serum creatinine (SCr) was normal in 4 patients, and 9 had 0-trace protein on urinalysis (UA). Uveitis scores (activity) trended with Uβ2M levels. Mean duration of disease was 21 months (range 1.1 – 51.5). Longer disease duration trended with higher initial Uβ2M levels. Mean follow up was 29 months (range 2.5-62). Final VA was ≥ 20/25 in 91% of eyes.

Conclusions: TINU affects all ages. Uveitis symptoms are classic, and involvement is often bilateral with sequential onset. Nephritis may be asymptomatic. SCr and UA (particularly urine protein) can be normal. Uβ2M is a useful diagnostic tool and appears to trend with the activity and duration of uveitis. Early identification of patients at risk for a complex course may reduce long-term complications associated with chronic uveitis.

Commercial Relationships: Lorraine M. Provencher, None; **Aaron Fairbanks**, None; **Nasreen A. Syed**, None

Program Number: 2189 **Poster Board Number:** A0295
Presentation Time: 3:45 PM–5:30 PM

The impact of Uveitis on the course of Multiple Sclerosis (MS) in a Large MS Cohort from the Fingolimod Trials

Lyndell L. Lim[1, 2], Helmut Butzkueven[3], Tiffany C. Lo[1], Cecily Whitford[5], Shannon Ritter[4], Diego G. Silva[4], Anthony J. Hall[6, 5]. [1]Centre for Eye Research Australia, University of Melbourne, East Melbourne, VIC, Australia; [2]Royal Victorian Eye and Ear Hospital, Melbourne, VIC, Australia; [3]Neurology, Royal Melbourne Hospital, Parkville, VIC, Australia; [4]Novartis Pharmaceuticals Corporation, East Hanover, NJ; [5]Eye Surgery Associates, East Melbourne, VIC, Australia; [6]Ophthalmology, Alfred Hospital, Melbourne, VIC, Australia.

Purpose: Uveitis and multiple sclerosis (MS) share similar immunopathology, where it has been postulated that the two diseases may have a shared antigen. Numerous studies have reported an association between uveitis and MS. However, no prospective study has described the effect a concurrent diagnosis of uveitis may have on the disease course of MS of a patient with both conditions. The purpose of this study is to describe the disease course of patients with MS and uveitis, in comparison to those without uveitis, who were all enrolled in prospective fingolimod trials.

Methods:
All patients who received ≥1fingolimod dose in any of the fingolimod trials for relapsing or primary progressive MS were included in the analyses. Patients excluded due to protocol deviation in any trial were not included. All patients had mandated ophthalmic reviews as part of their follow up throughout the clinical trials.

Results: Overall, 24,785 patients were included in the analysis: mean age, 39.8 years; women, 70%; Caucasian, 70%. History of uveitis was reported in 153/24691 patients (prevalence rate: 0.62). At baseline, there were no significant differences in MS disease characteristics between the groups of patients with/without a history of uveitis, except for T2 lesion number (31.3 vs 21.2, p=0.03). Patients with uveitis (first/recurrent event) had a higher increase in Expanded Disability Status Scale (EDSS) from baseline to Year 8 (first event, 0.63; recurrent event, 0.39 versus 0.1 for patients with no history of uveitis and no episodes of uveitis throughout follow up). Patients with a history of uveitis and/or recurrent uveitis during follow up had a numerically higher annualized relapse rate during the observation period versus those who did not have an event (0.6 vs 0.3, respectively, p=0.05).

Conclusions: This is the first report on the effect of uveitis on MS disease course in a large prospective MS cohort. Patients with uveitis showed a trend to increased MS disease activity and future disability over the observation period.

Commercial Relationships: Lyndell L. Lim, Abbvie (C), Allergan (R), Abbvie (F), Bayer (R), Allergan (C), Bayer (F), Novartis (F); **Helmut Butzkueven**, Medscape (R), Novartis (C), Genzyme (C), Medscape (C), Novartis (R), Merck (R), Merck (C), Novartis (F), Biogen (C), Oxford Pharmagenesis (C), Merck (F), Biogen (F), Genzyme (R), Oxford Pharmagenesis (R), Biogen (R); **Tiffany C. Lo**, None; **Cecily Whitford**, None; **Shannon Ritter**, Novartis (E); **Diego G. Silva**, Novartis (E); **Anthony J. Hall**, Bayer (C), Bayer (R), Novartis (F)

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Clinical Trial: NCT00355134

Program Number: 2190 **Poster Board Number:** A0296
Presentation Time: 3:45 PM–5:30 PM

Prevalence and incidence of uveitis in a large multiple sclerosis cohort from the fingolimod clinical trials

Tiffany C. Lo[1], Diego G. Silva[3], Cecily Whitford[2], Shannon Ritter[3], Lyndell L. Lim[1, 4], Anthony J. Hall[5]. [1]Centre for Eye Research Australia, The University of Melbourne, East Melbourne, VIC, Australia; [2]Eye Surgery Associates, East Melbourne, VIC, Australia; [3]Novartis Pharmaceuticals Corporation, East Hanover, NJ; [4]Royal Victorian Eye and Ear Hospital, Melbourne, VIC, Australia; [5]Ophthalmology, Alfred Hospital, Melbourne, VIC, Australia.

Purpose: To investigate the prevalence and incidence of uveitis in multiple sclerosis (MS) patients in fingolimod clinical trials.
Background:
Uveitis is associated with MS. Several studies have reported an occurrence of uveitis in MS of between 0.4% to 26%. Fingolimod is a sphingosine-1-phosphate-receptor modulator. Its use in the treatment of MS has been extensively studied in controlled clinical trials. Patients enrolled in these clinical trials were closely followed-up for ocular side effects and underwent regular ophthalmic examination. These studies present an opportunity to investigate the rates of uveitis in MS patients.
Methods: All patients who participated in fingolimod trials for relapsing or primary progressive MS and received one or more treatment doses in any of the studies were included in the analyses. Patients excluded due to protocol deviation in any trial were not included. Prevalence and incidence rate/100 patient-years in patients with/without a history of uveitis were determined.
Results: A total of 24,785 patients from the fingolimod trials were analysed: mean age, 39.8 years; women, 70%; Caucasian, 70%. Fingolimod treatment was administered to all patients. 22040 received fingolimod as first assigned treatment in randomized or open label studies while 1120 patients were randomised to IFN beta 1a and 1531 patients to placebo before being switched to fingolimod in the extension phase. The mean observation period was 594 days with a total of 40156 patient years. History of uveitis was reported in 153/24691 patients (prevalence rate: 0.62). 36 patients developed uveitis during the observation period, as a first event in 27 patients (incidence rate: 0.07/100 patient-years) and as a recurrent event in 9 patients. Uveitis occurred at any time during the course of the studies. The incidence of uveitis between MS subtypes were as follows: relapsing remitting, 0.12% and primary progressive, 0.21%; no significant difference was observed.
Conclusions: This is the first report on uveitis incidence in a large prospective MS cohort. Incidence of uveitis in MS patients was consistent between the different subtypes of MS, and occurred at any time point following MS diagnosis. Overall incidence and prevalence of uveitis in this study were low compared with previous reports. Recruitment bias and/or fingolimod treatment effect cannot be excluded.

Commercial Relationships: Tiffany C. Lo; **Diego G. Silva**, Novartis Pharmaceuticals Corporation (E); **Cecily Whitford**, None; **Shannon Ritter**, Novartis Pharmaceuticals Corporation (E); **Lyndell L. Lim**, None; **Anthony J. Hall**, Bayer AG (C)

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Clinical Trial: NCT01201356