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Guest Editors
Francesco Bandello, Milan
Borja Corcóstegui, Barcelona
Giuseppe Guarnaccia, Lugano

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Welcome note

On behalf of the ESASO Organising Committee, we are proud to bring to you the first ESASO Retina Academy supplement. This supplement edition of *Ophthalmologica* contains over 200 accepted abstracts on key research areas in the ophthalmic field.

Disclosures

Francesco Bandello is a consultant for Alcon, Alimera Sciences, Allergan, Bausch and Lomb, Bayer, Farmila-Thea, Genentech, Hoffmann-La Roche, Novagali Pharma, Novartis, Pfizer, Sanofi-Aventis and Thrombogenics.

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Photodynamic Therapy Versus Combination Therapy in Polypoidal Choroidal Vasculopathy: Changes of Aqueous Vascular Endothelial Growth Factor
Mee Yon Lee¹, Won Ki Lee²

¹The Catholic University of Korea, Uijeongbu St.Mary’s Hospital, Uijeoungbu, Korea; ²The Catholic University of Korea, Seoul St. Mary Hospital, Seoul, Korea

Introduction: To investigate the influence of photodynamic therapy (PDT) and combination of PDT and ranibizumab on aqueous humor levels of vascular endothelial growth factor (VEGF) in polypoidal choroidal vasculopathy (PCV).

Methods or Study Design: Prospective randomized clinical trial. We included 20 eyes with treatment-naive PCV and 20 eyes undergoing cataract surgery as controls. PCV eyes were randomized to treatment with PDT alone or to a combination of ranibizumab and PDT on the same day. During 3 months, retreatment was not performed. Aqueous humors were collected at baseline and at 1 week, 1 month, and 3 months after treatment in the PCV group and during cataract surgery in the control group. VEGF levels were measured using multiplex bead immunoassay.

Results: At baseline, VEGF levels were significantly increased in PCV eyes compared with control eyes. A significant decrease in VEGF levels was found at 1 week after PDT treatment (n = 8) and at all time points after combination treatment (n = 12). With combination treatment, VEGF levels were decreased to values below the detection limit in all eyes at 1 week, 1 month and in 7 of 12 eyes at 3 months. There was no difference in the clinical profiles among the 2 treatment groups at each time point.

Conclusions: Decreased levels of VEGF detected 1 week after PDT for PCV seems to reflect acute damage of vascular endothelial cells, one of the VEGF expression sites in PCV. Concomitant ranibizumab resulted in a further decrease in VEGF to negligible levels, but this result did not affect the clinical results for 3 months.

Keywords: Photodynamic Therapy, Polypoidal Choroidal Vasculopathy; VEGF, AMD.

The Effect of Number of Injections During the First Year on the Clinical Course of Neovascular Age-Related Macular Degeneration
Abdullah Ozkaya, Zeynep Alkin, Ihsan Yilmaz, Yalçın Karakucuk, Cengiz Alagoz, Ahmet Taylan Yazıcı
Beyoğlu Eye Training and Research Hospital, Istanbul, Turkey

Introduction: To evaluate the effect of injection number of ranibizumab on an as-needed treatment regimen during the first year of treatment on the clinical course of neovascular age-related macular degeneration (nAMD).

Methods or Study Design: Retrospective study. The newly diagnosed nAMD patients who were treated with intravitreal ranibizumab on an as-needed treatment regimen with a follow-up period of at least 24 months were included in the study. The patients were divided into three groups according to the required injection numbers during the first year; group A, 3 injections; group B, 4–5 injections; group C = 5 injections. Main outcome measures were the change in best corrected visual acuity (BCVA), and central thickness (CRT). Secondary outcome measure was the number of injections during the second year.

Results: The study included 92 eyes of 87 patients. Group A consisted of 14 eyes (15.2%), group B consisted of 30 eyes (32.6%), and group C consisted of 48 eyes (52.2%). The visual outcomes seemed better in group A; however, there was not a statistically significant difference among the three groups in regards of change in BCVA at all of the time points (p = 0.4 for month 6, p = 0.5 for month 12, p = 0.6 for month 18, p = 0.6 for month 24). There was not a statistically significant difference among the three groups in regards of change in CRT at all of the time points (p = 0.2 for month 6, p = 0.2 for month 12, p = 0.1 for month 18, p = 0.6 for month 24). The mean number of injections at month 12 and 24 was statistically different among the three groups (p < 0.0001 for both).

Conclusions: This study showed a possible relationship between injection numbers and treatment outcomes in patients with nAMD on an as-needed treatment regimen. However there was not a statistically significance among the three groups.

Keywords: Age-Related Macular Degeneration, Choroidal Neovascularization, Ranibizumab.
Visual Outcome of Intravitreal Ranibizumab for Exudative Age-Related Macular Degeneration: Timing and Prognosis

Handan Canan, Rana Altan-Yaycioglu

Baskent University School of Medicine, Department of Ophthalmology, Adana, Turkey

Introduction: Age-related macular degeneration (AMD) is the leading cause of vision loss in the world. Choroidal neovascularization (CNV) plays the main role in exudative AMD. Major clinical trials have reported the superior efficacy of intravitreal ranibizumab (IVR) treatment. The purpose of the current study was to report the 1-year clinical results of IVR in patients with exudative AMD, and to evaluate whether early treatment is of predictive value for prognosis of the disease.

Methods or Study Design: Medical reports of patients who underwent IVR for new-onset exudative AMD between March 2010 and January 2013 at Baskent University School of Medicine Department of Ophthalmology were reviewed retrospectively. All patients were treated with three consecutive monthly IVR and followed up for at least 12 months. Patients were divided into two groups: group 1 consisted of patients with visual symptoms for less than 1 month, and patients who had visual symptoms for 1–3 months were placed in group 2.

Results: A total of 104 eyes were involved; there were 40 eyes in group 1 (7–30 days), and 64 eyes in group 2 (35–90 days). The follow-up time was 13.7 ± 1.9 (12–19) months. The mean logMAR visual acuity (VA) improved, from 0.45 ± 0.639 at baseline to 0.08 ± 0.267 at 12 months in group 1, and from 1.06 ± 0.687 at baseline to 0.75 ± 0.563 at 12 months in group 2. The increase in VA was statistically significant in group 1 (P = 0.009). Mean central retinal thickness (CRT) decreased, from 355.13 ± 119.93 μm at baseline to 250.85 ± 45.48 μm at 12 months in group 1, and from 371.88 ± 91.047 μm at baseline to 268.61 ± 53.51 μm at 12 months in group 2. The decrease in CRT was statistically significant in group 1 (P = 0.001).

Conclusions: Shorter duration of visual symptoms (group 1), was associated with a better visual outcome after treatment. Patients must be informed about self-awareness of visual symptoms.

Keywords: Age-Related Macular Degeneration (AMD), Ranibizumab, Visual Acuity.

Association of Apolipoprotein E Polymorphism with Intravitreal Ranibizumab Treatment Outcomes in Age-Related Macular Degeneration

Berker Bakbak1, Banu Turgut Ozturk1, Ayse Gul Zamani2, Saban Gonul1, Sansal Gedik3, Selman Yildirim3, Suleyman Okudan1

1Selcuk University Faculty of Medicine, Department of Ophthalmology, Konya, Turkey; 2Meram Necmettin Erbakan University Faculty of Medicine, Department of Medical Genetics, Konya, Turkey

Introduction: Genetic factors are known to influence the response to anti-VEGF treatment in exudative age related macular degeneration (AMD). The current study was conducted to investigate the association of Apolipoprotein E (Apo E) polymorphism with the treatment response to ranibizumab for exudative AMD.

Methods or Study Design: One hundred nine eyes (109 patients, 59.6% male, mean age 63.84 ± 7.22 years) treated with intravitreal ranibizumab injections were included in the analysis. Smoking status and lesion type were recorded. Patients were categorized into three groups according to visual acuity (VA) improvement at six month after the first injection: VA improvement >5 Early Treatment Diabetic Retinopathy Study (ETDRS) letters (Group 1); VA change between 5 ETDRS letters gain and 5 ETDRS letters loss (Group 2); VA loss >5 ETDRS letters (Group 3). The frequency of APO E gene polymorphisms were evaluated in each group.

Results: Both smoking status and lesion type showed no significant association with visual acuity change (p = 0.102, p = 0.636, respectively). A lower frequency of the e2 and a higher frequency of e4 were observed in Group 1 (2.9%, 25.7%, respectively). Visual acuity change with more than 5 ETDRS letters was significantly associated with presence of e4/e4 or e3/e4 genotype (p = 0.024).

Conclusions: This study demonstrated that carriers of APO E4 polymorphism genotype show much improvement in visual acuity after treatment with ranibizumab in exudative AMD. APO E polymorphism identification may be used to monitor the response to Anti-VEGF treatment in exudative AMD.

Keywords: APOE, Apolipoprotein E, Ranibizumab, Age-Related Macular Degeneration, AMD.

Aflibercept in Refractory Wet Age-Related Macular Degeneration: Anatomical and Functional Outcomes After One Year of Follow-Up

Veronica Castro, Javier Montero, Enrique Cervera

Hospital General Universitario de Valencia, Valencia, Valencia, Spain

Introduction: Intravitreal antivascular endothelial growth factor (anti-VEGF) agents have improved visual outcomes in wet-age-related macular degeneration (AMD). Our objective is to describe anatomical and visual effects of Aflibercept in recalcitrant wet-AMD after a single injection and after one year of treatment.

Methods or Study Design: A retrospective observational study was performed to evaluate the efficacy of intravitreal aflibercept, on a pro-re-nata regimen, in patients with neovascular-AMD recalcitrant to prior ranibizumab and/or bevacizumab treatment. Active choroidal neovascularization (CNV) was defined by persistence/recurrence of retinal fluid, new retinal haemorrhages, and leakage in fluorescein angiography. Best-corrected-visual-acuity (BCVA) was measured using Early-Treatment-Diabetic-Retinopathy-Study-Chart, and qualitative/quantitative analysis of images was obtained by spectral-domainOCT. A Wilcoxon-test for paired-nonparametric variables was used, defining statistical significance as P values < 0.05.

Results: Thirty eyes of 28 patients with a mean age of 78 ± 8 years were included. Each study eye had received a mean of 6 ± 3 (range 2–5) aflibercept injections.
3–15) anti-VEGF injections. During a follow-up period of 267.90 ± 64.31 days, patients received 3.83 ± 1.51 (range 1–7) Aflibercept injections. A statistically significant decrease (p = 0.002683) in central macular thickness (CMT) (μ) after one single Aflibercept injection was found, reducing from 305.5 ± 68.533 μ to 257.07 ± 46.96 μ. At one year, average CMT was 275.33 ± 33.67 μ. Baseline mean BCVA (logMar) decreased from 0.60 to 0.60 (p > 0.05) after the first injection, improving to 0.5633 after twelve months (p > 0.05). After one single injection an anatomic response was observed in 83.3% of patients with absence of retinal fluid in 73.3% of them. At one year, 70% of patients presented an anatomic improvement with subretinal/intraretinal fluid in 43% of the study eyes.

Conclusions: A significant decrease in CMT was found suggesting that Aflibercept improved retinal thickness in unresponsive eyes. Although no statistically significant, our patients presented an improvement in BCVA. Aflibercept therapy for AMD has shown its effectiveness with a single injection; maintaining a reduction in foveal thickness and an anatomical improvement in most of patients after one year of treatment.

Keywords: Aflibercept, Age-Related Macular Degeneration, Recalcitrant, Choroidal Neovascularization.

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Long Term Result of Intravitreal Ranibizumab (Lucentis®) Injection for Cases with Serous Retinal Pigment Epithelial Detachment Secondary to Age Related Macular Degeneration
Hany Elmekawy, Amr Khafagy, Ahmed Mohamed Abdelbaki
Cairo University, Cairo, Egypt

Introduction: To report the results of 3-year follow-up of intravitreal injection of ranibizumab (Lucentis®) (0.5 mg/0.05 ml) in patients with pigment epithelial detachment (PED) secondary to exudative age-related macular degeneration (ARMD).

Methods or Study Design: Case series study of 8 patients presented with exudative ARMD complicated with PED as demonstrated by Optical coherence tomography (OCT) and Fluorescein angiography. All the patients received three consecutive monthly injections of 0.5 mg/0.05 ml of ranibizumab as an induction treatment. Follow up OCT was done every month for the first year and then as needed if the patient reported visual deterioration. Retreatment was allowed if OCT showed recurrent pigment epithelial detachment or recurrent activity of ARMD. Lucentis was re injected until the membranes stopped leaking.

Results: One month after the first intravitreal ranibizumab injection, optical coherence tomography (OCT) showed disappearance of PED in all eyes. Improvement in the mean central retinal thickness (CRT) from 333.75+35.73 microns to 254.88+47.9 microns and to 219.63+45 microns after one month and three month respectively. The pre injection best corrected visual acuity was 1.11±0.16 LogMar and improved to 0.49+0.18 LogMar at 3 months. The mean BCVA was well maintained to 0.47 ± 0.17 at 36 months, and the CRT 226.75 ± 36.25 microns. The mean number of injections was 8.5. All patients showed recurrence during the maintenance phase. No side effects were reported.

Conclusions: The intravitreal injection of ranibizumab is effective and safe for stabilizing vision and improving CRT in patients with PED secondary to ARMD, as evaluated at a 3-year follow-up examination.

Keywords: Age-Related Macular Degeneration, Anti-VEGF, Pigment Epithelial Detachment, Ranibizumab (Lucentis®).
Gene Polymorphisms of C3, C2 and Factor B and Age Related Macular Degeneration in a Greek Cohort Study
Ioannis Havvas, Ioannis K. Zarkadis, Nikolaos Pharmakakis
University of Patras, Patras, Greece

Introduction: To determine the impact of C2, C3 and CFB genes on age related macular degeneration (AMD) in a Greek population.

Methods or Study Design: A case control association study of 120 Greek patients with various stages of AMD and 140 independent Caucasian controls. All subjects were genotyped for rs547154, rs2230199, rs641153 and rs12614 polymorphisms by a combination of PCR and direct DNA sequencing assays.

Results: rs2230199 ‘G’ allele (minor allele) was significantly more frequent in AMD patients than controls (0.34 vs. 0.22, P = 0.0031) and with a frequency similar to other reported populations. The frequencies of the rs2230199 genotypes among cases and controls (p = 0.0055) were significantly different. rs2230199 seems to be a significant predictor of advanced AMD status [(OR = 6.41, CI 2.72–15.09, P < 0.0001), Area under the Curve (AUC = 0.706, CI 0.61–0.78, P < 0.0001)]. For the other single nucleotide polymorphism (SNP) loci the allele and genotype frequencies were not statistical significant. The MAF in controls and cases were similar and still much lower than the frequencies reported in other populations.

Conclusions: No associations with AMD were found for rs547154, rs641153 and rs12614 SNPs in Greek patients. However, this finding should be viewed with caution as the particular polymorphisms presented with very low frequencies in the Greek population. Our data suggest that C3 ‘G’ allele could serve as a high-risk genetic marker for the development of AMD and the progression of the disease to the advanced clinical stage.

Keywords: Age-Related Macular Degeneration, C2/C3, CFB, SNPs, Complement.

Two Year Real World Outcomes of Ranibizumab Therapy for Neovascular Age Related Macular Degeneration (nAMD)
Minak Bhalla, Ramu Muniraju
Ashford and St Peter’s Hospital, London, United Kingdom

Introduction: The aim is to assess the real world outcomes in terms of Visual acuity (VA) and injection frequency in patients receiving Ranibizumab intravitreal injections for nAMD.

Methods or Study Design: This is a retrospective study collecting data from nAMD patients who were treated with Ranibizumab in 2012 and followed for at least 2-years. VA was measured at baseline, 3 ± 1, 12 ± 2, 18 ± 3 and 24 ± 3 months. Data for the time difference between clinical decision and administering injection was recorded, along with the frequency of Ranibizumab injections in year one and two with any post-injection complications. Dosing Regimen: all patients were treated with three mandated monthly injections followed by PRN dosing.

Results: 73 patients started Ranibizumab treatment in 2012 (mean ± SD age = 82 ± 6.6; 68% were females). The mean (±SD) baseline VA was 54 ± 11 letters; 3 months it was 56 ± 14, at 12 months it was 54 ± 8 and at 18 months it was 56 ± 8.1. 22% of patients gained more than 15 letters at 3 and 12 months and 18% at 18 months. In contrast, 16% lost more than 15 letters at 3 months, 17% at 12 months and 12% at 18 months. Overall 83% lost less than 15 letters at the end of 12 months. On average 6 injections were administered in the first year and 3 in the second year 67% experienced no Ranibizumab-related complications whereas 21% patients had subconjunctival haemorrhages.

Conclusions: Our data is consistent with the landmark clinical trials (MARINA & ANCHOR studies). Majority of the patients lost less than 15 letters at the end of 12 months and this was sustained in the second year. However, there is individual case variability in VA improvement and frequency of injections. Three monthly mandated doses followed by PRN dosing in real world is as successful as monthly injections in clinical trial situation.

Keywords: Neovascular AMD, Injection Frequency, Ranibizumab, Visual Acuity, Real World Outcomes.
of patient’s VA. Long standing results in terms of preservation ans/or improvement of visual acuity (VA) and central macular thickness (CMT) in patients with exudative age-related macular degeneration (AMD) before and after intravitreal ranibizumab injections.

Methods or Study Design: This is a retrospective study including 48 eyes of 42 patients treated with intravitreal ranibizumab injections as monotherapy and completed a follow-up of at least 5 years. VA and CMT were recorded using SLO-OCT prior to initiation of therapy and after conclusion of a 5 year period as was the number of injections needed for each patient. The treatment protocol was PRN with monthly patients’ examination.

Results: The follow-up period was at least 5 years. Visual acuity at the last follow-up was improved in 21 (43%), remained stable in 10 (21%) and worsened in 17 (36%). The mean change in CMT was approximately 126 ± 48 μm. The number of injections needed was approximately 11.6 (with a range of 3 to 26).

Conclusions: Intravitreal ranibizumab injections seem to be an effective therapy for the treatment of wet AMD, with exceptional long standing results in terms of preservation and/or improvement of patient’s VA.

Keywords: Ranibizumab, Exudative AMD, Macular Thickness, Visual Acuity.

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Half-Dose Photodynamic Therapy Combined with Bevacizumab for Polypoidal Choroidal Vasculopathy
Jae Hyung Lee1, Mee Yon Lee2, Won Ki Lee3
1Department of Ophthalmology, Seoul St. Mary’s Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea; 2Eijeongbu St.Mary’s Hospital, Eijeongbu, Korea

Introduction: The purpose of this study is to evaluate the short-term efficacy of a therapy combining half-dose photodynamic therapy (PDT) and bevacizumab in the treatment of polypoidal choroidal vasculopathy (PCV), and in polyp regression in particular.

Methods or Study Design: Sixty-six eyes of 59 consecutive PCV patients were included. Thirty-four consecutive eyes underwent full-dose PDT/bevacizumab combination (full-dose group), and 32 eyes received half-dose PDT/bevacizumab combination (half-dose group) according to the study period. Main outcome measures included the rate of complete polyp regression and complete absorption of fluid, change in best-corrected visual acuity (BCVA) and central macular thickness (CMT) at 3 months.

Results: At 3 months, complete regression of polyps was achieved in 24 eyes in the full-dose group and 13 eyes in the half-dose group (70.6% vs 40.6%, respectively, p = 0.014). Complete fluid absorption was seen in 29 eyes in the full-dose group and 20 eyes in the half-dose group (85.3% vs 62.5%; p = 0.034). The full-dose group achieved a significantly greater CMT improvement than the half-dose group (p = 0.00). BCVA improved significantly in the full-dose group, but not in the half-dose group (p = 0.00 and p = 0.670, respectively).

Conclusions: Half-dose PDT/bevacizumab combination therapy was less effective in polyp regression compared with full-dose PDT/bevacizumab, and resulted in poorer visual and anatomical outcomes.

Keywords: Photodynamic Therapy, Polypoidal Choroidal Vasculopathy.
tically significant (p < 0.001). The mean interval between injections and the mean longest interval were shorter in group 3 (p < 0.05).

**Conclusions:** Presence of ERM in association with nAMD seems to increase the number of anti-VEGF injections and decrease the injection intervals for the treatment of nAMD. Although the anatomical and functional results are similar in eyes with or without ERM, the increased need for anti-VEGFs may mean that these membranes may decrease the penetration of the drugs through these membranes, which may act as a physical barrier.

**Keywords:** AMD, Vitreomacular Interface, Epiretinal Membrane.

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**12-Month Real-Life Data of Patients with Neovascular Age Related Macular Degeneration: Prospective Results of a Single Ocean Center**

Hüsnü Berk

St. Elisabeth Krankenhaus Augenklinik, Cologne, Germany

**Introduction:** The OCEAN study evaluates ranibizumab (Lucentis®) treatment patterns and outcomes in real-life conditions for all approved indications. With up to 6,000 patients OCEAN is the largest non-interventional, multicenter ophthalmological study in Germany so far. Here we present the 12-month results of 45 patients suffering from neovascular age related macular Degeneration.

**Methods or Study Design:** During an observation period over 12 months recorded parameters include: number of visits, visual acuity, ophthalmic imaging (OCT, angiography), intravitreal injections, other ocular treatments, and concomitant medications.

**Results:** To date 45 treatment-naïve nAMD patients have been enrolled into the OCEAN study at Elisabeth-Hospital, Cologne. Mean age was 77.9 ± 8.5 years. 73.3% of the patients are female. At baseline visit, all patients have been assessed for BCVA as well as morphological criteria by using fluorescein angiography and spectral domain optical coherence tomography. Mean decimal baseline VA for all patients was 0.193 (±2.18), mean central retina thickness was 386.0 μm (±81.6). All of the patients received three initial injections with ranibizumab, followed by further treatments according to assessment of individual disease progression. Most of the patients (51.0%) received their first treatment within 15 to 35 days after diagnosis. 17.8% of the patients have been treated within 2 weeks and 28.9% of the patients were treated after more than 35 days from first diagnosis. We will be able to present the 12-month follow-up data for visual acuity, central retinal thickness, number of injections as well as number of visits for these patients.

**Conclusions:** The OCEAN study provides multicenter real-life data that may allow for a better understanding of potential barriers and factors accounting for outcomes in clinical routine. At ESASO 2014, we present results of 45 nAMD patients treated at a single OCEAN center in Cologne, Germany. These results can be seen as an exemplary outcome of Lucentis® treatment patterns in real-life conditions.
Different Efficacy of Intravitreal Aflibercept Injection (IAI) in the Management Between Occult Choroidal Neovascularization (OCNV), Polypoidal Choroidal Vasculopathy (PCV) and Retinal Angiomatic Proliferation (RAP) Previously Treated with Ranibizumab

Robert Giannini, Luigi Zompatori, Simona Altimari
S. Giovanni Hospital, Tivoli, Rome, Italy

Introduction: To determine the different efficacy of intravitreal Aflibercept injection (IAI) between groups of subjects with recalcitrant occult choroidal neovascularization (OCNV), polypoidal choroidal vasculopathy (PCV) and retinal angiomatic proliferation (RAP) previously treated with ranibizumab.

Methods or Study Design: 20 patients with an occult CNV, 14 patients with PCV and 6 with RAP previously treated with ranibizumab were examined and treated with 2 mg IAI every month for the first 3 months, followed by a fixed dose of 2 mg IAI every 2 months for one year. The primary endpoint was the mean change from baseline central subfield retinal thickness (CST) at month 12 as measured by spectral domain-optical coherence tomography (SD-OCT). The secondary outcomes included mean change from baseline best corrected visual acuity (BCVA) score.

Results: At month 12 no significant change in ETDR BCVA (Early Treatment Diabetic Retinopathy Study best corrected visual acuity) in all groups of patients was observed with a mean increase in ETDR BCVA of 4.6 letters (p > 0.02). Compared with baseline anatomically, mean CST improved significantly from baseline (223.6 micron, p < 0.02) in all groups of patients. The best improvement was observed in OCNV group, the worst in RAP group.

Conclusions: In all recalcitrant eyes switching from previous anti VEGF treatment, Aflibercept 2.0 mg treatment led to significant anatomic improvement when given in a fixed dosing scheme for 12 months.

Keywords: Aflibercept, Choroidal, Neovascularization.

The Burden of Wet Age-Related Macular Degeneration (wAMD) and Diabetic Macular Edema (DME) in Greece

Mary Geltou1, Dimitrios Karagiannis2, Georgia Pantelopoulou3, Magdalini Chatzikou4
1University of Peloponnese, Corinth, Greece; 2Eye Hospital of Athens, Athens, Greece; 3Novartis Hellas, Athens, Greece

Introduction: Treatment delays in patients with wAMD and DME are very important since they are associated with disease progression. This is the first study in Greece to highlight patient’s access delays’ to treatment and estimate the disease burden.

Methods or Study Design: An expert panel with 11 ophthalmologists was convened. The experts came from six out of seven Regional Health Authorities, covering geographically the largest part of the country. A 13-page questionnaire was developed and validated to collect data on resource use, patient access delays, and indirect costs. Unit costs were retrieved from NHS sources and the analysis was conducted from the societal perspective, including costs incurred by patients, their families and the health care system, and indirect costs, of productivity losses.

Results: More than half of patients (63% wAMD and 44% DME patients) require caregiver support mostly from relatives and family, whilst only 11% of wAMD and 24% of DME patients occupy a paid caregiver, to help them with their everyday activities. The total cost of caregivers was estimated at €13,894 and €10,773 per year for wAMD and DME patients, respectively. The indirect cost associated with productivity losses for DME patients was estimated at 18.9 work-loss days and €1,498 per patient per year. 91% of the experts agreed that there are significant delays in patient access to specific treatments (average 20 days). They all agreed (100%) that if the disease is left untreated or undertreated due to delays, patients will suffer a faster disease progression, with a significantly higher total burden for patients, their families, and the health care system. A strong majority (>80%) supported that delays lead to deterioration of patients’ QoL.

Conclusions: wAMD and DME are associated with significant indirect costs for patients and their families. There are substantial delays in patients’ access to treatment, resulting in faster disease progression and deterioration of patients’ QoL.

Keywords: WAMD, DME, Burden, Greece.

The Course of the Age-Related Macular Degeneration with Open-Angle Glaucoma

Irina Panova, Marina Prokopieva, Tatiana Shaimova
South Ural State Medical University, Chelyabinsk, Russia

Introduction: Age-related macular degeneration (AMD) and primary open angle glaucoma (POAG) are among the main causes of avoidable blindness in geriatric patients. Both nosologies are similar in progressive course, bilateral disease, a persistent decrease in visual acuity, a high percentage of disability.

Methods or Study Design: During the period 2001–2013 there were 164 patients (317 eyes) with age-related macular degeneration, the average age 78.7 ± 8.7 years. We identified two study groups (SG): SG1 – 17 patients (34 eyes) with age-related macular degeneration in combination with primary open angle glaucoma (POAG) – 10.7%; SG2 – 92 (173 eyes) patients with age-related macular degeneration without neuroopticopathy (NOP) – 54%.

Results: The structure of AMD in SG1 consist of the atrophic form of AMD – 52.9%, an intermediate stage – 5.9%, the wet form – 41.2%. The structure of AMD in SG2 consist of the atrophic form of AMD – 30.6%, an intermediate stage – 46.9% (p < 0.05), the wet form – 22.5%. Analysis of the structure associated cardiovasual pathology and refraction in SG1 had no difference compared with SG2. The structure associated ophthalmopathology identify percentage of cataracts in SG1 – 79.4%, in SG2 – 59.7%. In the group AMD with POAG the visual acuity was authentically lower – 70.8% (less than 0.2).

Conclusions: 1. The frequency of the AMD with POAG is 10.7%. 2. Atrophic form of AMD and significantly lower visual acuity identify percentage of cataracts in SG1 – 79.4%, in SG2 – 59.7%. In the group AMD with POAG the visual acuity was authentically lower – 70.8% (less than 0.2).
function were more frequent in clinical course of AMD with primary open angle glaucoma. 3. Intermediate stage AMD was significantly more common in patients with age-related macular degeneration without neurooptiopathy.

**Keywords:** Age-Related Macular Degeneration, Open-Angle Glaucoma, Clinical Features.

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**162 (Rapid Fire Presentation)
Predictive Importance of Retinal Morphology on the Best-Corrected Visual Acuity Outcomes of Different Ranibizumab Treatment Regimens for Neovascular Age-Related Macular Degeneration**

Sebastian Waldstein1, Jonathan Wright2, James Warburton3, Philippe Margaron4, Christian Simader5, Ursula Schmidt-Erfurth1

1Christian-Doppler-Laboratory for Ophthalmic Image Analysis, Vienna Reading Center, Department of Ophthalmology, Vienna, Austria; 2Numerus Ltd., Berkshire, United Kingdom; 3Novartis Pharma UK Ltd., Surrey, United Kingdom; 4Novartis Pharma AG., Basel, Switzerland

**Introduction:** Characterization of neovascular age-related macular degeneration (nAMD) lesions at baseline by optical coherence tomography (OCT) allows evaluation of retreatment needs in anti-angiogenic therapy. A post-hoc analysis was conducted to establish predictive factors for best-corrected visual acuity (BCVA) outcomes and retreatment necessity from structure-function correlation for nAMD.

**Methods or Study Design:** Data of patients from the EXCITE trial (n = 353) receiving either monthly (frequent; n = 115) or quarterly (infrequent; n = 238) ranibizumab treatment were analyzed. BCVA was measured at monthly visits using ETDRS charts. OCT was performed monthly and evaluated at the Vienna Reading Center. Standardized grading of retinal morphology included intraretinal cysts (IRC), subretinal fluid (SRF), pigment-epithelial detachment (PED), vitreomacular interface (VMI) configuration classification comprising vitreomacular adhesion (VMA) and posterior vitreous detachment (PVD), and central retinal thickness (CRT). Predictor variables included retinal morphology, treatment frequency, and baseline BCVA. At baseline, data were available for 319 patients (102 frequent and 217 infrequent).

**Results:** Overall, adjusted BCVA mean change (letters) at Month 12 was +7.12 (frequent) and +3.08 (infrequent). Significant predictive factors for BCVA change at Baseline were SRF (p = 0.05), VMI (p < 0.01), treatment frequency (p = 0.01), and BCVA (p < 0.01). The mean differences in BCVA gains (letters) between frequent and infrequent treatments were +1.0 for patients with SRF vs +1.2 for patients without SRF. Most patients with no SRF at baseline had IRC (73.9% and 62.1% for frequent and infrequent arms, respectively) and PED (65.2% and 63.8% for frequent and infrequent arms, respectively). PVD was associated with similar BCVA gains for both frequent and infrequent regimens, without significant difference at the 5% level.

**Conclusions:** In patients with SRF at baseline, similar BCVA outcomes could be expected regardless of treatment interval, while those without SRF may require a monthly treatment regimen for maintenance of vision.

**Keywords:** Neovascular Age-Related Macular Degeneration, Optical Coherence Tomography, Posterior Vitreous Detachment, Ranibizumab, Subretinal Fluid.

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**164 Evaluation of Treatment with Ranibizumab in Patients with Wet Age-Related Macular Degeneration**

Alexandros Charonis1, Ioannis Datseris2, Sophia Androudi3, Symeon Lake1, Athanasios Sousouras4, Athanasios Vakalis5, Olga Kousidou6, Georgia Pantelopoulou6

1Medical Institute of Ophthalmology, Athens, Greece; 2OMMA, Eye Institute, Athens, Greece; 3Ophthalmologist, Thessaloniki, Greece; 4Prototyp Eye Center, Thessaloniki, Greece; 5RETINA, Thessaloniki, Greece; 6Novartis Hellas, Athens, Greece

**Introduction:** The aim of this study was to evaluate the effects of ranibizumab on Best Corrected Visual Acuity (BCVA) in patients with neovascular (‘wet’) age related macular degeneration (wAMD), after 10 months of treatment in everyday clinical practice.

**Methods or Study Design:** A multicentre, non-interventional observational study was conducted in 2010 for a period of ten months. Treatment with ranibizumab initiated with a loading phase consisting of monthly injections for three consecutive months and followed by maintenance phase, as was indicated on the Summary of Product Characteristics which was in effect at that time. Efficacy evaluation included records of BCVA before the loading phase and monthly records for ten months after the completion of the loading phase. Random effect regression was used in order to estimate changes in BCVA over the follow up period.

**Results:** 330 patients were enrolled (145 men and 185 women) with mean age 76.6 years (SD = 8.9). The mean number of injections (per eye including loading phase) was 7.2 (SD = 3.4). The mean BCVA for all treated eyes was 0.29 (SD = 0.21) before loading phase and 0.38 (SD = 0.25) after the loading phase, indicating a 31% mean increase in BCVA (p < 0.001). Ten months after the loading phase the mean BCVA was 0.43 (SD = 0.26) indicating a 48.3% mean increase (p < 0.001) from baseline and a 13.2% mean increase during the maintenance phase (p < 0.001). Random effects regression analysis showed a significant increase of BCVA over the total follow up period (p < 0.001).

**Conclusions:** The current study indicates significant and sustained improvement in BCVA of wAMD patients, even after the loading phase, during a follow up period of ten months.

**Keywords:** AMD, BCVA, Ranibizumab.
Quality of Life of Patients with Wet Age-Related Macular Degeneration Under Treatment with Ranibizumab

Alexandros Charonis1, Ioannis Datseris2, Sophia Androudi3, Symeon Lake3, Paris Tranos4, Salon Asteriadis5, Olga Kousidou6, Georgia Pantelopoulou6

1Medical Institute of Ophthalmology, Athens Vision, Athens, Greece; 2OMMA, Eye Institute, Athens, Greece; 3Ophthalmologist, Thessaloniki, Greece; 4REtina, Thessaloniki, Greece; 5Protypo Eye Center, Thessaloniki, Greece; 6Novartis Hellas, Athens, Greece

Introduction: The aim of this study was to evaluate the effects of ranibizumab on vision-specific quality of life (QoL) in patients with neovascular (‘wet’) age related macular degeneration (wAMD), after 10 months of treatment, in everyday clinical practice.

Methods or Study Design: A multicentre, non-interventional observational study was conducted in 2010. The treatment protocol consisted of three consecutive monthly injections as a loading dose, followed by a maintenance phase based on the Summary of Product Characteristics (which was in effect at that time). Efficacy evaluation included monthly visual acuity assessments and QoL as measured with the VFQ-25 (Visual Functioning Questionnaire-25). Random effect regression models were used in order to estimate the changes in VFQ-25 questionnaire dimensions over the follow up period.

Results: Sample consisted of 330 patients (145 men and 185 women) with mean age 76.6 years (SD = 8.9). The mean number of injections (per eye) during the study period was 7.2 (SD = 3.4). Random effects regression analysis showed a significant increase in most parameters of QoL, as measured with the VFQ-25. Specifically, a significant increase during the follow up period was found for Ocular Pain (β = 1.55, SE = 0.17, p < 0.001), Near Activities (β = 0.92, SE = 0.18, p < 0.001), Distance Activities (β = 1.18, SE = 0.21, p < 0.001), Social Functioning (β = 0.60, SE = 0.18, p = 0.001), Mental Health (β = 0.70, SE = 0.15, p < 0.001), Role Difficulties (β = 0.79, SE = 0.20, p < 0.001), Color Vision (β = 0.89, SE = 0.20, p < 0.001) and Peripheral Vision (β = 0.91, SE = 0.22, p < 0.001) scores, indicating significant improvement in the aforementioned parameters of visual functioning.

Conclusions: This is the first QoL study for wAMD patients performed in Greece and showed significant and continuous improvement in most areas of visual functioning that affect QoL, after 10 months of ranibizumab treatment.

Keywords: QoL, AMD, Ranibizumab.

Number of Injections and Quality of Life in Patients Suffering from Wet Age Related Macular Degeneration and Treated with Ranibizumab. A Cohort Study

Chrysanthis Symeonidis1, Stavros Dimitrakos2, Anastasios Kouris3, Spiros Kanellopoulos3, Vasilis Kozompolis4, Sotirios Kartaganis5, Olga Kousidou6, Georgia Pantelopoulou6

12nd Department of Ophthalmology, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece; 22nd Department of Ophthalmology, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece; 3Department of Ophthalmology, General Hospital of Athens ‘G.Gennimatas’, Athens, Greece; 4Department of Ophthalmology, Democritus University of Thrace, Alexandroupolis, Greece; 5Department of Ophthalmology, School of Medicine, University of Patras, Patras, Greece; 6Novartis Hellas, Athens, Greece

Introduction: The aim of this study was to evaluate changes in quality of life (QoL) according to the number of ranibizumab injections in a Greek population of neovascular (‘wet’) age related macular degeneration (AMD) patients.

Methods or Study Design: An observational study was conducted during a period of 6 months. Treatment with ranibizumab initiated with a loading phase consisting of monthly injections for three consecutive months, followed by a maintenance phase. In order to evaluate patients’ QoL, the VFQ-25 (Visual Functioning Questionnaire-25) was completed at baseline and after six months. Paired t-tests were used in order to estimate changes in VFQ-25 scores.

Results: Sixty nine patients with a mean age of 75.7 years (SD = 6.9, 36 men and 33 women) were enrolled in the study. Thirty nine patients (56.5%) completed the second visit. The mean number of injections (per eye) during the first six months of treatment was 3.5 (SD = 1.5). Patients that received at least four injections (51.3%) reported a significant improvement in the ‘General vision’ subscale (mean change (SD) = 6.3 (13.4), p = 0.050), while there was no significant increase reported by patients that received 3 or less injections (48.7%) in the ‘General vision’ scale (p = 0.816). Moreover, patients that received at least four injections reported a significant improvement in the ‘Mental Health’ (mean change (SD) = 6.3 (8.3), p = 0.004) and ‘Role Difficulties’ (mean change (SD) = 10.5 (15.7), p = 0.009) subscales. On the contrary, patients that received three or less doses reported a non-significant improvement in the aforementioned subscales (p > 0.05).

Conclusions: Ranibizumab represented an efficient treatment option that can improve the QoL of wAMD patients, when used according to standard clinical practice.

Keywords: QoL, AMD, Ranibizumab.
Macular Drusen Quantitation: A Mathematical Computer – Assisted Approach to Correlate with Age Related Macula Degeneration (AMD) Evolution

Chris Dimitrios Kalogeropoulos
University Eye Clinic of Ioannina, Ioannina, Greece

Introduction: Soft drusen tend to precede the development of clinically evident retinal pigment epithelial detachment (RPED) and choroidal neovascular membrane (CNVM).

Methods or Study Design: We aimed to correlate, using a mathematical analysis, the type and topography of macular drusen with the evolution of AMD. In 70 patients (114 eyes presenting drusen and 26 eyes presenting more advanced AMD characterized by RPED with or without CNVM) and age range 50 to 80 years were recruited and macular lesions were analysed. A computer-assisted mathematical analysis concerning the drusen detection and the measurement of the area occupied by drusen (total area of interest: x2 optic disc area). We evaluated the measurements of drusen analysis and correlated the data with AMD lesions and evolution. The follow up period ranged from 6 to 24 months.

Results: Analysis of our data showed that the evolution of drusen (increase of the area of the macula occupied by drusen at least x3) especially during a short period (6 months) may lead to CNVM development. Therefore, the significant and (very important) quick increase of the size of drusen area results in visual acuity degrease, increase of metamorphopsia and increase of risk for choroidal neovascularization. The RPED was found to be more common in eyes with drusen area 10% into the area of interest. CNVM was also found more likely in the eye with the larger drusen area (compared to the contralateral eye).

Conclusions: The computer-assisted approach of drusen topography (percentage of the area of the macula occupied by drusen) enhances the quantitative and more exact correlation of drusen with AMD, resulting in details which could be useful as prognostic factors and for treatment strategies.

Keywords: Macular Drusen, Topography, Age Related Macula Degeneration.

Retinal Phototoxicity and Immunity, are There Any Relationship and Key Role for Developing AMD?

Uzeyir Erdem
GMMA Eye Clinic and Eye Bank, Ankara, Turkey

Introduction: Chronic retinal phototoxicity as risc factor of AMD had been emphasized in the epidemiological studies. It has been well known the importance of RPE, Bruch’s membrane, and choriocapillaris layers in the histopathology of AMD. We aimed to clarify phototoxic effects of light on the rabbits RPE, Bruch’s membrane and choriocapillaris endothelium ultra structurally if there was any contribution in explaining AMD etiology.

Methods or Study Design: We conducted 2 studies with 3 groups. After one hour application of blue (488 nm), green (532 nm) and red light (640 nm) exposure via a slit lamp to a single eye of each of four chinchilla rabbits eyes were enucleated in the first group after 48 hours in the second group after 72 hours. Following enucleations ultrastructural changes were evaluated with light microscopy and transmission electron microscopy.

Results: Following blue light and red light exposure, we have seen important deteriorations of RPE basal invaginations, breaks of Bruch’s membrane, and also areas of new collagen synthesis and deposits were observed in the Bruch’s membrane very similar to those seen early phase of AMD. In red light group we have also seen eosinophil degranulation and trombocytes aggregation collagen synthesis areas in adjacent to new collagen synthesis areas revealing the immune and trombocyte activation.

Conclusions: The blue and the red light induced changes in the Bruch’s membrane and RPE were very similar ultra structurally those changes had been seen early phase of AMD. Additional red light changes with phototoxicity deserves further investigation about the links between phototoxicity and intravascular immunity and thrombosis like eosinophil degranulations and trombocyte aggregation and also new collagen synthesis areas deserves new long term studies to enlighten the drusen formation and neovascularization process of AMD. These findings support that this AMD model may play an important role in understanding the etiology and pathogenesis of AMD.

Keywords: Retinal Phototoxicity, AMD, Immunity, Eozinophyl, Trombocyte.

Treatment of Retinal Angiomaticous Proliferation with Intravitreal Anti-VEGF Drugs in Real Life Practice

Maurizio Battaglia Parodi1, Paola Danzi2, Francesco Seemarros2, Simone Donati3, Claudia Azzolini3, Alfredo Pece4, Vincenzo Pucci5, Andrea Musig5

1Department of Ophthalmology, University Vita-Salute, Ospedale San Raffaele, Milan, Italy; 2Department of Ophthalmology, University of Brescia, Brescia, Italy; 3Department of Ophthalmology, University of Insubria, Varese, Italy; 4Department of Ophthalmology, Melegnano Hospital, Milan, Italy; 5Department of Ophthalmology, Desenzano Hospital, Desenzano, Italy

Introduction: To evaluate the outcomes of intravitreal anti-VEGF in the treatment of retinal angiomaticous proliferation (RAP) in real life practice.

Methods or Study Design: This is a retrospective, intervention-al, multicentre, case series study. All clinical data of patients affected by RAP, regularly followed and treated with anti-VEGF drugs in our Retinal Services over 12 months were examined. 77 eyes of 77 patients were considered for the study. At baseline and over the follow-up, all patients underwent to a monthly complete ophthalmologic examination, including Best Corrected Visual Acuity (BCVA) on ETDRS charts, fluorescein angiography, indocyanine green angiography, and SD-OCT. Both intravitreal treatments with antiVEGF drugs ranibizumab and bevacizumab were
considered for the study. After the initial loading phase of three consecutive injections, further re-treatments were administered according to the persistence or recurrence of subretinal/intraretinal fluid. Main outcome measure was the change in mean BCVA at 12-month examination. Secondary outcomes included the proportion of eyes gaining at least 3 ETDRS lines, the mean change in Central Retinal Thickness (CRT), and the number of injections at the end of the follow up.

**Results:** Mean BCVA improved from 0.72 ± 0.35 to 0.59 ± 0.38 LogMAR (p < 0.001) at the 12-month examination. 23 eyes (29.8%) gained at least 3 ETDRS lines, whereas two eyes (2.5%) lost more than 3 ETDRS lines, over the follow-up. No statistically significant differences in visual acuity improvement were detected comparing ranibizumab and bevacizumab treatment. Mean CRT decreased from 390.0 ± 28.2 μm to 285.9 ± 64.6 μm (p < 0.001). A serous pigment epithelium detachment (sPED) resolved in 21% of eyes treated with bevacizumab and in 31% of eyes treated with ranibizumab. Mean number of injection was 4.1 ± 1.0 vs 4.7 ± 1.7 (p > 0.05) in ranibizumab and bevacizumab subgroups, respectively.

**Conclusions:** Intravitreal anti-VEGF therapy can ensure a significant visual function improvement in about one third of patients affected by RAP, who underwent to a common clinical practice. Ranibizumab treatment required less number of injections over 12 months.

**Keywords:** Retinal Angiomaticatous Proliferation, Ranibizumab.

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**Vitreomacular Interface in Patients Treated with Anti-VEGF for Neovascular Age-Related Macular Degeneration**

*Mehmet Onen, Ayse Metin Kayhan, Zeliha Yazar, Nil Irem Ucgun, Hikmet Sarikatipoglu*

Ankara Numune Education and Research Hospital, Department of Ophthalmology, Ankara, Turkey

**Introduction:** The aim of this study was to investigate the influence of the vitreomacular interface (VMI) on the efficacy of anti-VEGF therapy in patients with neovascular age-related macular degeneration (AMD).

**Methods or Study Design:** Records of 100 eyes of 88 consecutive neovascular AMD patients treated with Anti-VEGF were retrospectively reviewed. After 3 monthly injections, patients received intravitreal anti-VEGF as needed. The VMI changes were examined using spectral-domain optical coherence tomography and were identified as epiretinal membrane (ERM), vitreomacular adhesion (VMA) and vitreomacular traction (VMT). Best-corrected visual acuity (BCVA) and central retinal thickness (CRT) measurements were performed at monthly intervals.

**Results:** Vitreoretinal adhesion was found in 13 eyes (13%), ERM in 17 eyes (17%), and both VMA and ERM in 2 eyes (2%). During the follow-up time, release of VMA was shown in 7 eyes (7%) with VMA. Vitreomacular traction was not found. Patients without ERM and/or VMA, compared with patients with ERM and/or VMA, had a significantly higher mean improvement in BCVA (p = 0.007) and reduction in CRT (p = 0.0001) at six months. The loss of visual acuity was higher in eyes with VMA than eyes with ERM (p = 0.004).

**Conclusions:** Vitreomacular interface changes, including ERM and/or VMA may block the effect of anti-VEGF treatment, and cause inferior visual outcome in a subpopulation of patients.

**Keywords:** Vitreomacular Interface; Anti-VEGF Treatment; Neovascular Age-Related Macular Degeneration.

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**Experience of Intra-Vitreal Eylea During the First Year of Use at University Hospital of Wales**

*Ryan Davies, Sanjiv Banerjee*

University Hospital of Wales, Cardiff, United Kingdom

**Introduction:** Afibercept (Eylea) is an anti-VEGF intravitreal injection used in the treatment of wet macular degeneration and is an alternative to Ranibizumab (Lucentis). Eylea should be given monthly for the first 3 loading doses and then every 8 weeks after that up to a period of 1 year. Eylea has been used in Cardiff for one year on all patients being referred to UHW for treatment of wet AMD from Princess of Wales Hospital, Bridgend. Here we present our results of Visual acuity and central macular thickness (CMT) following the course of Eylea for the first year of use.

**Methods or Study Design:** All patients that have been referred to UHW from Princess of Wales Hospital, Bridgend have received Eylea. They have had the 3 monthly loading doses followed by 8 weekly injections. We have collected their Logmar visual acuities and CMT from OCT prior to their next injection. We have collected the results after the first 4 injections.

**Results:** We have a total of 15 patients that have had over 4 injections. 12 of the 15 patients demonstrated a marked reduction in CMT following their first injection which remained stable up to the time of the 4th. 2 patients again showed an initial improvement in CMT but by the time of their 4th injection the CMT was worse than baseline. 1 of the patients showed no improvement of CMT at any stage. Visual acuities were variable.

**Conclusions:** Eylea is proving to be a useful treatment for wet AMD in terms of reducing CMT. Those that remain stable may benefit from a treat and extend regime however there is a group of patients that do not appear to benefit, both in terms of CMT and visual acuity. We need a longer period to gather more data before its true worth will be revealed.

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**Macular Pigment Optical Density in Dry Type Age-Related Macular Degeneration**

*Zeliha Yazar, Aycan Uysal, Mehmet Onen, Nil Irem Ucgun, Hikmet Yavuz Sarikatipoglu*

Ankara Numune Education and Research Hospital, Department of Ophthalmology, Ankara, Turkey

**Introduction:** The aim of this prospective study is to compare macular pigment optical density (MPOD) between eyes with dry-type AMD and healthy people of the same age group to determine the role of macular pigment density in the etiology of AMD.

Abstracts
Methods or Study Design: Patients who were; performed the first examination and diagnosed with dry AMD in our Medical Retina Unit, not receiving drugs or nutritional support that may affect the macula, not exposed to ophthalmic surgery, without diabetes, glaucoma, cataracts or having NO I/II, C1/II P1/II standard lens opacities according to the Locs III classification, without degenerative myopia, with dark iris color, 60 years and over and not weak or non-obese were enrolled in study. Older people with similar features and natural fundus findings formed the control group. MPOD values were measured in all eyes with MPS II (Macular Pigment Screener-Electron Technology) device, the new application of heterochromatic flicker technology. The obtained results of the 2 groups were compared statistically. Statistical analysis was performed with SPSS for Windows version 11.0.

Results: We evaluated the 14 eyes of 14 patients (9 male-64.3%/5 women-35.7%) in AMD group and 28 eyes of 18 patients in control group (11 male-61.1%/7 women-38.9%). Mean age was 73.00 ± 4.60 years in AMD and 69.38 ± 6.77 in control group. There was no statistically significant difference between the groups in terms of age and gender (p = 0.098 and p = 0.854). Average MPOD measurements of the right eyes (0.711 ± 0.174) and the left eyes (0.673 ± 0.144) of people in the control group were not different (p = 0.345). The mean MPOD values of AMD group in women and in men were 12.51 ± 0.162 and 0.41 ± 0.064; in the control group 0.60 ± 0.136 and 0.619 ± 0.145 respectively. There was no difference in MPOD values measured in males and females within each group (in the AMD group and the control group: p = 0.240 and p = 0.748). The average MPOD value in the eyes of the AMD group was 0.47 ± 0.14 (0.24–0.67), and 0.69 ± 0.16 (0.43–1.06) in the control group. Between the 2 groups a statistically significant difference in terms of MPOD values was found (p < 0.001).

Conclusions: Macular pigment optical density is decreasing in patients with Dry Type AMD. This condition can be accepted to be one of the factors involved in the etiology of AMD and it can raise MPOD enhancing treatments.

Keywords: Age-Related Macular Degeneration, Etiology, Heterochromatic Flicker Technology, Macular Pigment Optical Density.

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Combined Ranibizumab and Photodynamic Therapy Results in Recalcitrant Choroidal Neovascular Membranes
Gökhan Özge, Mustafa Eren, Dorukcan Akincioglu, Seçkin Aykas
Gülnahane Military Medical Academy Dept. of Ophthalmology, Ankara, Turkey

Introduction: A common way to treat choroidal neovascular membrane (CNVM) targets a specific chemical in your body that causes abnormal blood vessels to grow under the retina. That chemical is called vascular endothelial growth factor, or VEGF. Repeat anti-VEGF treatments are often needed for continued benefit. Nevertheless some cases do not respond enough. Combination of photodynamic therapy and anti-VEGF therapy may be used in these recalcitrant cases.

Methods or Study Design: Two cases of CNVM secondary to age related macular degeneration retrospectively evaluated. 3 eyes of 2 patients had multiple (17–17–11) intravitreal anti-VEGF injections. Neither subretinal fluid in optic coherence tomography (OCT) nor late stage hyperfluorescence in fundus fluorescein angiography (FFA) disappeared following multiple intravitreal injections. We planned photodynamic therapy and ranibizumab combination.

Results: After combination therapy both hyperfluorescence in FFA and retinal edema in OCT disappeared but some subfoveal retinal irregularity remained. Visual acuity remained same in two eyes but one eye improves two lines.

Conclusions: PDT and anti-VEGF combination may be a choice for recalcitrant CNVM cases.

Keywords: CNVM, Combine, Photodyanami, Ranibizumab.

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Long-Term Results of AMD Treatment with Use of Ranibizumab
Halina Wykrota, Krzysztof Trzciakowski
OPTOMED, Katowice, Poland

Introduction: Years of trials of treating the wet form of AMD resulted in the development and introduction into clinical practice the VEGF-blocking drugs.

Methods or Study Design: Ranibizumab was administered in intravitreal injections that are resumed on the base of the VA and OCT follow ups. The longest follow-up period was 8 years. We are aiming to present the clinical examples including OCT follow-up images of patients with neovascular AMD treated effectively with the injections of intravitreal ranibizumab in the long term of observation.

Results: The positive effect of the treatment includes not only the stabilization of visual acuity but also visual acuity improvement maintained in the observation period lasted up to 8 years. In good responders the rate of needed injections was 4 to 5 per year. In our material of several thousand injections we have observed minimum number of adverse drug reactions and no serious adverse drug reactions.

Conclusions: Among the drugs currently available, ranibizumab has the strongest efficacy and safety evidences, proved by a large number of clinical studies and clinical practice.

Keywords: AMD, Anti-VEGF Treatment, Ranibizumab.
Evaluation of Choroidal Thickness in Age Related Macular Degeneration Using EDI OCT
Selman Belviranli¹, Nazmi Zengin², Gunhal Satirtav³, Ismail Dogru³
¹Karaman State Hospital, Karaman, Turkey; ²Necmettin Erbakan University Meram Medical Faculty, Konya, Turkey; ³Aksehir State Hospital, Konya, Turkey

Introduction: The aim of this study was to evaluate the change of choroidal thickness with age and choroidal thickness in age related macular degeneration (AMD).

Methods or Study Design: 178 eyes of 90 cases with AMD (AMD group) and 204 eyes of 102 cases older than 20 years without any chorioretinal pathologies (control group) were included. Choroidal thickness was measured at the subfoveal region with Spectralis® OCT device using EDI technique. Statistical analysis of the data was performed using the SPSS 17.0 software and P < 0.05 was considered statistically significant.

Results: In both control and AMD groups, subfoveal choroidal thickness (SFCT) showed a statistically significant negative correlation with age (R = –0.576 and R = –0.362 respectively). There was no difference in SFCT between genders in both groups. SFCT in AMD group (165.27 ± 62.33 μ), eyes with dry type AMD (166.95 ± 63.44 μ) and wet type AMD (162.18 ± 60.64 μ) was significantly reduced compared with the eyes in control group older than 50 years (258.60 ± 66.07 μ). There was no difference in SFCT between eyes with dry and wet type AMD. Among the eyes with dry type AMD, those with geographic atrophy had decreased SFCT (103.69 ± 37.53 μ). Among the eyes with wet type AMD, those with subfoveal scarring had decreased SFCT (142.18 ± 44.09 μ). SFCT in the eyes with advanced AMD (150.03 ± 61.25 μ) was significantly reduced compared with the eyes in early and intermediate AMD (177.49 ± 60.78 μ). SFCT in AMD patients with and without vitamin supplementation had no difference. Among the eyes with dry type AMD, SFCT had no difference between the eyes previously treated with intravitreal anti-VEGF injections and not treated.

Conclusions: Increasing age was correlated with decreasing SFCT. SFCT in eyes with AMD, both dry and wet types, was significantly reduced compared with the eyes without any chorioretinal pathologies. There was no difference in SFCT between wet and dry type AMD. SFCT was reduced in the eyes with geographic atrophy, subfoveal scarring and advanced AMD. Vitamin supplementation and intravitreal anti-VEGF injections had no effect in SFCT.

Keywords: Choroidal Thickness, EDI OCT, Age Related Macular Degeneration.

Association of Apolipoprotein E Polymorphism with Intravitreal Ranibizumab Treatment Outcomes in Age-Related Macular Degeneration
Berker Bakbak¹, Banu Turgut Ozturk¹, Ayse Gul Zamani², Saban Ganal¹, Samsal Gedik¹, Selman Yildirim¹, Suleyman Okudan²
¹Selcuk University Faculty of Medicine Department of Ophthalmology, Konya, Turkey; ²Meram Necmettin Erbakan University Faculty of Medicine, Konya, Turkey

Introduction: Genetic factors are known to influence the response to anti-VEGF treatment in exudative age related macular degeneration (AMD). The current study was conducted to investigate the association of Apolipoprotein E (Apo E) polymorphism with the treatment response to ranibizumab for exudative AMD.

Methods or Study Design: One hundred nine eyes (109 patients, 59.6% male, mean age 63.84 ± 7.22 years) treated with intravitreal ranibizumab injections were included in the analysis. Smoking status and lesion type were recorded. Patients were categorized into three groups according to visual acuity (VA) improvement at six month after the first injection: VA improvement >5 Early Treatment Diabetic Retinopathy Study (ETDRS) letters (Group 1); VA change between 5 ETDRS letters gain and 5 ETDRS letters loss (Group 2); VA loss >5 ETDRS letters (Group 3). The frequency of APO E gene polymorphisms were evaluated in each group.

Results: Both smoking status and lesion type showed no significant association with visual acuity change (p = 0.102, p = 0.636, respectively). A lower frequency of the e2 and a higher frequency of e4 were observed in Group 1 (2.9%, 25.7%, respectively). Visual acuity change with more than 5 ETDRS letters was significantly associated with presence of e4/e4 or e3/e4 genotype (p = 0.024).

Conclusions: This study demonstrated that carriers of APO E4 polymorphism genotype show much improvement in visual acuity after treatment with ranibizumab in exudative AMD. APO E polymorphism identification may be used to monitor the response to Anti-VEGF treatment in exudative AMD.

Keywords: APOE; Apolipoprotein E, Ranibizumab, Age-Related Macular Degeneration, AMD.
**Diabetic Retinopathy**

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The Short Term Effect of Intravitreal Ranibizumab on Diabetic Macular Edema

Sabihaa Güngör Kobat, Fatma Utku Celiker

Firat University, Elazig, Turkey

**Introduction:** The purpose of this study is to evaluate the effect of intravitreal ranibizumab on visual acuity and central macular thickness (CMT) in diabetic macular edema.

**Methods or Study Design:** This study includes 70 eyes with diabetic macular edema. Initially 3 monthly consecutive doses of ranibizumab were administered and the patient received additional intravitreal drug if necessary during the monthly controls. The mean baseline and the last BCVAs and the CMT were obtained.

**Results:** The mean follow up time was 9.42 ± 2.36 months and the mean number of treatment was 3.42 ± 0.91. The mean BCVA during baseline was 0.84 ± 0.38 (LogMAR) and it was 0.82 ± 0.40 during the last visit and the difference was not statistically significant. The mean baseline CMT was 514 ± 109.97 μm and it was 440 ± 124.38 μm during the last visit. However, the difference was statistically significant.

**Conclusions:** It was concluded that although ranibizumab didn’t achieved a functional recovery, in short term it had a significant effect on CMT.

**Keywords:** Diabetic Macular Edema, Ranibizumab.

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Intraocular Cytokines and Growth Factors Imbalance in Pathogenesis of Proliferative Diabetic Retinopathy

Alexander Trunov¹, Dmitry Chernykh², Valery Chernykh²

¹Novosibirsk Branch of S. Fyodorov Eye Microsurgery Federal State Institution, Scientific Center of Clinical and Experimental Medicine of Siberian Branch of Russian Science Medical Academy, Novosibirsk, Russia; ²Novosibirsk Branch of S. Fyodorov Eye Microsurgery Federal State Institution, Novosibirsk, Russia

**Introduction:** The purpose of the study was to investigate vitreous concentrations of a number of pro-/anti-inflammatory and angiogenic factors and their possible interactions in activation of inflammation and proliferation in proliferative diabetic retinopathy (PDR).

**Methods or Study Design:** Vitreous samples from 38 eyes with PDR (study group) and 25 eyes without diabetes mellitus and signs of DR (control group) were collected. Mean age in the study group – 50.5 ± 3.2 years (16 males and 22 females), in the control group – 53.5 ± 2.6 years (13 males and 12 females). Vitreous concentrations of vascular endothelial growth factor (VEGF), pigment epithelium derived factor (PEDF), monocyte chemotactic protein-1 (MCP-1), interleukin (IL) -4, -6, -8, 10, -17A and secretory immunoglobulin A (sIgA) were simultaneously measured using enzyme-linked immunoassay.

**Results:** Vitreous levels of VEGF, PEDF, IL-17A, IL-6, IL-8, IL-4 and sIg A were significantly (p < 0.05) higher in eyes with PDR compared to control. The concentration of VEGF was more than 17 times higher than in control, and the concentration of PEDF was not changed oppositely and was also higher (1.45 times) compared to control, that may indicate disturbances of compensatory mechanisms in angiogenesis regulation in PDR. Significant (p < 0.05) positive correlations were observed between vitreous concentrations of VEGF and IL-17A (r = 0.48), VEGF and IL-8 (r = 0.48), VEGF and IL-4 (r = 0.51), PEDF and IL-17A (r = 0.48), PEDF and IL-8 (r = 0.59), MCP-1 and PEDF (r = 0.72), MCP-1 and IL-8 (r = 0.45), IL-4 and IL-17A (r = 0.65), IL-4 and IL-8 (r = 0.71), IL-8 and IL-17A (r = 0.59).

**Conclusions:** Significantly raised levels of inflammatory and proliferative factors and numerous positive correlations between them demonstrate a significant role of activation of vascular proliferation and local inflammation in pathogenesis of PDR and the link between the inflammatory processes and vascular proliferation in PDR.

**Keywords:** Proliferative Diabetic Retinopathy, Pathogenesis.

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Comparison of Modified Grid Laser & Intravitreal Ranibizumab, and Mild Macular Laser & Intravitreal Ranibizumab in the Treatment of Diabetic Macular Edema

Mustafa Guzey¹, Fatih Mehmet Adibelli¹, Gonul Altun²

¹Harran University School of Medicine, Department of Ophthalmology, Sanliurfa, Turkey; ²M. Akif Inan Education and Research Hospital, Department of Ophthalmology, Sanliurfa, Turkey

**Introduction:** Once a patient develops diabetic macular edema (DME), the gold Standard treatment in recent decades has been macular photocoagulation which reduces the risk of visual loss. In recent years, alternative or adjunct medical treatments for DME have been studied. The objective of this study was to compare short term results of two modalities in the treatment of DME; the modified grid photocoagulation & 0.5 mg intravitreal Ranibizumab (MGP & IVR) and mild macular photocoagulation & 0.5 mg intravitreal Ranibizumab (MMP & IVR).

**Methods or Study Design:** MGP is a modified ETDRS direct-grid photocoagulation technique and MMP is a mild macular laser technique in which small burns are placed throughout the macula using a 532 nm Frequency Doubled Nd: YAG laser. 56 subjects with DME were assigned randomly to receive combined treatment by either the MGP & IVR (32 eyes) or MMP & IVR (36 eyes) modality. Study groups matched for Spectral Domain Optical Coherence Tomography (OCT)-based central foveal thickness values. Primary outcome measure was change in central foveal thickness at 2 months follow-up.

**Results:** Both of the modalities showed significant reductions in macular edema and there were no statistically significant differ-
Efficacy and Safety Profile of Ranibizumab Versus Laser Photocoagulation in Patients with Diabetic Macular Edema. Re-Des Study

M.I. López-Gálvez¹, L. Arias², M. Roura³

¹Instituto de Oftalmología Aplicada, IOBA. Universidad de Valladolid, Valladolid, Valladolid, Spain; ²Servicio de Oftalmología, Hospital Universitari de Bellvitge, Barcelona, Barcelona, Spain; ³Departamento Médico. Novartis Farmacéutica S.A., Barcelona, Barcelona, Spain

Introduction: The aim was to determine whether there were differences in mean change in best corrected visual acuity (BCVA) of treatment with ranibizumab 0.5 mg versus laser photocoagulation (LP) over 12 months in patients with diabetic macular edema (DME).

Methods or Study Design: Multicentre, randomised, and open-label controlled trial. 16 specialist sites in Spain participated. Patients were randomised to intravitreal injection of ranibizumab (0.5 mg) with 3 loading doses and then pro-re-nata treatment or LP (ratio 1:1). Inclusion criteria were: ≥18 years old, diabetes mellitus type 1/2, and altered visual acuity (VA) due to DME. The study eye must have had a BCVA = 78–25 letters, and central retinal thickness (CRT) = 250 μm.

Results: 83 patients were randomized (40 ranibizumab, 43 LP). Demographic baseline characteristics were comparable in both groups. Most patients were men (59.8%), with a mean (SD) age of 63.5 (9.4) years. Nine patients (22.3%) with ranibizumab and 11 (25.6%) with LP discontinued the study, mainly due to protocol deviations (56.6% ranibizumab, 36.4% LP) and adverse events in LP (36.4%). At month 12, patients treated with ranibizumab showed a trend to a better BCVA change vs LP [8.7 (9.1) vs 4.0 (10.6) letters, p = 0.0778], and a higher percentage of BCVA >73 letters (54% vs 24%, respectively, p = 0.0090). CRT at month 1 exhibited a significant reduction with ranibizumab [-55.2 (62.2) μm, p < 0.0001], not observed with LP [-21.9 (82.9) μm, p = 0.3606]. The mean (SD) number of treatments received were 5.3 (2.8) injections of ranibizumab and 2.1 (1.2) LP. About 50% of patients in each group had one treatment-emergent adverse event, 3 in ranibizumab and 2 in LP were serious.

Conclusions: Ranibizumab compared to LP showed a better improvement in the BCVA at month 12 and a significant CRT reduction at month 1 in patients with DME. The safety profile of ranibizumab was consistent with other clinical trials.

Keywords: Modified Grid Laser, Mild Macular Laser, Ranibizumab, Diabetic Macular Edema.

Abstracts
The Use of Subthreshold Diode Micropulse Laser 532 nm (SDM) in the Treatment of Diabetic Macular Edema

Doukas Dardabouni1, Ihsan Yilmaz2, Irfan Perente2, Maria Patsiamanidi1, Panagiotis Nanos1, Magda Triantafylla1, Kostas Kyratzoglou1, Konstantinos Ioannakis1

1Medical retina Unit, Department of Ophthalmology, University Hospital of Alexandroupolis, Evros, Greece; 2Beyoglu Eye Training and Research Hospital, Istanbul, Turkey

Introduction: To evaluate visual acuity (VA) and central macular thickness (CMT) using SLO-OCT in patients with diabetic macular edema, before and after treatment with 532 nm SMD and indicate it as a limited destructive to retinal tissues procedure.

Methods or Study Design: This study included 57 eyes of 42 patients treated with SMD-532 nm laser as monotherapy with focal and or grid pattern and VA and CMT were recorded in 3 and 6 months. Retreatment was performed, with 3 months interval if needed, upon investigator’s decision. The burn power parameters were estimated in the same way in all patients.

Results: The follow-up period was 6-months. In 22 (40%) eyes VA increased (>1 line in Snellen chart), while remained stable in 18 (31%) and worsened in 17 (29%) eyes, while in the same eyes VA remained stable. The mean reduction in CMT was approximately 105 ± 32 μm at a 6-month follow-up and there were no visible laser induced retinal scars turned up.

Conclusions: 532 nm SMD appears to be an effective approach in management of diabetic macular edema. Our results confirm its contribution in vision improvement-stabilization and CMT reduction with substantially less retinal damage.

Keywords: Diabetes Mellitus, Macular Edema, Diode Laser.

Vitrectomy with Intravitreal Triamcinolone Acetonide Followed by Retinal Laser Photocoagulation for Nontractional Diabetic Macular Edema

Yavuz Bardak, Hatun Handan Bardak, Mustafa Muhterem Ekim
Career Eye Hospital, Isparta, Turkey

Introduction: The efficacy and safety of vitrectomy with triamcinolone acetonide (IVTA) injection followed by laser photocoagulation (LP) for nontractional, refractory diabetic macular edema (DME) was investigated in this study.

Methods or Study Design: Nine eyes of nine diabetic patients (F/M:5/4, mean age 64.8) who were diagnosed as nontractional DME, refractory [central macular thickness (CMT) >300 micron] to three or more sequential anti-VEGF (bevacizumab/ranibizumab) injections and moderate vitreous hemorrhage avoiding effective peripheral and macular LP were included in this retrospective study. Patients underwent combined vitrectomy, internal limiting membrane peeling with IVTA (4 mg) and 1 month later, followed by Argon LP (macula and peripheral retina). The best-corrected visual acuity (BCVA), intraocular pressure (IOP) and CMT were measured at baseline and one, three, and six months (respectively) after vitrectomy.

Results: The mean BCVAs (Log MAR) were 2.44 ± 0.63, 1.54 ± 0.88, 1.12 ± 0.54, and 1.12 ± 0.32, respectively. The mean IOP (mm Hg) were 17.25 ± 1.85, 18.32 ± 2.12, 17.54 ± 1.95, and 17.63 ± 1.59 respectively. The mean CMTs (microns) were 446.5 ± 68.6, 284.7 ± 65.8, 212.4 ± 80.1, and 242.6 ± 65.3 respectively. The values of both BCVA and CMT at one, three, and six months were significantly improved from baseline (p < 0.05). There was not any significant change for IOP for all controls with respect to baseline (p > 0.05).

Conclusions: Vitrectomy combined with IVTA and LP is safe and effective procedure for nontractional DME refractory to anti-VEGF therapy.

Keywords: Bevacizumab, Triamcinolone Acetonide, Diabetic Macular Edema.
**T Lymphocytes in Vitreous of Patients with Proliferative Diabetic Retinopathy Reflect the Activity of Disease**

Maja Urbancic, Veronika Kloboves Prevodnik, Mojca Globocnik Petrovic

1University Medical Centre Ljubljana, Eye Hospital, Ljubljana, Slovenia; 2Institute of Oncology, Ljubljana, Slovenia

**Introduction:** Diabetic retinopathy has features of chronic inflammation. The purpose of our study was to investigate inflammatory cells in vitreous from patients with proliferative diabetic retinopathy (PDR) using flow cytometric analysis.

**Methods or Study Design:** Thirty-seven patients with PDR requiring vitrectomy because of macular traction or tractional retinal detachment were enrolled in the study (n = 37), and twenty patients with macular hole (MH) formed the control group (n = 20). Samples of vitreous and peripheral venous blood were obtained at the beginning of vitrectomy and analyzed by flow cytometry.

**Results:** T lymphocytes were found in vitreous from patients with PDR and CD4/CD8 (T helper/T cytotoxic) ratio was higher in vitreous (median 3.95) compared to blood (median 1.9; p < 0.0001). No B lymphocytes were detected in vitreous. The percentage of histiocytes/macrophages was significantly higher in vitreous (median 60.1) in comparison with blood (median 5.1; p < 0.0001). No lymphocytes were detected in vitreous of the control group. There were more T lymphocytes in vitreous from patients with active PDR compared to inactive PDR.

**Conclusions:** T lymphocytes are found in vitreous from patients with PDR and reflect the activity of PDR. Higher CD4/CD8 ratio in vitreous compared to blood from patients with PDR is consistent with local inflammatory response in PDR.

**Keywords:** Flow Cytometry, Proliferative Diabetic Retinopathy, Vitreous, Inflammatory Cells, T Lymphocytes.

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**Anti-VEGF as Rescue Therapy After Laser Photocoagulation in Diabetic Macular Edema – Three Years Follow Up**

Vladišlav Dzinic, Ana Oroš, Miroslav Dzinic

1Clinical Center of Vojvodine, University Eye clinic, Novi Sad, Serbia and Montenegro; 2Clinical Center of Vojvodine, University Eye clinic, Novi Sad, Serbia and Montenegro; 3Private Eye Clinic Dzinic, Novi Sad, Serbia and Montenegro

**Introduction:** Purpose of this study is to show the results of intravitreal anti-VEGF (bevacizumab) therapy in patients with diabetic retinopathy (DR) and diabetic macular edema (DME) who were previously treated with laser photocoagulation, in every day clinical setting.

**Methods or Study Design:** during 36 months period 21 patients (24 eyes) were followed. Mean age was 66 ± 9, 10 male and 11 female. All patients were previously treated with laser photocoagulation therapy either pan retinal and/or macular (focal or grid) photocoagulation. Visual acuity (VA) testing (Snellen chart), biomicroscopy, ophthalmoscopy, IOP and SD-OCT were conducted at baseline and follow up visits. In all patients residual DME was found on OCT, and after performing fluorescein angiography (FA) further laser treatment was not indicated. All patients received intravitreal injection 1.25 mg (0.05 ml) of bevacizumab, during initial treatment and retreatment on the PRN basis. All patients used local non steroid anti-inflammatory therapy (NSAID) 4–6 weeks after injection. Follow up visits were conducted at the first day after injection and every 4–8 weeks after. Last follow up visit was 36 months after injection.

**Results:** Mean VA after laser photocoagulation and before treatment was 0.2 ± 0.16 and average macular thickness 414 ± 112 μm. After 18 average VA was 0.31 ± 0.16 and macular thickness 370 ± 77 μm. The average number of injection per patient was 1.68 (2.07 for the first 18 months and 1.29 for the second). At the last follow up average VA was 0.34 ± 0.19 and macular thickness 355 ± 80 μm. Improvement was achieved in 14 eyes (58%), stabilisation in 7 eyes (29%) and 3 eyes (13%) worsen.

**Conclusions:** According to our study intravitreal application of bevacizumab have beneficial effects in patients with residual diabetic macular edema, despite small average number of injections. After complete laser photocoagulation anti-VEGF is one of the treatment options for improvement and stabilisation in VA and macular thickness (p < 0.01) during follow up period.

**Keywords:** Diabetic Macular Edema, Anti-VEGF, Bevacizumab, Laser Photocoagulation.
vision loss requiring IVT-AFL rescue showed substantial mean gains from initiation of rescue therapy to W52, ie, gaining back most vision lost during laser therapy. However, overall mean changes in these groups from original baseline to W52 were -0.8 letters (VIVID-DME) and 0.5 letters (VISTA-DME). Cataract (VIVID-DME) and vitreous haemorrhage (VISTA-DME) were the most common ocular SAEs in study eyes of patients receiving IVT-AFL (both 2 patients [0.7%]).

Conclusions: Overall, more patients receiving initial laser required rescue therapy than those receiving initial IVT-AFL. Rescue IVT-AFL therapy provided additional visual benefits in patients in the laser control group; however, due to visual losses occurring before rescue therapy was given, these patients did not achieve the same visual gains as those receiving IVT-AFL from baseline, suggesting earlier therapy is preferable in patients with DME.

Keywords: Diabetic Macular Edema, Rescue Therapy, Diabetic Retinopathy, Anti-Vascular Endothelial Growth Factor, Aflibercept.

155 Intravitreal Dexamethasone Implant for Persistent Diabetic Macular Edema
Cengiz Alagoz, Hasan Gunes, Okkes Baz, Kemal Yuksel, Ilhan Yilmaz, Ahmet Taylan Yazici, Ahmet Demirok
Beyoglu Eye Training and Research Hospital, Istanbul, Turkey

Introduction: The aim of this study was to assess the functional and anatomical results of intravitreal dexamethasone implantation in patients with persistent diabetic macular edema.

Methods or Study Design: The data of 17 eyes of 16 patients (7F/9M, mean age 62 years) receiving intravitreal dexamethasone implantation for diabetic macular edema persisting despite a previous treatment were reviewed retrospectively. Corrected Snellen visual acuity (CVA), intraocular pressure (IOP) as measured by Goldmann applanation tonometry, biomicroscopic findings and dilated fundus examination findings at baseline and follow-ups were recorded from files. Central macular thickness (CMT) values were recorded from optical coherence tomography.

Results: Mean CVA at baseline (0.24 ± 0.18) improved to 0.31 ± 0.18 (p = 0.076) at 1 month, 0.35 ± 0.17 (p = 0.019) at 2 months, 0.32 ± 0.21 (p = 0.003) at 3 months, 0.31 ± 0.21 (p = 0.007) at 4 months, 0.37 ± 0.18 (p = 0.127) at 5 months and 0.37 ± 0.20 (p = 0.042) at 6 months postoperatively. Mean CMT at baseline (605 ± 226 μm) reduced to 355 ± 138 μm (p = 0.013) at 1 month, 313 ± 99 μm (p = 0.003) at 2 months, 329 ± 107 μm (p = 0.004) at 3 months, 363 ± 121 μm (p = 0.008) at 6 months, 368 ± 99 μm (p = 0.012) at 5 months and 390 ± 126 μm (p = 0.018) at 6 months postoperatively. CMT reduced to <250 μm in 5 (29%) eyes and to <300 μm in 9 (53%) eyes during the follow-up. At 4-month to 5-month follow-up 1 eye received re-dexamethasone implantation, and 3 eyes with IOP elevation received an anti-VEGF injection for recurrent macular edema. Six (35%) eyes developed IOP elevation (>21 mm Hg) that was medically controlled.

Conclusions: Despite the significant CMT decrease observed throughout the study period, CVA improved only at 2- and 3-month follow-ups after the dexamethasone implant. Additional injections were required in eyes with edema recurrence at 4- to 5-month follow-ups.

Keywords: Persistent Diabetic Macular Edema, Dexamethasone Implant.

156 (Winning Abstract Oral Presentation) Ranibizumab in Diabetic Macular Edema: A Review of Arterial Thromboembolic Events in Long-Term Controlled Clinical Trials
Focke Ziemssen1, Abosede Cole2, Philippe Margaron3, Christine Thorburn4, Philip Watson5, Ron Hashmonay6, Clare Bailey2
1Centre for Ophthalmology, Eberhard-Karls-University of Tuebingen, Tuebingen, Germany; 2Bristol Eye Hospital, Clinical Research Unit, Lower Maudlin Street, Bristol, United Kingdom; 3Novartis Pharma AG., Basel, Switzerland; 4Novartis Pharmaceuticals UK Ltd, Frimley Business Park, Surrey, United Kingdom

Introduction: Anti-vascular endothelial growth factor (anti-VEGF) agents have been extensively used for diabetic macular edema (DME) management in recent years. Long-term use of anti-VEGFs may be associated with an increased risk of arterial thromboembolic events (ATEs). Ranibizumab, (Fab fragment with no Fc-portion) has very low systemic exposure. Its safety profile is well-characterized in DME based on several clinical trials. Here, we review the incidence of ATEs in DME studies with ranibizumab treatment up to 36 months.

Methods or Study Design: Retrospective pooled analysis of ATEs from RESOLVE, RESTORE, REVEAL, RESTORE-core+extension and RETAIN studies in DME. We used an inclusive search to capture all possible myocardial and non-myocardial (including but not limited to cerebrovascular accidents, transient ischemic attacks) ATEs. Separate analyses were conducted for 12-month pooled controlled dataset from RESOLVE, RESTORE and REVEAL (pro-re-nata; PRN); 24-month dataset from RESTORE-core+extension and RETAIN (PRN and treat-and-extend); 36-month dataset from RESTORE-core+extension (PRN). Patients received ranibizumab 0.5 mg in all studies, except RESOLVE which included 0.3 mg/0.5 mg/0.6 mg/1.0 mg doses.

Results: 12-month dataset: total patients with ATEs were similar for ranibizumab (10; 2.9%) and control (11; 3.8%). For ranibizumab (n = 350), six patients each (1.7%) had myocardial and non-myocardial ATEs, while in control (n = 287), seven (2.4%) and five (1.7%) patients had myocardial and non-myocardial ATEs. Relative risk (ranibizumab/control) for both ATEs was 1.24-month dataset (N = 327): four patients (1.2%) had myocardial and 18 (5.5%) had non-myocardial ATEs. ATE rate/year: 3.2% (total), 0.6% (myocardial) and 2.8% (non-myocardial). 36-month dataset (N = 83): four (4.8%) patients had ATEs, all non-myocardial. ATE rate/year: 1.6%.

Conclusions: ATE rates were low and similar between ranibizumab and control arms from the pooled studies. Yearly ATE rates were stable after treatment. This analyses suggest that ranibizumab 0.5 mg is not associated with systemic ATEs. The cumulative safe-
ty profile of ranibizumab in DME was consistent with its known positive risk-benefit profile.

**Keywords:** Ranibizumab, Arterial Thromboembolic Events, Diabetic Macular Edema.

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**Baseline Visual Acuity Strongly Predicts Visual Acuity Gain in Patients with Diabetic Macular Edema Following Anti-VEGF Treatment: A Cross Trial Comparison in Dme**

Sohba Sivaprasad1, Pravin U. Dugel2, Jost Hillenkamp3, Philippe Margaron4, Jessica Vögeler5, Andreas Wenzel6, Ron Hashmonay6, Pascale Massin8

1NIHR Moorfields Biomedical Research Centre, Moorfields Eye Hospital, London, United Kingdom; 2Retinal Consultants of Arizona, AZ 85014, Phoenix, United States; 3Department of Ophthalmology, University Medical Center Schleswig-Holstein, Kiel, Germany; 4Novartis Pharma AG, Basel, Switzerland; 5Novartis Pharma GmbH, Nürnberg, Germany; 6Assistance Publique des Hopitaux de Paris, Université Paris Diderot, Ophthalmology Department, Hopital Lariboisiere, Paris, France

**Introduction:** Variation in mean visual acuity (VA) improvement is observed between diabetic macular edema (DME) trials investigating the efficacy of different anti-vascular endothelial growth factor (VEGF) treatments (ranibizumab or aflibercept). This variation may be attributed to differences in study design, baseline VA, or other inclusion criteria. We conducted a retrospective analysis of clinical trials with anti-VEGFs in DME to determine if baseline VA is a predictor of VA outcome and whether VA gains across trials are comparable.

**Methods or Study Design:** Correlation analysis was performed between mean baseline VA and mean VA gain at Month 12 from 1387 DME patients across 9 randomized clinical trials. Data from RESOLVE, RISE & RIDE, RESTORE, RETAIN, DRCR.net, Da1387 DME patients across 9 randomized clinical trials. Data from RESOLVE, RISE & RIDE, RESTORE, RETAIN, DRCR.net, Da1387 DME patients across 9 randomized clinical trials. Data from RESOLVE, RISE & RIDE, RESTORE, RETAIN, DRCR.net, Da1387 DME patients across 9 randomized clinical trials. Data from RESOLVE, RISE & RIDE, RESTORE, RETAIN, DRCR.net, DME trials suggesting that individualized dosing regimens can be administered as a means of lessening treatment burden.

**Keywords:** Anti-VEGF, Diabetic Macular Edema, Plateau, Visual Acuity.

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**An Exploration of Ranibizumab Injection Frequency in Patients with Diabetic Macular Edema: A Post-hoc Analysis of the Restore and Retain Study**

João Figueira1, Philippe Margaron2, Ron Hashmonay2

1AIBILI, Azinhaga de Santa Comba Coimbra, Coimbra, Portugal; 2Novartis Pharma AG., Basel, Switzerland

**Introduction:** Considerable heterogeneity is reported in the number of injections required and patient’s response to treatment. We conducted a post-hoc analysis of the RESTORE and RETAIN studies to identify patients with a high VA response to ranibizumab treatment with fewer number of injections.

**Methods or Study Design:** In RESTORE and RETAIN, patients treated with ranibizumab pro-re-nata (PRN) with/without laser (N = 206) or alone (N = 117) who completed the 12-month study were analyzed. BCVA and number of ranibizumab injections administered in the high VA response (≥10 ETDRS letter gain [RESTORE and RETAIN] or BCVA gain = 84 letters [RE- TAIN] at Month 12) subgroup were analyzed. High VA response subgroups were analyzed based upon the injection number requirement. Additionally, subgroups of patients who did not require injections after the three loading doses were analyzed.

**Results:** Overall, 39% of patients in both RESTORE (n = 81) and RETAIN (n = 46) were high VA gainers at Month 12. Amongst these patients, 24% (n = 49) and 25% (n = 29) of completers in RESTORE and RETAIN respectively required = 8 injections (mean 5.1 ± 1.8 and 5.5 ± 1.7) for a VA gain of 15.3 ± 5.2 letters and 13.7 ± 5.1 letters at Month 12. Over 35% (n = 73) of patients in RESTORE did not require any injection at Month 3, and 26% (n = 55) at both Months 3 and 4. This latter subgroup received 4.3 ± 1.9 injections on average, or about one injection in the remaining 7 months to achieve a gain of 9.0 ± 8.5 letters, compared with a mean BCVA gain of 7.5 ± 8.4 letters for 7.2 ± 2.8 injections for all completers.

**Conclusions:** The current analysis showed that over 25% of patients in both RESTORE and RETAIN achieved high VA response with few injections in the first year of treatment. Furthermore, a quarter of the patients in RESTORE did not need a 4th and 5th loading injection. These results support individualized treatment in DME.

**Keywords:** Diabetic Macular Edema, Ranibizumab, RESTORE Study, RETAIN Study, Visual Acuity.
Evaluation of Ocular Pulse Amplitude and Choroidal Thickness in Diabetic Macular Edema

Yuksel Tutan, Tuba Kara Akyuz, Emre Guler, Fatma Betul Guragaç
Turgut Ozal University Medical Faculty Department of Ophthalmology, Ankara, Turkey

Introduction: The aim of this study is to evaluate the ocular pulse amplitude (OPA) and subfoveal choroidal thickness (SFCT) in patients with diabetic macular edema (DME) and healthy subjects.

Methods or Study Design: 34 patients (12 male and 24 female) who had type 2 diabetes mellitus with DME and 34 age-gender matched healthy subjects (13 male and 21 female) were included in this study prospective study. The intraocular pressure (IOP) and OPA were measured with Dynamic contour tonometer (Pascal OPA) and were measured with Cirrus HD-OCT (Carl Zeiss Meditec). The choroidal thickness at 1500 μm nasal and 3000 μm temporal to the central fovea was also measured. SFCT was measured using the Cirrus HD-OCT (Carl Zeiss Meditec). The choroidal thickness at 1500 μm and 3000 μm nasal and temporal to the central fovea was also measured. Right eye of each subject was selected for analysis.

Results: The mean IOP values were 18.4 ± 3.5 mm Hg and 17.1 ± 2.1 mm Hg in DME patients and healthy controls respectively. IOP values did not show significant difference between the groups (p = 0.091). The mean OPA values in patients with DME (2.58 ± 0.96) and controls (3.52 ± 1.03) were statistically different (p < 0.001). The mean SFCT value was 273.5 ± 30.2 μm in the eyes with DME and 321.4 ± 36.5 μm in the control group. The difference was statistically significant (p < 0.001). In both groups, no significant correlation was found between OPA and choroidal thickness measurements. The IOP showed a significantly positive correlation with OPA in both DME (p = 0.002, r = 0.526) and controls (p = 0.004, r = 0.483).

Conclusions: The current study suggests that both pulsatile choroidal blood flow and choroidal thickness are decreased in patients with DME.

Keywords: Diabetic Macular Edema, Ocular Pulse Amplitude, Choroidal Thickness.

Risk Reduction of Macular Edema with Nepafenac (0.1%) Post-Cataract Surgery in Patients with Diabetic Retinopathy: Efficacy and Safety from 2 Multicenter Trials

Ayala Pollack1, Dana Sager2, Rishi Singh3
1Kaplan Medical Center, Rehovot, Israel; 2Alcon Research Ltd., Fort Worth, Tx, United States; 3Cleveland Clinic, Cleveland, Oh, United States

Introduction: Nepafenac 0.1% was evaluated in two prospective, multicenter, randomized, double-masked, parallel-group, vehicle-controlled studies for risk reduction of macular edema (ME) and maintenance of best corrected visual acuity (BCVA) post-cataract surgery in patients with nonproliferative diabetic retinopathy.

Methods or Study Design: Patients were randomized to receive nepafenac or vehicle TID from Day 1 to Day 90 post-surgery. The primary endpoint was percentage of patients who developed ME (defined as = 30% increase in central subfield macular thickness (CSMT) from baseline at any postoperative visit). Secondary and additional endpoints included percentage of patients with BCVA decrease of >5 ETDRS letters from day 7 to 90, decrease of >10 letters from day 7 to any visit, and safety.

Results: Of 251 [Study 1] and 160 [Study 2] patients, significantly fewer nepafenac-treated patients developed ME within 90 days post-surgery (3.2% versus 16.7%; p < 0.001 [Study 1]; 5.0% versus 17.5%; p = 0.012 [Study 2]). At Day 90, mean CSMT increase was lower with nepafenac-treatment (8.6 μm, 95% CI [5.9, 11.4] [Study 1] and 11.1 μm, 95% CI [6.0, 16.3]-Study 2), than vehicle-treatment (29.4 μm, 95% CI [20.6, 38.3]-Study 1 and 39.3 μm, 95% CI [28.7, 49.8]-Study 2). In both studies, fewer nepafenac-treated patients experienced BCVA decrease of >5 letters from Day 7 to Day 90/exit visit (11.5% versus 2.5% respectively; p = 0.006 [Study 1] and 13.8% versus 6.3%, respectively; p = 0.120 [Study 2]). In those that developed ME within 90 days, 48% [Study 1] and 50% [Study 2] vehicle-treated patients lost >10 letters of BCVA at 1 postoperative visits after day 7, compared with 0% of nepafenac-treated patients. No new safety issues were identified after extended use (up to 90 days).

Conclusions: Nepafenac demonstrated a statistically significant reduction in risk of ME post-cataract surgery in diabetic retinopathy patients. Maintenance of visual acuity was another benefit. No new safety concerns were identified with extended use.

Keywords: Nepafenac, Diabetic Retinopathy, Macular Edema.
More nepafenac-treated patients had BCVA improvements of = 15 letters from pre-operative baseline to Day 90 (nepafenac: 55.2%, vehicle: 34.9%; P = 0.001). More nepafenac-treated patients showed an improvement of = 15 letters in BCVA from pre-operative baseline to Day 14 and maintained the improvement at each time point through Day 90 (nepafenac – 38.4%, vehicle – 22.2%; P = 0.006). Fewer nepafenac-treated patients experienced BCVA decreases of >10 letters from Day 7 to each post-operative visit (0.8% versus 9.5%, P = 0.014, 2.4% versus 14.3%, P = 0.003, 4.8% versus 11.9%, P = 0.05 and 5.6% versus 20.6%, P < 0.001 at Day 14, 30, 60, 90 respectively).

**Conclusions:** Nepafenac demonstrated a significant benefit in improvement and maintenance of BCVA compared to vehicle. Fewer patients in nepafenac group had loss of >10 letters from Day 7 visit at each subsequent postoperative visit.

**Keywords:** Nepafenac, Diabetic Retinopathy, Macular Edema.

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**Comparison of Subfoveal Choroidal Thickness in Diabetic Patients with/without Macular Edema**

Erkan Celik1, Burcin Cakir1, Emine Dogan1, Elib Betul Turkoğlu2, Gursoy Alagoz2

1Sakarya University Medical Education and Research Hospital, Sakarya, Turkey; 2Antalya Akdeniz University Medical Education and Research Hospital, Antalya, Turkey

**Introduction:** Diabetic patients have many pathological changes in their choroid like increased tortuosity, dilatation and non-perfusion areas. Recent studies have analyzed choroidal structure and histopathological changes in diabetes using spectral domain optical coherence tomography (EDI OCT). The aim of this study was to compare subfoveal choroidal thickness (CT) in diabetic patients with/without macular edema (ME).

**Methods or Study Design:** Twenty-four eyes with diabetic ME (Group I) and 22 eyes with diabetic retinopathy without ME (Group II) were enrolled. All patients underwent full ophthalmic examination and EDI OCT (Cirrus, Carl Zeiss Meditec Inc, Dublin, CA). The CT was defined as the vertical distance from the hyperreflective line of the Bruch’s membrane to the outermost hyper-reflective line, as measured in micrometers. Patients with previous laser photocoagulation and/or intravitreal injection were excluded.

**Results:** The central foveal retinal thickness was significantly different between groups (Group I: 364.05 ± 30.34 μ, Group II: 237.12 ± 31.48 μ). The CT measurements were not significantly different between groups (Group I: 181.25 ± 66.42 μ, Group II: 186.12 ± 70.78 μ).

**Conclusions:** We found that diabetic ME did not influence CT. The role of choroid in the pathophysiology of DR needs to be adequately investigated.

**Keywords:** Choroidal Thickness, Diabetic Retinopathy, Macular Edema.

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**Enhanced Depth Image Oct in Diabetic Eyes. A Multifactorial Approach**

Dimitrios Exarchopoulos, Christos Kalogeropoulos, Eleni Christodoulou, Maria Stefanitou

University Hospital of Ioannina, Ophthalmology Department, Ioannina, Greece

**Introduction:** To examine choroidal thickness (CT) in diabetic eyes and correlate it with diabetes duration, Diabetic Retinopathy severity, demographic, functional and anatomical factors and as well as the kind of treatment.

**Methods or Study Design:** 88 eyes of 50 diabetic patients (29 males/21 females) with a mean age of 68.8 ± 8 years and 23 eyes of 20 age matched healthy individuals were examined in this retrospective study. Diabetes and demographic parameters were recorded. All eyes underwent OCT with a SD-OCT machine updated with Enhanced Depth Image Software (EDI). CT was measured from the posterior border of RPE to the choroid/sclera junction at 500 μm intervals up to 2.500 μm temporal and nasal to the fovea. Cube average macular thickness (CAT) was measured. DR stage (No DR, BDR, Severe NPDR and PDR), BCVA and treatment (laser or Anti-VEGF) were also noted.

**Results:** Mean CT was 199.8 ± 44 μm in healthy eyes versus 192 ± 50 μm in diabetic eyes (P = 0.324) and slightly larger in eyes with PDR (211 ± 49 μm, P > 0.05) versus the other DR stages. Mean CT was slightly lower in eyes undergone laser or Anti-VEGF injections (187.6 ± 43, P > 0.05 and 189 ± 52 μm, P = 0.64 respectively). A mild positive correlation between CT and CAT was found in diabetic eyes (Pearson correlation = 0.149, P = 0.166) and a negative one concerning CT and BCVA (Pearson correlation = -0.172, P = 0.110). CT correlated positively with HbA1c (Pearson correlation = 0.196, P = 0.067). Average CT was found 194 ± 53 μm in eyes with DME and 187 ± 40 μm in those without DME (P = 1,000). In diabetic eyes, choroid seems to be thinnest nasally and its thickest region is placed subfoveally.

**Conclusions:** Choroid presented thinner in diabetic eyes and among them those with PDR presented a slightly larger CT versus the other DR stages. DME seems to accompany a slightly thicker choroid. Choroidal vascular status is affected by multiple structural and pathologic factors in diabetic eyes.

**Keywords:** Choroidal Thickness, EDI, OCT, Diabetic Retinopathy.
Rapid Response to Intravitreal Aflibercept (IVT-AFL) in Patients with Diabetic Macular Edema (DME) in the Vivid-dme and Vista-DME Trials

Monica Varano1, Jean-Francois Korobelnik2, Mariacristina Parravano3, Todd A. Katz2, Carola Metzig4

1Fondazione G.B.Bietti-IRCCS, Rome, Italy; 2Hôpital Pellegrin, CHU de Bordeaux, Bordeaux, France; 3Bayer HealthCare Pharmaceuticals, Whippany, United States; 4Bayer HealthCare, New Jersey, Germany

Introduction: The VIVID-DME and VISTA-DME clinical trials evaluated the efficacy and safety of IVT-AFL versus macular laser photocoagulation in patients with DME.

Methods or Study Design: Patients were randomised to IVT-AFL 2 mg every 4 weeks (2q4) plus sham laser, IVT-AFL 2 mg every 8 weeks (2q8) (after 5 initial monthly doses) plus sham laser, or laser plus sham injections. Primary endpoint was change from baseline in best corrected visual acuity (BCVA) at Week 52. The current analysis further assessed early changes in BCVA from baseline during IVT-AFL or laser treatment in these trials.

Results: At Week 4 (after a single IVT-AFL injection or laser treatment), mean BCVA gains in ETDRS letters from baseline (IVT-AFL 2q4 and 2q8 versus laser) were +5.7 and +5.4 versus +0.9 in VIVID-DME and +7.0 and +6.6 versus +2.6 in VISTA-DME. In the IVT-AFL groups, a mean gain of at least 10 letters first occurred at Week 36 (2q8) and Week 44 (2q4) in VIVID-DME, and at Week 20 (2q4) and Week 28 (2q8) in VISTA-DME, but did not occur in either laser group. By Week 52, mean BCVA gains from baseline (IVT-AFL 2q4 and 2q8 versus laser) were +10.5 and +10.7 versus +1.2 (P < 0.0001) in VIVID-DME and +12.5 and +10.7 versus +0.2 (P < 0.0001) in VISTA-DME. Overall, the incidence of adverse events (AEs) was similar across the groups. Cataract (in VIVID-DME) and vitreous haemorrhage (in VISTA-DME) were the most common ocular serious AEs in study eyes of patients receiving IVT-AFL (both 2 patients [0.7%]).

Conclusions: These data demonstrate a rapid improvement in BCVA with substantial gains seen following a single IVT-AFL injection; the 2q8 regimen (following 5 initial monthly injections) appears to show similar efficacy to the 2q4 regimen. The results further indicate that IVT-AFL represents an effective and well-tolerated treatment for DME, with significant and early effects on visual outcomes.

Keywords: Anti-VEGF, Diabetic Macular Edema, Diabetic Retinopathy, Intravitreal Aflibercept, Rapid Response.

The Study of VEGF Levels in Lacrimal Fluid in the Patients with Diabetic Retinopathy, Suffering from Diabetes Mellitus 1 Type

Zhanna Zamilevna Khasanova, Aleksandr Nikolaevich Samoilov

Kazan State Medical University, Republican Clinical Ophthalmologic Hospital, Kazan, Russia

Introduction: Objective is to study the level of VEGF (VEGF-L) in lacrimal fluid (LF) in the patients with diabetes mellitus (DM) type 1 depending on a way of introduction of insulin.

Methods or Study Design: The study was conducted in 20 patients divided into 2 groups: 1st group consisted of 10 patients with insulin-using multiple subcutaneous injection (IMSI), 2nd group consisted of 10 patients with insulin-using wearable batcher: continuous subcutaneous infusion of insulin (CSIH). Lacrimal fluid sampling was held in the amount of 0.1 ml and the levels of VEGF was obtained by immune-enzyme assay using test systems (Human VEGF-A Plainm ELISA). VEGF (Vascular Endothelial Growth Factor, endothelial growth factor vessels) is a signaling protein influencing the development of the new blood vessels (angiogenesis), the survival of immature blood vessels (vascular support) and stimulating the permeability of small blood vessels.

Results: VEGF in the 1st group: 746.04 ± 78.6 pg/ml VEGF in the 2nd group: 133.8 ± 11.07 pg/ml

Conclusions: The patients of the 1st group have significantly lower VEGF levels, compared to the 2nd group. It is 133.8 ± 11.07 pg/ml respectively. The obtained data demonstrate that continuous subcutaneous infusion of insulin more effective than insulin-using multiple subcutaneous injection, and, therefore, allows to reduce the risk of development diabetic retinopathy and its severity.

Keywords: Diabetic Retinopathy, VEGF, Diabetes Mellitus 1 Type.

Ranibizumab Protects the Retina Against Ischemic Damage

Stephanie C. Joachim, Sabrina Reinehr, Gesa Stute, Carsten Theiss, Burkhard Dick

Ruhr-University Bochum, Bochum, Germany

Introduction: The goal of this study was to evaluate the effects of intravitreally injected Ranibizumab, a vascular endothelial growth factor (VEGF) inhibitor, on retinal cells in an ischemia animal model.

Methods or Study Design: Rats underwent retinal ischemia-reperfusion (I/R) and one group was treated with Ranibizumab three days later. Three weeks after I/R aqueous humor VEGF levels were measured via ELISA. H&E staining of retinal cross-sections was performed to evaluate the structure of the retinae. Retina sections were marked with Brn-3a to quantify retinal ganglion cells (RGC). Additionally, VEGF-receptor 2 and macroglia cells (GFAP) were labeled.
Results: A significant VEGF increase was detected in aqueous humor of ischemic eyes (p = 0.02), which was not noted in ischemic animals treated with Ranibizumab (p = 0.98). I/R retinas showed significantly lower RGC numbers (p = 0.001) when compared to controls than the Ranibizumab group (p = 0.20). VEGF-R2 was highly expressed in I/R retinas (p = 0.006), but not so much in Ranibizumab retinas (p = 0.43). Also, a stronger GFAP response was observed in I/R retinas (p = 0.01) than in Ranibizumab treated ones (p = 0.37).

Conclusions: Besides a lower VEGF-receptor 2 expression a RGC protection could be achieved through Ranibizumab treatment. Additionally, less gliosis occurred in treated eyes. Ranibizumab seems to protect the retina against damage in an ischemia animal model.

Keywords: Retina, Ischemia, Ranibizumab, VEGF, GFAP.

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Telemedicine Screening of Diabetic Retinopathy: Our Experience
Laura Hernandez Bel, Catalina Navarro Palop Navarro Palop, Isabel López Ibáñez
Hospital General Universitario de Valencia, Valencia, Valencia, Spain

Introduction: To determine the prevalence of diabetic retinopathy (DR) and evaluate our experience in DR screening in a study carried out between the Ophthalmology Department of the University General Hospital of Valencia and Department 9 Primary Care of Valencia by using a non-retinal mydriatic camera and telemedicine.

Methods or Study Design: A descriptive, cross-sectional study was conducted on 2,658 diabetic patients from 1 July 2011 to 1 January 2013. All patients had undergone ophthalmologic examinations, including measurement of the best-corrected visual acuity (BCVA) and intraocular pressure. Five 45° retinographies of both eyes of each patient were obtained by a general practitioner is high-risk (BCVA) and intraocular pressure. Five 45° retinographies of both eyes of each patient were obtained by a general practitioner is high-risk.

Results: In the current study, 2,658 patients (42.54% female and 57.46% male) were studied with a mean age of 64 years old. DR prevalence in patients that was explored was 53.21% with 78.87% of them having mild moderate non-proliferative DR, 5.7% severe non-proliferative DR, 0.4% proliferative DR and 15.37% diabetic maculopathy associated with any level of retinopathy.

Conclusions: We highlight the benefits of the tele-ophthalmology in screening diabetic patients to enable early diagnosis and treatment, and improving the circuit of communication between primary and specialist care.

Keywords: Diabetic Retinopathy, Telemedicine Screening, Non-Retinal Mydriatic Camera, Screening Diabetic Patients.

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Vessel Diameter Study: Intravitreal Triamcinolone Acetonide for Diabetic Macular Edema
Muhammed Mustafa Kurt, Osman Cecik, Ferhat Evliyaoglu, Murat Aslankurt, Burak Erden, Mustafa Nuri Elcioglu
Department of Ophthalmology, Okmeydani Training and Research Hospital, Istanbul, Turkey

Introduction: To determine the effect of intravitreal injection of triamcinolone acetonide on retinal vessel diameters in the treatment of diabetic macular edema.

Methods or Study Design: Thirty eyes of 30 patients (15 male, 15 female, mean age: 57.5 years, age range: 43–78 years) that were injected with intravitreal triamcinolone acetonide (2 mg/0.05 mL) for diabetic macular edema were included in the study. Non-injected fellow eyes served as control. Main outcome measures were central retinal artery equivalent (CRAE), central retinal vein equivalent (CRVE) and artery-vein ratio (AVR).

Results: Pre-injection mean CRAE (147.1 micron) decreased to 141.0 micron at 1 week and to 139.4 micron at one month (P > 0.05). Baseline CRVE (209.6 micron) decreased initially to 198.9 micron then to 198.5 micron at one week at one month, respectively (P < 0.05). Pre-injection AVR value did not change neither at one week nor at one month (P > 0.05). In control group eyes, all parameters at one week and at one month were similar to baseline values (P > 0.05, for each).

Conclusions: Intravitreal triamcinolone injection in eyes with diabetic macular edema may lead to reduction in the diameter of retinal arteries and veins.

Keywords: Triamcinolone, Macular Edema, Vessel Diameter, Diabetes.

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Short Term Intraocular Pressure and Retinal Nerve Fibre Layer Alterations After Intravitreal Ranibizumab Injection, the Efficacy of Prophylactic Anti-Glaucomatous Treatment
Yonca Atalay, Nil Irem Ucgun Zeki Fikret, Cenk Zeki Fikret, Zelilha Yazar
Ankara Numune Egitim Arastirma Hastanesi, Ankara, Turkey

Introduction: The purpose of this study is to evaluate the short term intraocular pressure (IOP) and retinal nerve fibre layer changes after intravitreal ranibizumab injections for diabetic macular edema and to determine the efficacy of anti-glaucomatous treatment.

Methods or Study Design: A total of 36 patients’ 52 eyes that received intravitreal injections of ranibizumab (0.1 mL) every month for diabetic macular edema were enrolled prospectively. While the first group (18 patients 26 eyes) didn’t receive any medication, the second group (18 patients 26 eyes) was applied topical brimonidine tartarat 0.15%, 2 hours before the injection. IOP values at baseline, 1 hour and 24 hours after the injection were mea-
sured using non-contact pneumotometry. Retinal nerve fibre layer was assessed at baseline and after the injections using optic coherence tomography (OCT).

**Results:** In the first group, the mean IOP value was 16 mm Hg. Considering three injections, the mean IOP value at the first hour was 22.4 mm Hg and 17 mm Hg after 24 hours. Mean IOP value after the first day of injection was markedly higher than pre-injection levels and the difference was statistically significant (p < 0.05). One hour after the injection, IOP levels higher than 40 mm Hg were lowered with acetazolamide (2 patients). One patient was diagnosed glaucoma and topical brimonidine treatment was initiated. In the second group the mean IOP value was 14 mm Hg. The mean IOP value was 19.5 mm Hg 1 hour after the injections and 15.2 mm Hg after 24 hours. Comparing two groups 1 and 24 hours after the injection, IOP levels were significantly higher in the first group (p < 0.05). RNFL values, optic cup volume, cup/disc ratio, neuroretinal rim were evaluated before and after the injections and the difference was not statistically significant. However, in the first group two patients’ RNFL values show attenuation in one quadrant.

**Conclusions:** Topical brimonidine treatment appears to be a safe option for the patients that will receive intravitreal ranibizumab injection.

**Keywords:** Ranibizumab, Intravitreal, Diabetic Macular Edema, Brimonidine Tartrate.

**207 Saving Sight and Creating Capacity: Outpatient Diabetic Review (OPDR) as Part of the English Diabetic Retinopathy Screening Programme**

**Aaron Thye Wang Ng, Annu Thomas, Shahzad Shafquat**
Russells Hall Hospital, Dudley, United Kingdom

**Introduction:** Introduction of the community Diabetic Retinopathy Screening Programme has been effective in identifying diabetic retinopathy and enabling prompt treatment. Russell’s Hall Hospital cares for a population catchment area of 338000 in Dudley, United Kingdom and receives diabetic retinopathy screening referrals from secondary grading. Tertiary grading is then performed by a medical retina consultant in the hospital. The screening programme has led to an increased clinical demand to the hospital medical retina service. To create capacity, patients, who were referred with diabetic maculopathy grade M1 and found to only require observation from tertiary grading, are then followed up in an Outpatient Diabetic Review (OPDR) in a community primary care health centre.

**Purpose:** To review clinical outcomes of patients referred to OPDR and cost-effectiveness of intervention.

**Methods or Study Design:** Prospective study with a minimum of nine months follow-up data on 99 patients with diabetic maculopathy (M1) referred during the period from October till December 2013. Patient demographics, visual acuity and diabetic retinopathy status will be recorded.

**Results:** Total referrals from diabetic retinopathy screening in Dudley to the tertiary grader between October till December 2013 (12 weeks) was 576 patients. These eyes were graded electronically and decisions were made to either discharge patients back to annual screening, referred to OPDR or reviewed in clinic in a hospital setting. 99 of these patients were found to have diabetic maculopathy (M1) and subsequently been seen in OPDR. These patients will have their visual acuity, fundus photography and further grading made by the same consultant based on the fundus photographs. These patients can then be discharged back to annual screening or reviewed in hospital based on clinical severity. Further intervention, final visual acuity and diabetic retinopathy status will be recorded. Cost-effectiveness and additional clinical capacity will be analysed.

**Conclusions:** This study will ascertain how OPDR is creating capacity, cost-effective and saving sight. Current recommendation to improve the OPDR service will be to include use of OCT.

**Keywords:** Diabetic Retinopathy, Screening Programme, Community, Capacity, Cost Effective.

**215 Systemic Risk Factors in Progression of Diabetic Macular Edema**

**Tunc Murat**, Bozkurt Hafize

1Department of Ophthalmology, Ankara Numune Training and Research Hospital, Ankara, Turkey; 2Department of Ophthalmology, Duzce University Medical Center, Duzce, Turkey

**Introduction:** Diabetic macular edema is the most common cause of visual deterioration in patients with diabetes. Vascular factors and diminished blood-retina barrier have been described as potential etiopathogenic factors in accumulation of fluid between the retinal layers and visual impairment. The association of systemic risk factors in diabetic macular edema is not clear. The purpose of our study is to determine the systemic risk factors in development and progression of diabetic macular edema in patients with diabetic retinopathy.

**Methods or Study Design:** 535 eyes of 270 patients with diabetic retinopathy were evaluated for the systemic risk factors in development and progression of diabetic macular edema. More than 20 independent variables including, demographic data, systemic diseases and laboratory tests were explored by logistic regression analysis using the SPSS software package for statistical significance.

**Results:** Elevated blood urea nitrogen (BUN), high blood glucose, duration of diabetes and age over 60 years old were found as statistically significant risk factors in progression and development of diabetic macular edema (p < 0.05); the impacts of factors such as gender, existence of systemic hypertension, total cholesterol, LDL, HDL, TG, HbA1C, MCV, MCH, MPV, PT-INR and other tested variables were not found as significant risk factors for progression of diabetic macular edema (p > 0.05).

**Conclusions:** Close monitoring the diabetic patients with systemic risk factors may provide prevention or early treatment of diabetic macular edema and preservation of the vision.

**Keywords:** Diabetic Macular Edema, Systemic Risk Factors.
Inflammation and Diabetic Macular Edema
Nil Irem Uçgun¹, Cenk Zeki Fikret², Zuhal Yıldırım²
¹Ankara Numune Education and Research Hospital, Ankara, Turkey; ²Etimesgut Public Health Laboratory, Ankara, Turkey

Introduction: To investigate the relationship among inflammation in the vitreous and diabetic macular edema.

Methods or Study Design: Vitreous samples from 21 proliferative diabetic retinopathy (PDR), 21 nonproliferative diabetic retinopathy (NPDR) and 21 nondiabetic (control) patients were studied. Vitreous interferon (IFN) gamma, tumor necrosis factor (TNF)-alpha, matrix metalloproteinase (MMP)-2 and MMP-9 levels were detected in all samples by ELISA. Samples were stored at -80°C until analyzed. Central macular thickness (CMT) were evaluated by optic coherens tomography (OCT) in all patients.

Results: The levels of vitreous TNF-alpha in PDR and NPDR patients were significantly higher compared to nondiabetic patients (p < 0.005). Mean INF gamma levels were significantly higher in PDR patients (70.98 pg/mL) and NPDR patients (46.61 pg/mL) than in nondiabetic patients (22.02 pg/mL). There were differences in vitreous INFgamma levels between PDR and NPDR patients (p < 0.005). MMP-2 and MMP-9 concentrations in the vitreous were not different between all groups (p > 0.05). There was a correlation between INFgamma and TNF-alpha levels. No correlation was existed between CMT and INFgamma, TNF-alpha, MMP-2, MMP-9 levels in the vitreous (p > 0.05).

Conclusions: Increased levels of INFgamma, TNF-alpha were found in diabetic patients compared to control subjects. Our data support the hypothesis that inflammation is associated with diabetic macular edema. Antiinflammatory treatment may reverse the CMT in diabetic macular edema.

Keywords: Diabetic Macular Edema, Inflammation, INF Gamma, TNF-Alpha, MMP.

Effect of a Polycap in Refractory Diabetic Macular Edema: A Prospective Analysis
Aditya Sudhakar¹, Tejas Desai², Jay Trivedi³, Bakulesh Khamar³
¹Eye Hospital and Retina Centre, Baroda, India; ²Nagri Eye Hospital, Ahmedabad, India; ³Thakore Eye Hospital, Ahmedabad, India

Introduction: To determine the usefulness of a polycap containing 3 antihypertensives, 1 antilipid agent and an anticoagulant on refractory clinically significant macular edema.

Methods or Study Design: Prospective case series. Inclusion: Patients of well controlled type II diabetes mellitus with CSME non-responsive to at least one of the following treatment modalities: two sessions of focal laser or intravitreal anti-VEGF/steroid injection a minimum of 3 months prior to enrollment. Exclusion criteria: Macular ischemia, proliferative disease, coexistent ocular disease (except early nuclear sclerosis) and contraindication to polycap. Demographic, corrected visual acuity (CDVA) at baseline and final follow up. details of the ocular and systemic exam special investigations, final outcome and adverse events were noted. Treatment was in the form of a once daily capsule (polycap) administered in the morning after breakfast. Primary outcome measure: Change in CMT as measured at baseline and months 1, 3, 6, 9, 12. Secondary outcome measure: Change in CDVA and adverse events (monitored as above). Appropriate statistical analysis, including generalized estimating equations was performed.

Results: Twenty-four eyes of 2 diabetic patients (7 males, 5 females, mean age of 61.8 ± 5.7) and 24 eyes of 12 healthy controls (8 males, 4 females, mean age of 62.7 ± 5.1) were included for analysis. Mean central foveal thickness (CFT) was 245.4 ± 29 μm and 224.5 ± 12 μm in diabetic eyes and healthy controls, respectively (p = 0.007). Mean retinal sensitivity on microperimetry was 17.98 ± 2.18 dB and 19 ± 0.46 dB, in diabetic eyes and healthy controls, respectively (p = 0.011). mfERG showed normal amplitude of waves.

Morpho-Functional Evaluation of Diabetic Eyes Without Diabetic Retinopathy
Giuseppe Casalino, Giuseppe Querques, Federico Corvi, Ilaria Zucchiatti, Maria Lucia Cascavilla, Enrico Borrelli, Francesco Bandello
Department of Ophthalmology, San Raffaele Scientific Institute, Vita-Salute University, Milan, Italy

Introduction: Our aim was to study retinal function in type 2 diabetic patients without diabetic retinopathy (DR).

Methods or Study Design: Twelve consecutive type 2 diabetic patients with no signs of DR and 12 healthy controls underwent a comprehensive ophthalmologic examination, including spectral-domain optical coherence tomography (SD-OCT), a retinal sensitivity map with customized grid of 45 Goldmann III stimuli covering the central 12° microperimetry (MP-1 microperimeter Nidek Technologies, Padova, Italy) and multifocal electroretinography (mfERG, RE-TI scan multifocal system, Roland Consult, Brandenburg, Germany). The first-order mfERG responses, namely the P1 and N1 amplitudes, were analyzed.

Results: Twenty-four eyes of 2 type 2 diabetic patients (7 males, 5 females, mean age of 61.8 ± 5.7) and 24 eyes of 12 healthy controls (8 males, 4 females, mean age of 62.7 ± 5.1) were included for analysis. Mean central foveal thickness (CFT) was 245.4 ± 29 μm and 224.5 ± 12 μm, in diabetic eyes and healthy controls, respectively (p = 0.007). Mean retinal sensitivity on microperimetry was 17.98 ± 1.58 dB and 19 ± 0.46 dB, in diabetic eyes and healthy controls, respectively (p = 0.01). mfERG showed normal amplitude of waves.
N1–P1 with a normal implicit time in both groups: the mean amplitude of N1 in the three central rings was −0.54 ± 0.41, −0.29 ± 0.20, −0.25 ± 0.10 and −0.53 ± 0.1, −0.28 ± 0.06, −0.23 ± 0.06 in diabetic eyes and healthy controls, respectively (p = 0.2, p = 0.6, p = 0.5); the mean amplitude of P1 in the three central rings was 0.70 ± 0.31, 0.43 ± 0.24, 0.28 ± 0.15 and 0.75 ± 0.19, 0.39 ± 0.08, 0.26 ± 0.06 in diabetic eyes and healthy controls, respectively (p = 0.4, p = 0.5, p = 0.8).

Conclusions: Type 2 diabetic patients with no signs of DR presented significantly thickened CFT and reduced sensitivity on microperimetry, but similar mfERG findings compared to healthy controls.

Keywords: Diabetic Retinopathy, Optical Coherence Tomography, Central Foveal Thickness, Microperimetry, Multifocal Electroretinography.

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Comparison of Ranibizumab Monotherapy Versus Combination of Ranibizumab with Focal/Grid Laser Therapy in the Treatment of Diabetic Macular Edema
Aycan Uysal, Nil Irem Uçgun Zeki Fikret, Zeliha Yazar, Mehmet Önen, Cenk Zeki Fikret, Hikmet Yavuz Sarikatipoglu
Ankara Numune Training and Research Hospital Eye Clinic, Ankara, Turkey

Introduction: The aim of this article is to evaluate the therapeutic effect of intravitreal ranibizumab (IVR) and IVR combined with focal/grid laser (IVR+L) in diabetic macular edema (DME).

Methods or Study Design: The patients who had HbA1c levels less than 10% were included in the study. Type II diabetic patients who had central macular thickness (CMT)> 250 μm in optical coherence tomography (OCT) due to DME were included in the study. 41 patients were treated with 0.5 mg (0.05 mL) IVR (group 1) and 22 eyes were treated with IVR+L (group 2). Patients were compared between before and after treatment in terms of best corrected visual acuity (BCVA) and central macular thickness (CMT) values. When edema repeated (CMT >250 μm) IVR was done again.

Results: A total number of 63 eyes of 63 patients with DME were included in the study who were treated and followed up for 24 weeks. The patients comprised 30 females (47.61%) and 33 males (52.39%) who were included in the study. The mean age was 57.38 ± 8.12 in group 1 and 59.15 ± 6.93 in group 2. There was no statistically significant difference between the two groups in terms of sex and age distribution. The mean number of injections was 3.18 ± 0.55 in group 1 and 3.45 ± 0.69 in group 2. In group 1, mean BCVA was 0.61 ± 0.39 logMAR before treatment and 0.48 ± 0.28 logMAR after treatment. In group 2, mean BCVA was 0.60 ± 0.31 logMAR before treatment and 0.46 ± 0.61 logMAR after treatment. In group 1, mean CMT was 477.15 ± 116.50 μm before treatment and 345.56 ± 129.66 μm after treatment. In group 2, mean CMT was 445.18 ± 109.45 μm before treatment and 336.77 ± 93.60 μm after treatment. It was observed a statistically significant increase in BCVA values (p = 0.00) and a statistically significant reduction in CMT (p = 0.00) values in both groups. The improvement in BCVA and CMT in IVR and IVR+L groups both had no statistically significant difference. There wasn’t a statistically significant difference but the mean number of intravitreal injections was lower in IVR+L group than IVR group. Treatment-related adverse effects were not observed in any patient.

Conclusions: Our analysis showed that both IVR and IVR combined with focal/grid laser are effective in reducing CMT and improving BCVA in DME and can be well tolerated based on the safety assessment. Intravitreal IVR may be equivalent to IVR combined with focal/grid laser.

Keywords: Diabetic Macular Edema, Ranibizumab, Focal/Grid Laser.

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Intravitreal Ranibizumab for the Treatment of Diabetic Macular Oedema
Fani Zacharaki, Manju Chandran, Geeta Menon
Frimley Park Hospital NHS Foundation Trust, Camberley, United Kingdom

Introduction: The purpose of this study was to evaluate the visual and anatomic results of intravitreal Ranibizumab for the treatment of center – involving diabetic macular oedema.

Methods or Study Design: Retrospective review of patients’ data. The main criterion for initiation of Ranibizumab set by NICE guidelines was center-involving diabetic macular oedema with Central Subfield Thickness > 400 μm. All patients were given a loading dose of 4 monthly injections, followed by monthly follow-up and as needed treatment.

Results: 76 eyes of 60 patients completed the 4 month loading period. Mean age of the study cohort was 71 years (SD = 11). 52 of the patients were male and 24 female. 38 eyes reached a 6 month follow-up. Only 3 eyes were treatment-naïve, the vast majority having previous Avastin, laser, triamcinolone acetate or combined therapy. Mean visual acuity at baseline was 60.73 ETDRS letters. Mean Central Subfield thickness was 502.4 μm. At month 4 mean VA was 63.88 ETDRS letters, mean subfield thickness 379.63. Mean VA at month 6 was 63 letters and mean CSFT 387.6 μm. 22 eyes were dry at month 4 (28.9%). 7 patients had missed injections due to missing visits. In 1 patient treatment was discontinued due to decrease in visual acuity and deterioration of macular oedema.

Conclusions: Almost 1/3 of our patients had a very good anatomic response with complete resolution of intraretinal fluid at month 4. Stabilization of VA was achieved in most our patients. However our visual outcomes are not comparable with the multicenter trials. This is probably due to the demographics of our cohort and the inclusion of mainly refractory to previous treatment cases.

Keywords: Diabetic Macular Oedema, Ranibizumab.
Introduction: Introduction of the community Diabetic Retinopathy Screening Programme has been effective in identifying not only diabetic retinopathy but also significant non-diabetic ocular pathology.Russells Hall Hospital cares for a population catchment area of 338000 in Dudley, United Kingdom and receives diabetic retinopathy screening referrals from secondary grading. Tertiary grading is performed by a medical retina consultant in the hospital.

Purpose: To review clinical outcomes of non-diabetic ocular pathology in patients referred from Diabetic Retinopathy Screening.

Methods or Study Design: Prospective study with a minimum of nine months follow-up data on 146 patients with diabetic retinopathy referred for non-diabetic ocular pathology during the period from October till December 2013. Patient demographics, visual acuity, non-diabetic ocular pathology and diabetic retinopathy status will be recorded.

Results: Total referrals from diabetic retinopathy screening in Dudley to the tertiary grader between October 2013 till December 2013 (12 weeks) were 576 patients. Out of these, 146 patients (25.3% of total number of patients) were referred for non-diabetic ocular pathology. Out of the 146 patients, the fundus photographs of these eyes were then viewed electronically and decision was made to either discharge patients back to annual screening (50 of 146 patients, 34.2%), refer to Outpatient Diabetic Review (OPDR) in the community (15/146, 10.3%), review in hospital eye clinic (78/146, 53.4%), or recommendations to general practitioner to review in hospital (15/146, 10.3%), refer to Outpatient Diabetic Review (OPDR) in the community (15/146, 10.3%), review in hospital eye clinic (78/146, 53.4%), or recommendations to general practitioner to review in hospital.

Conclusions: This study shows that diabetic retinopathy screening service is useful in identifying other pathology which may otherwise have been missed or presented late to hospital. It would help define clinical demand, enable future planning and timely management of these conditions.

Keywords: Diabetic Retinopathy, Non-Diabetic, Pathology, Screening, Outcomes.
of blindness. Our purpose in this study was to assess the awareness of DR and admission to ophthalmology clinic among patients with type 2 diabetes.

Methods or Study Design: All adult patients who admitted to Mevlana University eye clinic between January and June 2014 were questioned for diabetes after the statement of their complaints. 160 patients with type 2 diabetes for at least 5 years, confirmed by medical records, were included in the study. All patients were asked for their complaints and self-declaration of diabetes was noted. A questionnaire including questions about demographic characteristics, disease process, and follow-up was applied to responders. Then, all patients underwent a detailed ophthalmologic examination. Statistical analysis was performed using SPSS version 17.

Results: 160 patients with type 2 diabetes, 66 (41.3%) male and 94 female (58.8%), were included. The mean age was 60.64 ± 9.91 years (range 38–86). The mean time since the patients were diagnosed with type 2 diabetes was 12.62 ± 5.97 years (5–30 years). 63 patients (39.4%) had DR of different stages. Among 160 patients, 51 (31.9%) self-declared that they had diabetes when they were asked for their complaints. 47 patients (29.4%) reported that they had regular eye examinations. Age and sex were not associated (p < 0.05), while duration of diabetes for more than 10 years (p = 0.002), being on insulin therapy (p < 0.001), existence of diabetic retinopathy (p < 0.001) and self-declaration of diabetes (p < 0.001) were positively associated with having regular eye examinations.

Conclusions: The rates of self-declaration of diabetes and having regular eye examinations among patients with type 2 diabetes are low in our country. All adult patients admitting for eye examination should be questioned for diabetes.

Keywords: Type 2 Diabetes, Diabetic Retinopathy, Awareness, Self-Declaration of Diabetes, Regular Eye Examination.

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Unusual Presentation of Chloroquine Retinopathy: Absence of Bull’s Eye Maculopathy

Cem Ozgonul1, Gokcen Gokce2, Murat Kucukevcilioglu3

1Anittepe Military Dispensary, Department of Ophthalmology, Ankara, Turkey; 2Sarikamis Military Hospital, Department of Ophthalmology, Kars, Turkey; 3University of Iowa, Department of Ophthalmology, Iowa, United States

Introduction: This study aims to present a rare clinical presentation of severe chloroquine retinopathy presented without the typical morphology of bull’s eye maculopathy.

Methods or Study Design: A 61 year old female patient was admitted with complaint of decreased vision over six months period in her both eyes. She had a history of 250 mg per day chloroquine treatment for systemic lupus erythematosus over the last 15 years. Besides clinical evaluation the patient was assessed with different functional and structural retinal analysis methods.

Results: On ophthalmologic examination, her visual acuity was 0.1 and 0.2 in the right and left eye, respectively. Posterior chamber intraocular lens was noted in both eyes by biomicroscopy. The fundus was hypopigmented with attenuated arterioles, a foveal reflex was absent in both macula bilaterally, but no bull’s eye maculopathy was observed. Macular optical coherence tomography illustrated attenuation of the outer retinal layers, including the photoreceptor layer, in both eyes. Visual field testing with Humphrey 10–2 showed bilateral dense central scotomas. Multifocal electroretinography detected significantly depressed macular activity in both eyes. Microperimetry showed a loss of sensitivity in the macular region. The diagnosis was chloroquine toxicity with bilateral central scotomas. Following discussion with the patient’s physician, chloroquine treatment was discontinued. At follow-up examination 3 months later, the woman’s vision and macular sensitivity remained unchanged.

Conclusions: This case demonstrates the importance of regular screening for chloroquine toxicity. With severe toxicity, diffuse ocular involvement and permanent severe vision loss are possible, especially in more susceptible individuals.

Keywords: Chloroquine, Maculopathy, Retinopathy, Systemic Lupus Erythematosus.
the current approach to the functional investigation of retinal diseases.

**Keywords:** Macular Edema, Micoperimetry, Retinitis Pigmentosa.

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20 **Peripapillary Retinal Nerve Fiber Layer and Ganglion Cell-Inner Plexiform Layers Thickness in Ankylosing Spondylitis**

Eser Ayhan Tuzcu, Nilgül Ustun, Nilüfer İlhan
Mustafa Kemal University, Hatay, Turkey

**Introduction:** To assess the thickness of the retinal nerve fibril layer (RNFL) in cases with ankylosing spondylitis (AS).

**Methods or Study Design:** The study included 40 AS patients and 50 healthy controls. After detailed ocular examination, the thickness of the peripapillary RNFL, the macula, and the ganglion cell-inner plexiform layers (GCIPL) were measured by spectral domain optic coherence tomography (SD-OCT). The correlation between the duration of the disease and the thickness of the RNFL, the macula, and the GCIPL were analyzed in the patients who had AS. These patients were then placed into 2 groups according to their BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) score: patients with BASDAI score <4 and those with BASDAI score ≥ 4.

**Results:** No significant difference was detected in the RNFL thickness of the AS patients and of the controls (p = 0.407). Nor was any significant difference detected in the GCIPL thickness of the AS and the control groups (p = 0.091). In addition, no significant difference was found in the macular thickness when the AS group was compared to the control group (p = 0.139).

However, a negative correlation was detected between the duration of the disease and the thickness of the temporal quadrant RNFLs (r = -0.334; p = 0.035). The temporal quadrant RNFL thickness and the mean thickness of the GCPIL were significantly thinner in the AS patients with BASDAI score ≥ 4 (p = 0.034 and p = 0.025, respectively). Also, the BASDAI score were negatively correlated to the temporal quadrant RNFL and GCIPL thickness (r = -0.332; p = 0.036 and r = -0.348; p = 0.028, respectively). The correlations between the BASDAI score and the mean GCIPL and temporal RNFL thickness were evaluated.

**Conclusions:** RNFL thickness and GCIPL thickness of ankylosing spondylitis may be affected by the severity and duration of the disease.

**Keywords:** Ankylosing Spondylitis; Retinal Nerve Fiber Layer; Ganglion Cell-Inner Plexiform Layer; Thickness; Disease Activity.

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42 **Familial Drusen: Case Report**

Nedime Sahinoglu-Keskek, Emine Alyamac-Sukgen, Yusuf Kocak
Adana Numune Education and Training Hospital, Adana, Turkey

**Introduction:** Familial drusen typically manifest at younger ages than age-related macular degeneration. Drusen are usually numerous and of varying size, typically extending beyond the vascular arcades and nasal to the optic disk. We aimed to present a patient with familial drusen.

**Methods or Study Design:** The patient underwent a standart ophthalmic examination, including decimal best corrected visual acuity, slit-lamp biomicroscopy and dilated funduscopy. Fundus fluorescein angiography was also performed.

**Results:** 57-year-old woman was attended to our clinic with visual loss and metamorphopsia in right and left eyes. She stated that her father also had low vision. Decimal best corrected visual acuity was 0.4 in both eyes. Funduscopy examination showed basal laminar drusen in both eyes with hyperfluorescent dots corresponding drusen in fundus fluorescein angiography. Fundus fluorescein angiography showed no choroidal neovascular membrane in right and left eyes. The clinical appearance and history confirmed the diagnosis of familial drusen.

**Conclusions:** The clinical entities of familial drusen that are well documented in the literature are Doyne honeycombed dystrophy and Malattia Leventinese. The phenotype is distinctive because the drusen develop in a radiating pattern from the fovea. The clinical appearance of familial drusen is variable, ranging from a few large, coarse lesions to numerous tiny dots sometimes called basal laminar or cuticular drusen. Fluorescein angiography often shows more extensive drusen and RPE changes than are evident on ophthalmoscopy. The ERG and EOG are typically normal. Central vision is good as long as the drusen are discrete and extrafoveal. However, these patients may be at a greater than normal risk for macular degeneration as they age.

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49 **Intraocular Cytokines Concentrations in Patients with Different Levels of Activity of Retinal Pathologies**

Andrey G. Shchuko, Natalya V. Zaytseva, Igor V. Zlobin
Irkutsk Branch of S. Fyodorov Eye Microsurgery Federal State Institution, Irkutsk, Russia

**Introduction:** To measure aqueous humor cytokines and to determine the association of their levels with particular retinal pathology and disease activity.

**Methods or Study Design:** 40 eyes of 40 patients were included to the study: 4 patients had wet AMD, 10 – central retinal vein occlusion (RVO), 6 – myopic choroidal neovascularization (mCNV), 12 – diabetic macular edema (DME), 6 – proliferative diabetic retinopathy (PDR) with active retinal neovascularization, 2 – neovascular glaucoma (NVG); mean age – 56 (range 27–75) years. Patients were divided into 2 groups (with severe or moderate activity of vascular and neovascular retina pathology) based on the results...
of ophthalmoscopy, slit lamp, optical coherence tomography and fluorescein angiography examination. Interleukin (IL) -6, -8, vascular endothelial growth factor (VEGF) and monocyte chemoattractant protein-1 (MCP-1) were quantitatively detected by enzyme-linked immunosassay in aqueous humor samples.

Results: Severe disease activity was found in 8 patients with CRVO, 10 patients with DME, all patients with PDR and NVG; moderate – in all patients with AMD and mCNV, 2 patients with CRVO and 2 – with DME. Cytokine levels were significantly (p < 0.05) higher in patients with severe compared to moderate disease activity. VEGF and MCP-1 levels were increased in all patients: 20.2–1394 pg/ml and 433–3152 pg/ml compared to control, respectively (p < 0.05). The highest concentrations of VEGF (1394 pg/ml), MCP-1 (3152 pg/ml) and IL-6 (4680 pg/ml) were detected in 2 patients with NVG. 2 patients with DME, patients with mCNV and wet AMD had moderately increased levels of both VEGF and MCP-1. Significantly increased level of IL-6 was also found in these patients (52–156 pg/ml) that may indicate a presence of chronic inflammation. IL-8 levels did not reach test sensitivity.

Conclusions: VEGF, MCP-1 and IL-6 levels were found to be increased in a number of vascular and neovascular retinal pathologies. The disease activity correlated with studied intraocular cytokines levels.
Prognostic Factors Relevant for Visual Acuity in Chronic Central Serous Chorioretinopathy

Zeynep Alkin, Abdullah Ozkaya, Ihsan Yilmaz, Yalcın Karakucuk, Ahmet Taylan Yazıcı

Beyoğlu Eye Training and Research Hospital, Istanbul, Turkey

Introduction: To investigate the visual prognostic factors in patients with chronic central serous chorioretinopathy (CSC).

Methods or Study Design: We retrospectively studied 32 eyes of 32 patients (8 women and 24 men) who had the diagnosis of chronic CSC. Central foveal thickness (CFT), central neurosensory retinal thickness (CNRT), subfoveal choroidal thickness (SFCT), vertical length of subfoveal subretinal fluid were measured. Leakage patterns on indocyanine green angiographic pictures were evaluated. The mean duration of the current episode was also recorded.

Results: The mean age was 48.1 ± 7.9 years (range, 36–64 years). At the time of diagnosis, best corrected visual acuity (LogMAR) was 0.56 ± 0.23 (range, 0.1–1.0), CFT (μm) 315 ± 131 (range, 153–655), CNRT (μm) 86.5 ± 25 (range, 60–150), SFCT (μm) 517 ± 98 (range, 313–661), and vertical length of subfoveal subretinal fluid (μm) 225 ± 113 (range, 85–528). Indocyanine green angiography showed vascular hyperpermeability in 18 eyes. Fourteen eyes had punctate hyperfluorescent spots. The mean duration of the current episode 28.8 ± 24 months (range, 7–72 months). Best-corrected visual acuity had significant correlation with CNRT (p = 0.04, r = −0.48). No relationship was found between BCVA and the factors including CFT, SFCT, vertical length of subfoveal subretinal fluid, duration of the current episode, and leakage patterns (p > 0.05 for all).

Conclusions: These findings suggested that visual acuity is closely related with central neurosensory retinal thickness in patients with CSC.

Keywords: Central Serous Chorioretinopathy, Visual Acuity.

Acute Retinal Pigment Epithelitis: Case Report

Fatih Cakir Gundogan¹, Abdullah Ilhan², Umit Yolcu³

1Gulhane Military Medical Academy, Ankara, Turkey; 2Erzurum Maresal Cakmak Military Hospital, Erzurum, Turkey; 3SiIRT Military Hospital, Siirt, Turkey

Introduction: In this report, we present a case of unilateral ARPE (acute retinal pigment epithelitis) with retinal structural and electrophysiological findings.

Methods or Study Design: A 20-year old man applied with vision loss in the left eye. Right eye examination was unremarkable. Best-corrected visual acuity (BCVA) in the left eye was 20/200. Fundus examination revealed a few yellow spots within a round-shaped macular lesion. Autofluorescence (FOF) imaging showed hyperautofluorescence in the lesion. Central amplitudes in multifocal electroretinogram (mERG) was depressed. The patient reported a rhonopharyngitis 7–10 days before the visual loss. The patient was diagnosed as acute retinal pigment epithelitis. BCVA improved gradually up to 20/20 in four weeks. MfERG amplitudes returned to normal. A slight pigmentary distortion was the only residual fundus finding.

Results: BCVA improved gradually up to 20/20 in four weeks. MfERG amplitudes returned to normal. A slight pigmentary distortion was the only residual fundus finding. But, there was almost no change in FA (fluorescein angiography) and FOF.

Conclusions: SD-OCT and mERG findings in our case supports the hypothesis that RPE is possibly the initial site of involvement in ARPE. MfERG depression confirmed the functional involvement of cone photoreceptors in the disease process.

Keywords: Pigment Epithelitis, Multifocal Electroretinogram.

Single Intravitreal Ranibizumab Injection for Optic Disc Neovascularisation Due to Possibly Traumatic, Direct Carotid Cavernous Fistula

Ali Osman Saatci¹, Ozlem Barut Selver², Hasan Can Doruk¹

1Dokuz Eylul University Ege University Department of Ophthalmology, Izmir, Turkey; 2Ege University Department of Ophthalmology, Izmir, Turkey

Introduction: The aim of this poster is to share our observations about the place of intravitreal ranibizumab injection in the...
management of optic disc neovascularisation due to possibly traumatic, direct carotid cavernous fistula.

**Methods or Study Design:** We report a patient with optic disc neovascularisation due to possibly traumatic direct carotid cavernous fistula treated by a single dose of intravitreal ranibizumab prior to neurointervention.

**Results:** A 25-year-old man had a 10-month history of bilateral proptosis and left sixth nerve paralysis was evaluated. Conjunctival vessels were markedly dilated, especially in the left eye. Clinical examination and fundus fluorescein angiography revealed disc neovascularisation in the left eye with subtle peripheral retinal ischaemia. Magnetic resonance imaging suggested a high-flow carotid cavernous fistula on the left side and this was confirmed by catheter angiography. A single dose of intravitreal ranibizumab was injected prior to neuro-intervention. The disc neovascularisation regressed completely three days later. The left direct carotid cavernous fistula was later treated successfully with coil embolisation.

**Conclusions:** Optic disc neovascularisation is a very rare feature of carotid cavernous fistula and intravitreal ranibizumab may be a useful therapeutic adjunct prior to neurointerventional techniques to reduce neovascularisation-induced haemorrhage following the intervention.

**Keywords:** Ranibizumab, Carotid Cavernous Fistula, Optic Disc Neovascularisation.

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**81 Bilateral Macular Cyst After Electric Shock**

*Mesut Coskun, Esra Ayhan Tuzcu, Yener Firincioglu*

Department of Ophthalmology, Mustafa Kemal University Faculty of Medicine, Hatay, Turkey

**Introduction:** A case report of bilateral macular cyst after electric shock.

**Methods or Study Design:** Case report.

**Results:** A 35-year-old man who had pain, low visual acuity, and lacrimation in his left eye came to our clinic for a consultation. The month before, he had touched a lamppost and was injured with a 440-volt electrical current; he had to be hospitalized in intensive care as a result. His best-corrected visual acuity (BCVA) was 0.7 in the right eye, and he had light perception in the left eye. A slit lamp examination showed that the right eye was normal, whereas his left eye exhibited ciliary injection, hypopyon, corneal edema, dense anterior camera inflammation, and posterior synechia. The ocular tension measured via applanation tonometry was 11 mm Hg in the right eye, 28 mm Hg in the left eye. Upon fundus examination, the view was like a macular hole in the right fundus and the left fundus could not lighten. Ultrasonography showed that the bilateral retina and vitreous were normal. We detected a macular cyst image via OCT in the right eye. We began a treatment of brimonidintartarat + timolol 2x1, brinzolamid 2x1, prednisolon asetat 24x1, and sikpleojen 5x2 for the left eye. After treatment the intraocular pressure of the left eye was 12 mm Hg and the posterior synechia and hypopyon were clear. We detected a macular cyst image via OCT in the left eye. The final BCVA was 0.7–0.8 within 14 days.

**Conclusions:** There is only one other report of an occurrence of a bilateral macular cyst following a high-voltage electrical injury, and the case did not involve uveitis. In our patient, we detected a bilateral macular cyst and uveitis. After electrical injury, a macular hole or cyst may evolve.

**Keywords:** Electric Shock, Macular Cyst.
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Ultra Wide Field Digital Retinal Imaging Guided Gas Bubble Height Measurement and Early Detection of Hole Closure in SD OCT After Full Thickness Macular Hole (FTMH) Surgery
Kumar Boral, Arnab Das, Tushar Kanti Sinha
Disha Eye Hospitals, Barrackpore, Kolkata, India

Introduction: To measure the height of gas volume by ultra wide field digital retinal imaging system (Optos) and standardize the logistic of early hole closure by serial standard Spectral Domain OCT (SD-OCT) after FTMH surgery.

Methods or Study Design: A prospective nonrandomized comparative study performed taking 66 cases (>400 μ, n = 40 & <400 μ, n = 26) of idiopathic FTMHs in a tertiary eye care hospital. Triamcinolone assisted 23G vitrectomy, ILM peeling, fluid air exchange performed in all and divided into two groups-I (n = 35), where 14% C3F8 gas used & II (n = 31), where air used for tamponade. Height of gas volume in ultra wide field digital retinal imaging system (Optos 200TX) measured as <50%, 50% or >50%. Serial Optos and standard SD-OCTs (RTvue) performed in all at 48 hrs, 72 hrs, 7 days, 2 weeks and 1 month. Minimum follow up was 3 months. If hole closure detected in OCT, then positioning was discontinued.

Results: Pre & postop BCVA 0.93 ± 0.37 & 0.63 ± 0.26 LogMAR (Group I) and 1.15 ± 0.45 & 0.73 ± 0.21 LogMAR (Group II) respectively. Closure rate were 91.43% (I) and 93.55% (II). At 48 hours, macular OCT was possible in 61.29% eyes of Group II only. In Group I eyes, OCT was not possible because of presence of large sized (> 50%) gas bubble till 48 hrs. At 72 hrs, SD-OCT was possible in 11.43% (I) vs 74.19% eyes (II) [p < 0.001]. At 7 days, SD-OCT was possible in 31.43% (I) vs 96.77% eyes (II) [p < 0.001]. At 2 wks, it was 57.14% (I) vs all (100%) eyes (II). SD-OCT was possible in all 35 eyes Group I eyes at 1 month.

Conclusions: 1) Ultra-wide field digital retinal imaging can assess height of gas bubble postoperatively, 2) Standard SD-OCT can detect macular hole closure earliest at 48 hours post-surgery with air tamponade in 61.29% cases with gas volume = 50% in height and significantly more with air than C3F8 gas tamponade at 72 hrs & 7 days.

Keywords: Ultra Wide Field Digital Retinal Imaging, Gas Bubble Height, Hole Closure, SD-OCT, Full Thickness Macular Hole.

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Objective Determination of Retinal Function in Bietti Crystalline Retinopathy
Dorukcan Akincioglu1, Abdullah Ilhan2, Umit Yolcu3, Fatih Cakir Gundogan1
1Gulhane Military Medical Academy, Dept. of Ophthalmology, Ankara, Turkey; 2Erzurum Military Hospital, Eye clinic, Erzurum, Turkey; 3Siirt Military Hospital, Eye clinic, Siirt, Turkey

Introduction: Bietti crystalline dystrophy (BCD) is a rare retinal degeneration with progressive visual loss and night blindness, characterized by glistening intraretinal crystals associated with atrophy of retina pigment epithelium (RPE) and in some cases with crystal deposits at the corneal limbus.

Methods or Study Design: This is a case report of a 44-year-old woman who presented with complaints of decreased vision with night blindness. A complete ophthalmological evaluation, spectral domain optic coherence tomography (SD-OCT), full-field electroretinogram (fERG) and multifocal electroretinogram (mfERG) were performed.

Results: Yellow colored tiny crystalline deposits were seen on fundus examination. In addition local retinal pigment epithelium and choriocapillaris atrophic areas were detected. Rod and cone responses were depressed in full-field flash electroretinogram. Multifocal electroretinogram testing showed severe foveal function disturbance with less severe but still depressed responses in more periphery.

Conclusions: Here we describe signs and symptoms of the patient from clinical ocular electrophysiologic point of view.

Keywords: Bietti, Electrophysiology, Multifocal Electroretinogram, Retinopathy.

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Asymmetric Retinopathy in a Type 2 Diabetic Patient with Masked Hypertension
Dorukcan Akincioglu, Gokhan Ozge, Ali Hakan Durukan
Gulhane Military Medical Academy, Dept. of Ophthalmology, Ankara, Turkey

Introduction: High blood pressure related ocular abnormalities can be categorized as chorioidopathy, retinopathy and optic neuropathy. While choroidal changes going on retinal microvascularatures undergoes serial changes like vasospasms and sclerosis which causing lots of retinal pathologies; retinal vascular occlusion, retinal arteriolar emboli, macroaneurysms, ischemic optic neuropathy and age-related macular degeneration. Now there are 4 potential group of patients according to their blood pressure measurements; truly normotensive, truly hypertensive, white coat hypertension, retinopathy. His office blood pressure measurements were normal, after carotid artery ultrasonography and ambulatory blood pressure monitoring (ABPM) we confirmed systemic hypertension with right carotid artery athemomatous plaques. Systemic steroid therapy started for optic disc edema, complete ophthalmological examination, retinal nerve fiber analysis (RNFL) and fundus photography were performed on follow-up examinations during 9 months.

Results: In his last follow-up visit (9 months from first visit) his visual acuity was 20/20 in right eye and counting fingers in left eye. Left eye visual loss was due to anisometropia. He had constricted peripheral vision in right eye. Fundus examination revealed pale optic disc, decreased vascular tortuosity and caliber in...
right eye but left vascular tortuosity was remaining in left eye and disc was normal.

Conclusions: As an ophthalmologist we may expose lots of unaware hypertensive patients and save them from lots of systemic complications by referring and ambulatory blood pressure monitoring is an option especially for normotensive individuals with diabetes, kidney disease (proteinuria), high cardiovascular risk profile and fluctuating daily blood pressure levels if we are sure of fundoscopic hypertensive abnormalities.

Keywords: Asymmetric Hypertensive Retinopathy, Carotid Artery, Masked Hypertension, Plaques.

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Ocular Syphilis Presented with Panuveitis and Optic Atrophy
Dorukcan Akincioglu1, Cem Ozgonul2, Ali Hakan Durukan3
1Gülhane Military Medical Academy, Dept. of Ophthalmology, Ankara, Turkey; 2Van Military Hospital, Eye Clinic, Van, Turkey; 3Gülhane Military Medical Academy, Dept. of ophthalmology, Ankara, Turkey

Introduction: Syphilis is known as masquerade of a myriad of ocular conditions. Frequent syphilitic ocular manifestations include interstitial keratitis, chorioretinitis, retinal vasculitis, vitritis and papillitis. We aim to present a rare complication of tertiary syphilis with ocular involvement.

Methods or Study Design: A 69 year old male patient was admitted with complaints of redness, pain and loss of vision in his left eye. There was no significant past ophthalmic and systemic disease history. Ophthalmologic evaluations were performed.

Results: On ophthalmologic examination, his visual acuity was at level of 20/25 in the right and hand movement in the left eye. Conjunctival hyperemia, ciliary injection, keratic precipitates, +1 cells in anterior chamber and posterior synechia was noted in the left eye by biomicroscopy. The right eye was normal by biomicroscopy. Fundoscopy revealed vitritis and due to dense vitreous condensations retina couldn’t be viewed in left eye. In the right eye, fundoscopy revealed dirty-yellow retinal infiltrates throughout inferior major arcuate artery. In the late venous period of fundus fluoresceine angiography, there was hypofluorescent fields in the hyperfluorescent placoid area and perivascular staining was remarkable. VDRL test was positive. A diagnosis of bilateral acute syphilitic posterior placoid chorioretinopathy was made. Patient was treated with systemic steroids and crystallized penicillin. Visual acuity did not improve because of optic atrophy secondary to optic neuritis.

Conclusions: Ocular syphilis is seeing a worldwide resurgence. Syphilis has the potential to lead to any type of intraocular inflammation. Syphilis should be considered in the differential diagnosis of patients presenting with panuveitis. Ocular syphilis can potentially cause severe loss of vision due to optic neuritis.

Keywords: Optic Atrophy, Panuveitis, Syphilis.

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Repeat Selective Laser Trabeculoplasty in Treatment of Silicone Oil Induced Secondary Glaucoma
Hatun Handan Bardak, Yavuz Bardak
Career Eye Hospital, Isparta, Turkey

Introduction: The efficacy and safety of repeat Selective Laser Trabeculoplasty (SLT) as an adjunctive treatment in patients with Open Angle Glaucoma (OAG) secondary to emulsified Silicone Oil (SO) was evaluated in this study.

Methods or Study Design: In this retrospective study, 15 eyes of 15 patients with high Intraocular Pressure (IOP) (IOP > 21 mm Hg) before emulsified SO removal despite maximally tolerated medication were analyzed. All patients had IOP >21 mm Hg despite the maximally tolerated medication before the first and the second SLT. Success criteria’s 1-IOP reduction of = 20%, without additional intervention and/or 2-IOP = 21 mm Hg.

Results: The first SLT treatment provided a significant decrease in IOP from baseline [24.66 ± 1.54 mm Hg] at each control (1 day, 1 week, 1 month, 3 and 6 months) [respectively IOP 21.3 ± 1.55, 20.46 ± 1.30, 20.13 ± 1.40, 20.26 ± 1.03, 21.33 ± 0.89] following the first SLT (p < 0.05, t test). Success was 66%, 73%, 86%, 86, 66%, 66% at controls respectively. The mean time between the first and second SLT was 7.8 ± 0.86 months. IOP before the first SLT [24.66 ± 1.54] was significantly higher than IOP before the second SLT [23.60 ± 1.05] (p < 0, 05, t test). The second SLT treatment provided a significant decrease in IOP from baseline [23.60 ± 1.05 mm Hg] at each control (1 month and 3 months) [respectively IOP 20.66 ± 1.42, 20.40 ± 1.29] following the second SLT (p < 0.05, t test). Success was 73% and 80% at controls respectively. Following the SLT treatments, no complications were observed.

Conclusions: SLT is effective and safe treatment to decrease IOP in OAG secondary to emulsified SO. SLT can be repeated when its effect decreases.

Keywords: Glaucoma, Silicone Oil, Selective Laser Trabeculoplasty.

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Vaso-Occlusive Retinopathy in Systemic Lupus Erythematosus and Visual Outcomes After Hyperbaric Oxygen Treatment
Dorukcan Akincioglu, Gokhan Ozge
Gülhane Military Medical Academy, Dept. of Ophthalmology, Ankara, Turkey

Introduction: Systemic lupus erythematosus (SLE) is a chronic autoimmune connective tissue disorder with relapsing and remitting clinical course. Multiple organ systems are affected and clinical manifestations vary between populations. Most commonly seen ocular manifestation is keratoconjunctivitis sicca but retinal vasooclusion and optic nerve involvement are most visually devastating manifestations. Presence of antiphospholipid antibodies are common in SLE with retinal involvement. Also there is in-
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creasing evidence for association of central nervous system involvement with occlusive retinal disease. We present a patient with vaso-occlusive retinal disease who is already on multiple immunosuppression therapy and visual outcomes.

**Methods or Study Design:** A 42 year-old woman presenting with sudden visual loss diagnosed with retinal vaso-occlusion. Visual acuity was counting fingers and a branch arterial of lower arcade was occluded. All systemic researches resulted negative but SLE antibodies were positive which she was on medication for. We started hyperbaric oxygen therapy same day. One week after her visual acuity was 20/20 and she had stopped therapy because of auditory problems. Two days later she had sudden vision loss again and this time lower arcade artery was occluded and vision was counting fingers again. Hyperbaric therapy planned again and visual acuity was 20/20 after 14 sessions though 20 sessions completed.

**Results:** Antiphospholipid antibodies and central nervous system involvement evaluations resulted negative. Her visual acuity were back to 20/20 after 20 vaso-occlusive attacks. On the other hand retina was thinner in ischemic zone and she was having some subjective problems due to hemodynamic fluctuation in related zone. Her systemic medication wasn’t changed but anticoagulation therapy started during attacks by her rheumatologist.

**Conclusions:** Visual prognosis is very poor in retinal involvement secondary to SLE even after different immunosuppression modalities. Nevertheless increasing oxygen concentrations for retinal cells may save vision during ischemic period and may end with good visual outcomes like in our case.

**Keywords:** Hyperbaric, Retinopathy, SLE, Vaso-Occlusive.

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**Acute Retinal Necrosis Secondary to Cytomegalovirus**

Ahmet Tas¹, Abdullah Ilhan², Fatih Cakir Gundogan³

¹Agri Military Hospital, Agri, Turkey; ²Erzurum Maresal Cakmak Military Hospital, Erzurum, Turkey; ³Gulhane Military Medical Faculty, Ankara, Turkey

**Introduction:** We would like to present an interesting case of acute retinal necrosis secondary to cytomegalovirus retinitis.

**Methods or Study Design:** A 30-year old woman applied with blurred vision in the left eye which started 3 days ago. She had a history of liver transplantation due to autoimmune hepatitis and had been taking immunosuppressive treatment for two years. Visual acuity was 20/20 in the right eye and 20/40 in the left eye. Anterior segment biomicroscopy was unremarkable in both eyes. Fundoscopy revealed hyperemic and edematous optic disc, arteriolar thinning, venous tortuosity and ischemic-hemorrhagic retinal areas in the left eye. CMV-PCR was positive in both hemoculture and vitreous sample.

**Results:** Immediate parenteral and intravitreal anti-viral treatment and vitreoretinal surgery failed to stop the progression. Final VA was no light perception.

**Conclusions:** This is an interesting case with a very aggressive clinical course of acute retinal necrosis secondary to CMV retinitis despite all medical efforts.

**Keywords:** Cytomegalovirus Retinitis, Acute Retinal Necrosis.
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The Association of Posterior Lenticonus with Best Vitelliform Macular Dystrophy

Umit Yolcu, Mustafa Eren, Abdullah Ilhan, Oktay Diner

1SIIRT Military Hospital, Siirt, Turkey; 2Gülhane Military Medical Faculty, Ankara, Turkey; 3Erzurum Maresal Cakmak Military Hospital, Erzurum, Turkey

Introduction: We would like to report a 10-year old boy referred to our clinic with progressive vision loss.

Methods or Study Design: Best corrected visual acuity was 20/25 in the right eye and 20/100 in the left. Anterior segment biomicroscopy showed posterior lenticonus in OU. Fundoscopy revealed diffuse yellowish macular deposits centered on the fovea resembling egg yolk in OU. Arden ratios were below normal in OU.

Results: Macular lesions, supported by OCT findings, were attributed to the vitelliform stage of Best disease.

Conclusions: This is an interesting case with the association of Best Disease and posterior lenticonus.

Keywords: Lenticonus, Best Vitelliform Macular Dystrophy.

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The Association of Posterior Staphyloma with Retinitis Pigmentosa

Oktay Diner, Abdullah Ilhan, Fatih Cakir Gundogan

1Gülhane Military Medical Faculty, Ankara, Turkey; 2Erzurum Maresal Cakmak Military Hospital, Erzurum, Turkey

Introduction: We are to present a 22-year old young patient applied with night-blindness and progressive vision loss.

Methods or Study Design: Slit lamp examination showed normal anterior segment findings. Fundoscopic examination revealed bone-spicule pigmentation and posterior staphyloma, with 5 optic disc in diameter in OD and 4 optic disc diameter in OS. Full-field ERG showed evidence of a generalized retinal dysfunction involving both rod and cone responses.

Results: This was an interesting case with the association of posterior staphyloma with retinitis pigmentosa.

Conclusions: This case may be an incomplete form of MRCS syndrome (microcornea, retinal dystrophy, cataract, posterior staphyloma).

Keywords: Retinitis Pigmentosa; Posterior Staphyloma; Rod-Cone Dystrophy.

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Spectral Domain OCT in Patients with Retinitis Pigments A

Walid Saadeldien Mohamed Ibrahim

Assiut University Hospital, Assiut, Egypt

Introduction: To evaluate macular changes in patients with retinitis pigmentosa using spectral domain OCT.

Methods or Study Design: Ten patients (20 eyes) diagnosed clinical and by multi focal ERG were included, 6 females and 4 males, age 30–50 years. All patients had OCT evaluation by Rte device (Optus, Inc.) including cross line scans and macula map.

Results: Mean macular thickness was 180 um. One eye showed lamellar macular hole and one eye showed subfoveal cyst.

Conclusions: Spectral domain OCT is useful in evaluation of macular changes in patients with retinitis pigmentosa.

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Dramatic Improvement of Vogt-Koyanagi-Harada Disease with Early and High-Dose Steroid Therapy

Fawwaz Falih Al-Mamoori

Eye Speciality Hospital, Amman, Jordan

Introduction: Vogt-Koyanagi-Harada (VKH) syndrome is a well known, autoimmune systemic disease, directed against organs such as the eye, inner ear, meninges, and skin. Ocular manifestations are bilateral granulamatous panuveitis with choroiditis and multifocal serous retinal detachment. Corticosteroids are still the cornerstone of treatment in the acute phase and patients who receive early adequate doses of corticosteroids often have rapid resolution of the ocular and systemic manifestations, with good visual outcomes.

Methods or Study Design: We retrospectively reviewed the medical records of nine patients who were diagnosed with acute VKH disease based on systemic symptoms, ocular findings, optical coherence tomography (OCT) and fluorescein angiography (FA) at Eye Specialty Hospital from 2009 to 2013, Inclusion Criteria: No history of penetrating ocular trauma, surgery preceding the onset, or clinical or laboratory evidence of other entities of uveitis. FA and OCT performed prior to introduction of inflammation suppressive therapy. OCT was performed at least once at 3 months after initiation of treatment. All patients received initial intravenous (IV) pulse therapy of methylprednisolone (1000 mg/day) for three days followed by 1 mg/Kg/day oral prednisolone Tapering course over a minimum of 6 months. Collected Data: Age, gender, best corrected visual acuity (BCVA), biomicroscopic examination, findings, systemic signs, timing of therapy, follow up duration, treatment outcome (acute resolved, Chronic or recurrent), disease or treatment complications, Initial FA signs and pre and post treatment OCT findings.

Results: Nine patients who fulfilled the inclusion criteria were reviewed. Five patients are male and 4 patients are female with mean age of (21.7 ± 5.70 years).
Conclusions: This small series suggests that dramatic improvement of visual acuity is dependent on early, fast and accurate diagnosis followed by an aggressive and lengthy steroid treatment. We still need further follow-ups and larger scale series for helpful evidence.

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Role of Fluoroquinolones in Diplopia After Retinal Detachment Surgery
Loredana Arrico, Claudia Ganino, Simona Bianchi, Rossella Giannotti, Romualdo Malagola
Department of Sense Organs, University of Rome, Rome, Italy

Introduction: to assess the role of systemic therapy with fluoroquinolones in patients with diplopia after retinal detachment surgery, considering the effects of these antibiotics on tendons and muscles as evidenced in literature.

Methods or Study Design: 30 patients with diplopia after retinal detachment surgery (P group) and 30 patients without diplopia after surgery (N group) were examined retrospectively. Systemic and ocular conditions, systemic and ocular therapy, type of surgical procedures, refraction and visual acuity before and after surgery, type of diplopia were evaluated. The survey has been particularly concerned with the type of antibiotic and steroid systemic therapy administered, the duration of both therapies and the appearance of diplopia according to the time of administration. Statistical analysis: Chi-squared Test, Anova one way and Mann-Whitney test. In addition, we examined the Odds Ratio (OR), the Confidence interval (CI) and we considered as significative p values = 0.004.

Results: The risk of diplopia after retinal detachment surgery is associated with fluoroquinolones and macrolides therapy. 11 patients of the P group and 3 of the N group underwent administration of fluoroquinolones, while 7 patients in the P group and 1 patient in the N group took macrolides. The Odds Ratio in these patients was 9.5 (CI 95%, range 1.6–62), so the risk of developing diplopia was eight times higher in the P group than in the N group. Patients in the P group presented an early appearance of diplopia; they also showed a longer period of antibiotic and steroid systemic therapy than those in N group (8.9 days vs 4.9 days for systemic antibiotic therapy, 19.5 days vs 6.9 days for systemic steroid therapy).

Conclusions: Diplopia after retinal detachment surgery can be related not only to the kind of surgical procedure, but also to the systemic administration of fluoroquinolones or macrolides and to the period of antibiotic therapy.

Keywords: Retinal Detachment Surgery, Diplopia, Fluoroquinolones, Macrolides.

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Fundus Autofluorescence in Best Vitelliform Macular Dystrophy
Maurizio Battaglia Parodi1, Pierluigi Iacono1, Bruno Falcomatà2, Riccardo Sacconi1, Federico Selvi1, Matteo Scaramuzza1, Francesco Bandello1
1 Department of Ophthalmology, University Vita-Salute, Ospedale San Raffaele, Milan, Italy; 2 Azienda Ospedaliera Bianchi-Melacrino-Morelli, Unità Operativa Complessa Oculistica, Reggio Calabria, Italy

Introduction: To provide a systematic classification of Fundus Autofluorescence (FAF) patterns in patients affected by Best Vitelliform Macular Dystrophy (VMD).

Methods or Study Design: Cross-sectional prospective study. Patients affected by VMD at different stage disease were prospectively enrolled from January 2012 to July 2013. Eighty eyes of 40 patients were included in the study. All patients underwent a complete ophthalmologic examination including genetic characterization, short-wavelength fundus autofluorescence (SW-FAF), and near-infrared autofluorescence (NIR-FAF). Main Outcome Measures: The recognition of the FAF patterns in the different stages of VMD, and the identification of a relationship between FAF patterns and best corrected visual acuity (BCVA).

Results: Six FAF patterns for both SW and NIR-FAF were identified, including normal, hyper-autofluorescent, hypo-autofluorescent, patchy, multifocal, and spoke-like patterns. By employing Gass’ classification for defining consecutive stages of VMD (namely vitelliform, pseudohypopyon, vitelliruptive, atrophic, and cicatricial), no pattern was identified as stage-specific. Patchy pattern showed the higher prevalence. Patterns with reduced and increased AF on SW-FAF and NIR-FAF were associated with lower and higher BCVA values, respectively. Eyes with patchy pattern showed intermediate BCVA values (Anova: p = 0.001).

Conclusions: Six main patterns on both SW- and NIR-FAF were identified in VMD. No FAF pattern can be considered stage-specific. Although a difference in the BCVA among the FAF patterns was registered, only a longitudinal study designed to evaluate the clinical and FAF modifications over the follow-up will help clarify the prognostic implications of each FAF pattern.

Keywords: Fundus Autofluorescence, Best Vitelliform Macular Dystrophy.

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Anti-VEGF Therapy for Idiopathic CNVM: A Comparative Analysis
Aditya Sudhalkar, Jay Chhablani, Rohit Yogi
LV Prasad Eye Institute, Hyderabad, India

Introduction: To determine the clinical characteristics of patients with idiopathic CNVM and to compare the treatment outcome between intravitreal bevacizumab and ranibizumab for the same.

Methods or Study Design: Retrospective chart review. Data obtained from patients with idiopathic CNVM included demographics, the corrected distance visual acuity (CDVA, baseline and
were 2.2 ± 1.3 with no recurrence during the follow up.

CNVM) with a good safety profile. Mean number of injections effective in the treatment of idiopathic CNVM (including subfoveal adherence tomography (SD-OCT).

Acute posterior multifocal placoid pigment epitheliopathy (APMPPE) using multimodal imaging spectral domain optical coherence tomography.

There was no significant difference between the groups in terms of CDVA change (p = 0.31) or CMT reduction (p = 0.51). Males had higher odds of poor outcomes (OR-2.8; 95% CI 0.29–18.25). 12 patients had a subfoveal CNVM and 6 of these improved to 20/80 or better. No adverse events were noted.

Conclusions: Both bevacizumab and ranibizumab appear effective in the treatment of idiopathic CNVM (including subfoveal CNVM) with a good safety profile. Mean number of injections were 2.2 ± 1.3 with no recurrence during the follow up.

Keywords: Idiopathic CNVM, Anti-VEGF, CMT, Adverse Events.

Multimodal Imaging in a Case of Acute Posterior Multifocal Placoid Pigment Epitheliopathy
Sertan Goktas, Rabia Sakarya, Yasar Sakarya, Muanmer Ozcimen, Ismail Alpfidan, Ismail Senol Ivacik, Erkan Erdogan, Husamettin Aksoy
Department of Ophthalmology, Konya Training and Research Hospital, Konya, Turkey

Introduction: To present the retinal changes in a patients with Acute posterior multifocal placoid pigment epitheliopathy (APMPPE) using multimodal imaging spectral domain optical coherence tomography (SD-OCT).

Methods or Study Design: Case: Forty-seven years-old women presented within 1 day of photopsia and blurred vision. Mean best-corrected visual acuity was 20/20 bilaterally. Fundus examination in the left eye had a yellow-white subretinal lesions macular lesions which consistent with APMPPE. Lesions was hypoautofluorescent lesions in early phase and hyperfluorescent in late phase with Fundus floresceinangiografi (FFA). On first examination cotton-wool-like lesions were seen in affected areas with the examination of SD-OCT, after one week breakdown the integrity of inner segment/outer segment was seen. OCT also choroidal thickness in the area of the lesion was measured as 265–300 μm with OCT. Fundus autofluorescence (FAF) examination revealed that around of the lesions was hyper-autofluorescence and the edges was hypo-autofluorescence in the early period. In the late period these findings were more pronounced with FAF examination.

Results: Complaints of patients declined with oral steroid therapy at 1 month.

Conclusions: APMPPE lesions can be evaluated and valuable information can be obtained by OCT, FFA, FAF examinations in early and late stage.

Keywords: Acute Posterior Multifocal Placoid Pigment Epitheliopathy, Optical Coherence Tomography, Fundus Autofluorescence.

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A Case of Focal Serous Retinal Detachment in Association with Foveal Choroidal Excavations
Sertan Goktas, Yunus Emre Karakoyun, Rabia Sakarya, Yasar Sakarya, Muanmer Ozcimen, Isin Ugurlu, Abdulkadir Bukus, Tulay Soylu
Department of Ophthalmology, Konya Training and Research Hospital, Konya, Turkey

Introduction: To present a case of Subfoveal choroidal focal serous retinal detachment in association with Foveal Choroidal Excavations.

Methods or Study Design: Case: Twenty-seven year old woman was admitted to our clinic within 1 month of complaints of decreased visual acuity in the left eye. Visual acuity was 1.0 in the right eye, the left eye was 0.7. Anterior segment examination was normal. Loss of foveal reflex of the right and left eye was seen with posterior segment examination. Optical coherence tomography (OCT) examination in the right eye revealed that focal choroidal excavation in the temporal fovea. OCT examination of the left eye revealed that focal choroidal excavation and serous retinal detachment in the subfoveal area. Horizontal and vertical diameter of Serous retinal detachment were measured 1900 μm, and height were measured 105 μm. Choroidal neovascularization was not observed. Nepafenak 0.1% (Nevanac, Alcon, Turkey) drops have prescribed 4x1 to the left eye. A month later, on the OCT examination serous viewed completely disappeared.

Results: Improvement with nepafenak indicate that inflammatory event may play a role in the pathogenesis of Choroidal Excavations.

Conclusions: Topical Nepafenak may be an option in the treatment of serous retinal detachment which developed with focal choroidal excavation.

Keywords: Choroidal Excavations, Serous Retinal Detachment, Optical Coherence Tomography, Nepafenak.
Natural History of Ocular Manifestations in a Family with Marfan Syndrome

Mohammad Hossein Davari¹, Toba Kazemi², Hoda Gheytasi³, Esmat Davari⁴
¹Atherosclerosis and coronary Artery Research center, Assistant Prof. of ophthalmology, Birjand University of Medical Sciences, Birjand, Iran; ²Vali-e-Asr Hospital, Birjand, Iran; ³Atherosclerosis and coronary Artery Research center, Professor of cardiology, Birjand University of Medical Sciences, Birjand, Iran; ⁴Department of Genetic, PhD student of genetic at University of Barcelona translational research, laboratory 2 Hospital Duran I Reynolds, Barcelona, Spain, Birjand, Iran; ⁵Tobacco Research Center, Vali-e-Asr Hospital, Birjand, Iran

Introduction: Marfan syndrome (MFS) is a genetic disorder which is inherited by autosomal dominant traits. In MFS, lenses displacement and Cardiovascular involvement is important causes of morbidity and mortality in the clinical Course of the disease.

Purpose: To investigate the natural history of ocular and cardiovascular abnormalities in one family with Marfan syndrome during 10 years follow up.

Methods or Study Design: 11 patients with MFS, from the same family in Birjand, south east of IRAN were followed for 10 years. Occurrence of ocular manifestations and adverse cardiovascular Outcomes was measured clinically and by ultrasound examination.

Results: After 5 years follow up seven had mar fan syndrome and the rest are normal. Father and three of his sons and two of his daughters and First grandchild are involved. Mother and a son are normal. Ocular manifestation were lens ectopia 100% (7/7), Flat cornea 28EI% (2/7), on gated eyeball 42% (3/7), Hypoplastic iris or ciliary’s muscle hypoplasia 42% (3/7). Glaucoma (2/7). Cataract (2/7). Retinal detachment (2/7) After 10 years follow up 11 members have mar fan syndrome. Father and three of his sons and two of his daughters and 5 grandchildren are involved. Ocular manifestation were lens ectopia 100% (11/11), Flat cornea 28EI% (4/11), on gated eyeball 42% (5/11), Hypoplastic iris or ciliary’s muscle hypoplasia 42% (5/11). Glaucoma (3/11). Cataract (3/11). Retinal detachment (2/11). Three patients needed ocular surgery.

Conclusions: During 10 years follow up in this family with Marfan syndrome, ocular manifestations as well as adverse cardiovascular abnormalities develop and progress gradually, but may cause considerable morbidity and mortality by the end of the second decade. We think MFS with this severe genetic penetration is rare.

Keyword: Retina.
is unknown. It may be classified into Type 1 and Type 2 as described by Yanuzzi et al.

Methods or Study Design: A retrospective analysis of patients diagnosed with IMT seen between 2010 and 2013 at the Medical Retina Unit, Hospital Selayang was performed. Demographic characteristics, clinical features, staging (Lawrence Yanuzzi modified classification) and treatment options were analysed.

Results: Thirty patients were recruited over the three years. Sixty percent (18 patients) were female. Seventy percent (22 patients) were of Indian ethnicity. The mean age of presentation was 59. Eighty percent (25 patients) presented with blurring of near vision. Only 33.3% (10 patients) had a presenting Snellen visual acuity of 6/60 or less. Eighty percent (24 patients with 48 eyes) were Type 2 and the remaining 20% (6 patients with 6 eyes) were Type 1. Of the Type 2, only 14.6% (7 eyes) were in the proliferative stage. The remaining 85.4% (41 eyes) were non-proliferative. Out of this, 53.6% (22 patients) were Stage 2, 34.1% (14 eyes) Stage 4, 7.3% (3 eyes) Stage 3 and 4.9% (2 eyes) Stage 1. Of the 7 eyes with proliferative IMT, 3 received treatment for choroidal neovascularisation.

Conclusions: This small series of patients showed that non-proliferative Type 2 Macular Telangiectasia was the more common form and may occur predominantly in Indian females.

244 Bilateral Serous Macular Detachment: A Presenting Sign of Acute Lymphoblastic Leukemia

Luisa Vieira, Nuno Silva, Andre Vicente, Ana Cabugueira, Rita Anjos, Rita Flores, Vitor Maduro
Central Lisbon Hospital Center, Lisbon, Portugal

Introduction: Acute lymphoblastic leukemia is a malignant hematopoietic neoplasia rare in adults. Although it is common to find ocular fundus alterations in the course of disease, they are rarely a presenting sign of it. The purpose of our study was to describe a case of bilateral serous macular detachment as a presenting sign of acute lymphoblastic leukemia in an adult.

Methods or Study Design: A complete ophthalmic and systemic evaluation was performed on a patient of 63 years, who was admitted to the Emergency Room with decreased visual acuity, with 2 weeks of evolution.

Results: We describe a case of a patient with painless and progressive loss of visual acuity (right eye 2/10 and left eye 3/10) in 2 weeks, which also had fever and cervical lymphadenopathy. Fundus examination showed bilateral macular serous detachment, confirmed by optical coherence tomography (central macular thickness on the right eye was 638 μm and on the left eye was 423 μm). Fluorescein angiography revealed hyperfluorescent pinpoint in the posterior pole. In the late phase of the angiogram, the limits of the macular detachment were revealed. The changes found in the blood count triggered a more extensive systematic study. The diagnosis of acute lymphoblastic leukemia B (CD10 +) was made. Intensive systemic chemotherapy was started immediately.

Conclusions: This case illustrates the importance of a systematic study face a bilateral macular serous detachment without other signs suggestive of local injury, even in an adult patient. This is particularly important when early treatment is imperative and patient survival depends on it.

Keywords: Acute Lymphoblastic Leukemia, Serous Macular Detachment.

254 An in Vitro Study for Analysing the Responses to Monophasic Pulses from Retinal Ganglion Cells

Mustafa Eren1, Mahmut Emin Celik2, Mustafa Ozden3, Gulnur Sabaci4, Irfan Karagoz2
1 Gülhane Military Medical Academy, Ankara, Turkey; 2 Gazi University Engineering Faculty Department of Electrical and Electronics Engineering, Ankara, Turkey; 3 Kirikkale University Engineering Faculty Department of Electrical and Electronics Engineering, Kirikkale, Turkey; 4 Hacettepe University Faculty of Medicine, Ankara, Turkey

Introduction: To determine optimum stimulation parameters experimentally and test in vivo applicability of new epiretinal implant system intended to be developed in Turkey.

Methods or Study Design: After developing a new software-based retinal stimulation strategy to obtain high spatio-temporal resolution in epiretinal implant system and presenting its results at ARVO 2014, we have aimed to conduct in vitro animal experiments to determine optimal range for stimulation and design parameters. In this study, electrical stimulations of retinal tissue and responses to those are investigated in in-vitro studies conducted on rat retinal tissue in Gazi University Calibration and Biomedical Research Center (BIYOKAM) – Retina Implant Laboratory. Microelectrode amplifier with 60 channels and its connected parts and data acquisition systems are involved to experimental setup. A perfusion system and temperature controller are respectively used to keep the tissue alive and the medium 37 Celsius. Retinal ganglion cells (RGCs) are electrically stimulated with a sophisticated microelectrode array which has 6x10 electrode grid, 500 μm electrode spacing, 30 μm electrode diameter. Monophasic pulses, whose amplitudes are 50, 75, 100 μA and pulse width is 500 μs, are applied to the retina tissue through one electrode in the medium, then responses are recorded.

Results: Monophasic rectangle pulses are applied through one electrode to the retina. Responses are recorded from 40, 39 and 41 channels for 50, 75, 100 μA pulses respectively. Recorded signals are then analyzed offline. This study provides better understanding of the effect of electrical stimulation over the retina tissue due to processes occurred at electrode-tissue interface, in addition determining retinal stimulation thresholds in terms of optimal electrode layout and stimulation circuit design. This work is supported within the scope of TUBITAK 1001 with number 113E181 named ‘Development of Electrode Matrix Array and Stimulation Strategy for Obtaining High Spatio-Temporal Resolution In Epiretinal Implant Systems’.
Conclusions: Optimal parameters for electrical stimulation on the retinal tissue can provide a basis for in vivo animal studies.

Keywords: Epiretinal Implant, Electrical Stimulation, In Vitro Study.

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Retrospective Case Study of TB Retinitis
Natalia Bazijk
Lakeridge Health Corporation, Oshawa, Canada

Introduction: The purpose of this study was to describe a case of retinal scarring and mild uveitis, most likely secondary to latent tuberculosis, which was treated with anti-VEGF injection (Bevacizumab).

Methods or Study Design: Method: A retrospective case review.

Results: A 37 year old female presented with total loss of vision in the left eye (nLP) and CF@ 4ft vision in the right eye. The patient had mild uveitis with retinal scarring. The patient was investigated for all possible underlying etiologies. A strongly positive TB skin test was found (Mantoux) with a normal chest X-ray. The patient was treated with 3 injections of off-label intravitreal Bevacizumab (1.25 mgs/0.05 mls) and systemic medication consisting of Pyrazinamide 1500 mgs/day, Avelox 400 mgs/day – switched to Azithromycin due to borderline Bartonella titres, Isoniazid 300 mgs/day, Rifampin 300 mgs/day and Pyridoxine 25 mgs/day. Visual acuity improved to 20/80 in the right eye.

Conclusions: Conclusion: Guinea pig model of intra-ocular tuberculosis has demonstrated over-expression of VEGF from RPE and photoreceptors. The vitritis and chorioretinitis with subtle macular edema was managed successfully with injection of intravitreal Bevacizumab (off-label). Vision improved to 20/80 right eye and has remained stable for approximately 1 year, until patient was lost to follow-up.

Keywords: Tuberculosis, Vascular Endothelial Growth Factor, Bevacizumab, Retinitis.

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Retinal Nerve Fiber Layer Thickness and Visual Field Tests in Patients with Compression of the Optic Chiasm
André Vicente, Rita Anjos, Lívio Costa, Luisa Vieira, Arnaldo Santos, Joana Ferreira, Duarte Amado, João Paulo Cunha
Centro Hospitalar Lisboa Central, Lisbon, Portugal

Introduction: The compression of the optic chiasm by lesions such as pituitary adenoma can compromise visual function. The relationship between functional and structural measurements is extremely important in the management of diseases of the anterior visual pathways. The authors present an analysis of the retinal nerve fiber layer measurements and visual field tests in patients with compressive chiasmal lesions.

Methods or Study Design: An observational study was designed with 20 eyes of 20 patients with compressive chiasmal lesions followed at the neuroophthalmology department. Retinal nerve fiber layer (RNFL) thickness was determined using high-resolution macular scans obtained with Optical Coherence Tomography (OCT SPECTRALIS® – Heidelberg Engineering GmbH). Static Computerized Perimetry (Octopus Perimetry®, Haag-Streit) was also performed. Statistical analysis was done with SPSS Statistics. A p value < 0.05 was considered statistically significant.

Results: RNFL thickness was significantly reduced when compared with average values from normal population (p < 0.05). Average RNFL thickness reduction evaluated by OCT was similar to other published studies. Even though 4 of the 20 patients had normal visual fields, a positive structural and functional correlation between the tomographic and perimetric evaluations was identified.

Conclusions: In patients with compressive chiasmal lesions, OCT and perimetry are helpful in evaluating the relationship between structure and function. The changes determined by both methods were different. Nevertheless, an association between structural damage determined with OCT and functional damage was verified in most patients. OCT evaluation of the RNFL thickness is an accurate method of predicting functional damage. This study highlights the importance of RNFL thickness evaluation in these patients.

Keywords: RNFL, Chiasmal Lesions, OCT.

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The Effects of the Concurrent Intravitreal Bevacizumab Injection on Transscleral Diode Laser Cyclophotocoagulation Treatment Success in Neovascular Glaucoma Patients
Nurser Ariturk, Zeynep Seymen
Ondokuz Mayis University Faculty of Medicine Department of Ophthalmology, Samsun, Turkey

Introduction: To evaluate of the intravitreal bevacizumab injection impact on Transscleral diode laser cyclophotocoagulation treatment success in neovascular glaucoma patients who have increased intraocular pressure, conjunctival hyperemia, corneal edema and pain symptoms.

Methods or Study Design: Between 2003–2014, 45 eyes of 45 patients with the medical and surgical treatment-resistant due to neovascular glaucoma who had performed transscleral diode laser cyclophotocoagulation treatment, were enrolled in this study. File records were retrospectively analyzed. Intravitreal bevacizumab injection was performed in 12 eyes. All of patients were examined routine eye examination. Before and after treatment in the control of anterior segment slit-lamp biomicroscopic findings (conjunctival hyperemia, corneal edema) and IOP was recorded.

Results: In the 12 eyes with intravitreal bevacizumab injection, preoperative IOP was 42.3 ± 1.7 mm Hg and 20.1 ± 3.4 mm Hg at the last visit (P = 0.005). Thirty-three eyes without intravitreal bevacizumab injection, preoperative IOP was 46.12 ± 1.5 mm Hg and 30.76 ± 2.4 mm Hg at the last visit (P = 0.000), postoperatively. There was found statistically significant difference IOP between the two groups (P = 0.019). There was no statistically significant
difference between the two groups were compared in terms of conjunctival hyperemia, corneal edema and pain (P > 0.05).

Conclusions: Transscleral diode laser cyclophotocoagulation with simultaneously intravitreal bevacizumab injection is affect the success of transscleral diode laser cyclophotocoagulation treatment and reduces the number of antiglaucoma drugs.

Keywords: Neovascular Glaucoma, Transscleral Diode Laser Cyclophotocoagulation, Intravitreal Bevacizumab Injection.

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Laser Pointer – A Toy for Kid?
Jan Marco Novak
Department of Ophthalmology, Regional Hospital, Pardubice, Czech Republic

Introduction: Laser beam appears to be safe only in the specific determined conditions, but for the eye can be dangerous in any case.

Methods or Study Design: Case report: In the year 2013 a 11 years old boy, studied a laser pointer of his father (red laser 560 nm pointer of chinese production, output 100 mW). He located its beam directed into his right eye for some seconds. After one month the boy passed through an ophthalmological examination. BCVA of the right eye was only 0.32, while left eye reached of expected 1.0. Changes in the macula region were revealed by ophthalmoscopy and specified by SD-OCT.

Results: Only fine changes were recognized by ophthalmoscopy one month after retinal damage. Punctual total destructions of the retinal layers between external limiting membrane and Bruch’s membrane were found by SD-OCT. The sharpness of the retinal changes was increased by the time.

Conclusions: High speed expansion of laser technology in the last 10 years allowed construction of small laser emitors with output of more than 500 mW. Such equipment belongs to the class IV of standard laser safety. The strongest apparatus on the market is Twin Diode 445 nm laser, power of 3500 mW. Such equipment is not only a toy but very strong weapon with skin damage effects and effect of permanent blindness for long distance. Prevention of the retinal damage in the general public has to be organized by wide adult education and creation of new laws.

Keywords: Retinal Laser Damage.

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Choroidal Thickness in Primary Congenital Glaucoma
Rita Anjos, Ana Cabugueira, Luisa Vieira, Mariana Cardoso, Luis Pinto, Ana Xavier, Cristina Ferreira, Cristina Brito
Centro Hospitalar Lisboa Central, Lisboa, Portugal

Introduction: Primary congenital glaucoma (PCG) is a relatively rare disease but an important cause of blindness. Although admittedly related to an abnormality in the iridocorneal angle, its pathophysiology is not fully defined. The purpose of our study is to evaluate the choroidal thickness (CT) in children with primary congenital glaucoma (PCG) and healthy children.

Methods or Study Design: Prospective study of children with PCG (glaucoma group) and healthy children. With resource of optical coherence tomography the following measures were made: retinal thickness (RT) and CT at the fovea, 1.5 mm nasal and 1.5 mm temporal to the fovea; peripapillary retinal nerve fiber layer thickness (RNFL) and CT.

Results: Data from 12 eyes of 9 children with PCG and 17 eyes of 9 healthy children were analyzed. Macular CT and RT and peripapillary CT were similar in both groups (p > 0.05). However, when patients with high ametropias were excluded, foveal CT was higher in the glaucoma group (p < 0.05). There was a correlation between foveal CT and global RNFL in the glaucoma group (r = 0.764; p = 0.01) and in the control group (r = 0.570; p = 0.042).

Conclusions: Although numerous studies have been recently published on the choroidal changes in adult glaucoma, the subject is still controversial. In our study there were no global differences between CT in children with or without PCG.

Keywords: Primary Congenital Glaucoma, Choroidal Thickness, Retinal Thickness, Retinal Nerve Fiber Layer, Visual Acuities.

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The Effect of Uneventful Phacoemulsification Cataract Surgery on Foveal Thickness and Volume
Derya Dal1, Osman Okan Olcaysü1, Ozge Sarac2, Yasin Toklu2, Nurullah Cagil2
1Erzurum Training and Research Hospital, Ophthalmology Department, Erzurum, Turkey; 2Yildirim Beyazit University, Ataturk Training and Research Hospital, Ophthalmology Department, Ankara, Turkey

Introduction: This prospective study evaluated the effects of uneventful phacoemulsification cataract surgery on foveal thickness and volume. Optical coherence tomography (OCT) was used for this purpose.

Methods or Study Design: Twenty eyes of 20 patients without any systemic or ocular disorders who underwent uncomplicated phacoemulsification cataract surgery and foldable intraocular lens implantation were included in this study. Mean foveal thickness (MFT) and mean foveal volume (MFV) were measured with OCT before surgery and at 1 week, 1 and 2 months postoperatively. All surgeries were performed by the same surgeon. All patients received topical antibiotic and topical steroid drops for 6 weeks after surgery. The correlation of effective phacoemulsification time (EPT) and the percentage phaco power (PPP) with postoperative MFT and MFV values were investigated.

Results: There were 12 males and 8 females. The mean age was 66.5 ± 10.2 (55–81) years. The mean EPT was 13.8 ± 13.4 seconds and the mean PPP was 15.7 ± 8.8%. The mean baseline MFT was 247.10 ± 13.9 (224–273) μm. Postoperatively it was 249.5 ± 15.02, 247.9 ± 17.5, and 259.6 ± 16.5 μm at 1st week, 1st month, and 2nd month respectively (p = 0.01, p = 0.001, p = 0.001 respectively). The mean baseline MFV was 0.194 ± 0.01 mm³. It was 0.196 ± 0.01 mm³ at 1st week after surgery (p = 0.01). It increased to 0.205 ± 0.01 mm³
Efficacy of Topical Ketorolac on Macular Thickness in Patients Undergoing Cataract Surgery

Derya Dal¹, Ozge Sarac², Yasin Toklu², Hasan Basri Cakmak³, Elif Damar Gungor⁴
¹Training and Research Hospital, Ophthalmology Department, Erzurum, Turkey; ²Yildirim Beyazit University, Ataturk Training and Research Hospital, Ophthalmology Department, Ankara, Turkey; ³Europe Eye Center, Malatya, Turkey

Introduction: The present study was designed to evaluate the effects of topical 0.5% ketorolac combined with routine topical steroid treatment on macular thickness in patients who had uncomplicated cataract surgery. Optical coherence tomography (OCT) was used for this aim.

Methods or Study Design: Fifty-eight eyes of 43 consecutive patients who underwent uneventful phacoemulsification surgery were included in the study. All patients received topical 0.1%, dexamethasone six times a day postoperatively, which was tapered and discontinued in 6 weeks. Randomly selected patients were additionally received topical 0.5% ketorolac 4 times a day, beginning 2 days prior to surgery and discontinued in 4 weeks after surgery and formed group 1. Patients who only received topical steroids formed group 2. Macular thickness analyses were performed with OCT. The mean foveal thickness (MFT), the parafoveal and perifoveal thickness (ParaFT, PeriFT) measurements were performed preoperatively and postoperative at 1 week, at 1 month, and at 2 months. The postoperative changes in parameters were compared between the groups.

Results: The increase in MFT at 1st week, 1st month, 2nd month after surgery in group 1 (-1.09 ± 2.78 μm, -1.14 ± 4.94, 1.50 ± 6.62 μm respectively) was significantly lower compared to group 2 (2.06 ± 3.65, 12.06 ± 8.47, and 11.17 ± 7.60 μm) (p = 0.008, p = 0.000, p = 0.000 respectively). The increase in ParaFT and PeriFT was lower in group 1 at 1st week, although it was not statistically significant (p = 0.470, p = 0.243). There was statistically significant increase in ParaFT at 1st month and 2nd month in group 2 (11.83 ± 10.29, 10.20 ± 8.59 μm) compared to group 1 (4.09 ± 6.36, 4.55 ± 8.33 μm) (p = 0.015, p = 0.015). There was statistically significant increase in PeriFT at 1st month and 2nd month in group 2 (9.33 ± 9.07, 9.15 ± 7.50 μm) compared to group 1 (4.29 ± 5.96, 4.43 ± 8.07 μm) (p = 0.048, p = 0.017).

Conclusions: The increase in the macular thickness is lower in patients who had uneventful cataract surgery and using topical steroids along with the topical nonsteroid anti-inflammatory treatment.

Keywords: Cataract Surgery, Ketorolac, Macular Thickness, Optical Coherence Tomography.
306 (Young Ophthalmologist Award)
Comparison of Retinal Nerve Fiber Layer, Ganglion Cell Complex and Subfoveal Choroidal Thickness in Unilateral Pseudoexfoliation
Sibel Aksoy, Sezen Akkaya, Haticе Kübra Kökçen, Yelda Ozkurt, Aysu Karatay Arsan
Fatih Sultan Mehmet Training and Research Hospital, Istanbul, Turkey

Introduction: The purpose of this study is to compare the retinal nerve fiber layer (RNFL), macular ganglion cell complex (GCC) and subfoveal choroidal thickness (SCT) in eyes affected with pseudoexfoliation and unaffected fellow eyes in patients with unilateral pseudoexfoliation (PXF) and unilateral pseudoexfoliation glaucoma.

Methods or Study Design: Sixty-four eyes of 32 patients with clinically unilateral PXF syndrome were included in this study. All eyes were examined by slit-lamp biomicroscopy after pupillary dilation. PXF eyes had clinically evident PXF material at the pupillary border or on the anterior lens capsule, peripupillary atrophy and asymmetric mydriasis in one eye. These eyes were placed in the PXF eye group. Their clinically unaffected fellow eyes were placed in the fellow eye group. Patients were excluded if they were found to have concomitant corneal, retinal, choroidal pathologic processes, ocular trauma and prior intraocular surgery. RNFL, GCC and SCT were measured using high resolution spectral domain OCT. Best corrected visual acuity (BCVA), intraocular pressure (IOP), central macular thickness (CMT), RNFL, GCC, SCT were compared between PXF eyes and fellow eyes.

Results: The mean age of 17 men and 15 women patients were 67.68 ± 6.99 years. Fifteen PXF eyes (46.8%) had glaucoma. The mean BCVA, CMT and macular GCC thickness were not significantly different between the groups (p < 0.05). The mean IOP and vertical C/D ratio were higher in the PXF group (19.75 mm Hg and 0.57) than fellow eyes group (15.44 mm Hg and 0.5), (p < 0.05). The mean superior, nasal and inferior quadrant RNFL thickness were significantly thinner in the PXF eyes group compared with the fellow eyes group (p < 0.05, at all points). The mean SCT in the PXF eyes group was 219.7 ± 74.4 μm versus 256.2 ± 8 μm in the unaffected fellow eyes group (p < 0.05).

Conclusions: Retinal nerve fiber layer and macular choroidal thickness in eyes affected with pseudoexfoliation in unilateral pseudoexfoliation are reduced when compared to unaffected fellow eyes. It is well known that increased outflow resistance and decreased fluid drainage results in the chronic IOP elevations and glaucomatous optic nerve damage. Decreased choroidal thickness, probably due to increased vascular resistance and reduced blood flow secondary to diminished vessel contractility and loss of elasticity, is seen in PXF syndrome.

Keywords: Choroidal Thickness, Optic Coherens Tomography, Unilateral Pseudoexfoliation.

307 (Young Ophthalmologist Award)
Choroidal Neovascular Membrane Secondary to Optic Nerve Pathologies and Intravitreal Antivascular Growth Factor in the Treatment
Mine Ozturk1, Ayse Feyza Onder2
1Department of Ophthalmology, Istanbul, Turkey; 2Haséki Training and Research Hospital, Istanbul, Turkey

Introduction: Choroidal neovascular membrane (CNVM) secondary to optic nerve pathologies is an uncommon entity. It can be associated with numerous conditions such as idiopathic intracranial hypertension, optic disc drusen, congenital disc anomalies such as tilted disc and optic nerve tumors. Intravitreal antivascular growth factor treatment is one of the treatment modalities of CNVM secondary to optic nerve pathologies. The purpose of this report is to document the demographic characteristics of our patients with CNVM secondary to optic nerve pathology and results of intravitreal antivascular growth factor treatment.

Methods or Study Design: Retrospective review of six eyes of five patients with CNVM secondary to different optic nerve pathologies.

Results: Four patients were female and one patient was male. Mean age was 48 years ranging from 36 to 56 years. Associating optic nerve pathologies were idiopathic intracranial hypertension in two, optic disc drusen in two and intracranial meningioma in one patient. The preinjection best corrected visual acuity was counting fingers in all eyes except one with 0.3. Intravitreal antivascular growth factor treatment was performed to all eyes, except one eye because of late period of CNVM. Some eyes had more than one injection. The final visual acuity with a mean follow-up of 14 months (range 13–24 months) was improved in all patients with treatment, ranging from 0.1 to 0.4 with associated angiographic resolution of the hemorrhage.

Conclusions: CNVM is a rare but important complication of optic nerve pathologies and intravitreal antivascular growth factor appears to be an effective treatment option for this entity.

Keywords: Intravitreal Antivascular Growth Factor, Choroidal Neovascular Membrane, Optic Nerve Pathologies.
The Safety of Intraocular Usage of Nonsteroid Antiinflamatory Drugs

Cezmi Dogan1, Hüseyin Yetik2, Hakkı Oktay Seymen2, Oner Süzer3, Övgü Aydin4

1Istanbul University Cerrahpasa Medical Faculty Department of Ophthalmology, Istanbul, Turkey; 2Istanbul University Cerrahpasa Medical Faculty Department Of Physiology, Istanbul, Turkey; 3Istanbul University Cerrahpasa Medical Faculty Department of Pharmacology, Istanbul, Turkey; 4Istanbul University Cerrahpasa Medical Faculty Department of Pathology, Istanbul, Turkey

Introduction: Aim of this study is to determine the effects of intravitreally injected Non Steroidal Antiinflammatory Drugs (NSAIDs) on normal ocular tissues.

Methods or Study Design: Six eyes of 3 rabbits as being control group, 78 eyes of 39 albino rabbits in toto were used and by targeting the different enzymatic steps at the inflammation cascade that they affect 4 different NSAIDs as Aspirin, Indomethacin, Ketorolac and Meloxicam were studied. In the control group the same volume of BSS as in drug groups were injected. To evaluate the ocular effects after drug injections clinical examination methods including biomicroscopy, indirect ophthalmoscopy and Schiotz tonometry, electrophsiological test including ERG and histopathological examination including light microscopy were used. All evaluating tests were performed before the injections and after all injections performed at a unit time all tests were performed 1 week, 1 month and 3 months after the injections as well.

Results: At clinical examination methods including biomicroscopy, indirect ophthalmoscopy and Schiotz tonometry no significant toxicity was determined. If 2 traumatic cataracts seen excluded, number of purely drug depended cataract developed eyes, when taken into account as the intersection of the first seen at first week and re-detected at first month, first seen at first week and disappeared at first month and first seen at first month, was 9 out of 72 drug injected eyes as 12.5% overall. In meloxicam and indomethacin groups, excluding 2 traumatic cataracts each per group, no drug depended cataract was observed. Drug depended cataracts were only observed as 22% (4/18) in Ketorolac and 27.7% (5/18) in Aspirin groups. In tonometry no value out of the normal range of rabbits (17.5 ± 3.1 mm Hg) were observed. No toxicity sign was observed at electrophysiological and histopathological examinations.

Conclusions: After intravitreal injection of NSAIDs (including Aspirin, Ketorolac, Indomethacin, Meloxicam) no significant toxicity sign was observed but cataract. According to the results of this study, intravitreal NSAIDs injections may be an additional or alternative treatment option for several anterior or posterior segment ocular diseases those shown to get useful effects after other antiinflammatory drug injections. Further human studies are needed to confirm this animal study’s observations.

Keywords: Non Steroidal Antiinflammatory Drugs, NSAIDs, Intravitreal Injections, Toxicity.

Retina Pediatric

Ranibizumab for Central Retinal Vein Occlusion in Paediatrics Patients

Verónica Castro, Catalina Navarro, Javier Montero

Hospital General Universitario de Valencia, Valencia, Valencia, Spain

Introduction: Retinal vascular occlusion is the most common cause of retinopathy leading to severe visual loss in all age groups. Central retinal vein occlusion (CRVO) is usually seen in older age group and is often associated with systemic vascular diseases. We describe the efficacy of treatment with Ranibizumab intravitreal injections in a cystoid macular edema (CME) secondary to central retinal venous occlusion in a healthy 16-year-old female with the only predisposing risk factor of oral contraceptive treatment.

Methods or Study Design: Case report. Best-corrected visual acuity (BCVA) was measured using Early-Treatment-Diabetic-Retinopathy-Study-Chart, and qualitative/quantitative analysis of images was obtained by spectral-domain OCT. Intravitreal Ranibizumab injections were administered in the operating room under sterile conditions.

Results: After doing a comprehensive range of blood tests including a full blood count, protein electrophoresis, lupus anticoagulant, autoantibodies, and thrombophilia screen and a MRI scanning of the orbits and visual pathway all of which showed no abnormality and supposed oral contraceptive treatment as the only thrombotic risk factor; one intravitreal Ranibizumab injection was administered. During a follow-up of 118 days our patient received 3 monthly Ranibizumab injections. Baseline mean BCVA (logMar) increased from 0.7 to 0.3 after the first injection, improving to 0.1 after three injections. A significant decrease in central macular thickness (CMT) (μ) after one single Ranibizumab injection was found; reducing from 1053 μ to 432 μ. At the end of the follow-up period, CMT was 232 μ; 821 μ less than prior.

Conclusions: From our knowledge, this is the only case of a CME secondary to CRVO in an adolescent patient treated with 3 monthly ranibizumab injections. A significant improvement in BCVA with a decrease in CMT was found suggesting that Ranibizumab is an effective and secure treatment in paediatric patients with macular oedema.

Keywords: Ranibizumab, Pediatrics, Oral Contraceptive Treatment, Central Retinal Vein Occlusion.
**66 (Rapid Fire Presentation)**

**Intravitreal Bevacizumab Monotherapy for Zone I Retinopathy of Prematurity**

Murat Gunay¹, Huseyin Yetik², Gokhan Celik³

¹Zeynep Kamil Maternity and Children’s Disease Education and Research Hospital, Istanbul, Turkey; ²Istanbul University Cerrahpasa Faculty of Medicine; Surp Pirgic Armenian Hospital, Istanbul, Turkey; ³Zeynep Kamil Maternity and Children’s Disease Education and Research Hospital, Istanbul, Turkey

**Introduction:** To evaluate the treatment outcome and success rate of intravitreal bevacizumab monotherapy (IVBM) for Zone I retinopathy of prematurity (ROP).

**Methods or Study Design:** Totally 35 infants with anterior and/or posterior Zone I ROP were included in this prospective interventional case series study. A 0.625 mg IVB was injected to all eyes under topical anaesthesia with a 30-gauge needle 1-mm from limbus through pars plica.

**Results:** Twenty six neonates (74.3%) had anterior and 9 neonates (25.7%) had posterior Zone I ROP. The mean, gestational age (GA), birth weight (BW), postmenstrual treatment time and follow-up period were 25.22 ± 1.64 weeks, 741.11 ± 152.06 g, 32.33 ± 1.58 weeks, 72.89 ± 3.82 weeks for posterior Zone I ROP; 27.54 ± 1.94 weeks, 894.04 ± 229.07 g, 33.81 ± 1.67 weeks, 73.04 ± 3.68 weeks for anterior Zone I ROP, respectively. There was a statistically difference of GA and treatment time between anterior and posterior Zone I ROP (p < 0.05). The treatment time of the second and third injections were; 38.50 ± 3.10 weeks and 43.50 ± 4.94 weeks, respectively. There was no significant difference of total number of IVB injections between anterior (globally 55 injections, 66.3%) and posterior (globally 28 injections, 33.7%) Zone I ROP (p = 0.224). The rate of additional IVB treatment was 12.9% (second dose) and 5.7% (third dose). Success rates of 1st, 2nd and 3rd injections were 87.1%, 94.3% and 100%, consecutively. Supplemental IVB treatment was strongly correlated with lower GA (p < 0.05) but not with BW (p > 0.05). However, all neonates who needed a third dose of IVB had BW of 1000 grams or lower.

**Conclusions:** The present study demonstrated that IVBM is an excellent method in the management of Zone I disease. Especially premature infants with no retinal vasculature beyond macula have higher benefits in terms of treatment outcome as well as have a chance to gain normal appearing retina.

**Keywords:** Bevacizumab, Monotherapy, Retinopathy of Prematurity.

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**Normative Spectral Domain Optical Coherence Tomography Data in Healthy Turkish Children**

Fatma Betül Güragaç, Yüksel Totan, Emre Güler, Aylin Tenlik

Turgut Özal University, Medical Faculty, Department of Ophthalmology, Ankara, Turkey

**Introduction:** To determine the normative database of macula, optic disc, retinal nerve fiber layer (RNFL), ganglion cell-inner plexiform layer (GC-IPL) thickness in healthy Turkish children by Optical Coherence Tomography (OCT) and to identify the determinants of these measurements.

**Methods or Study Design:** This study involved 343 eyes from 343 healthy children (146 boys, 197 girls) with ages between 3 and 17 years. Each child underwent a dilated eye examination, cycloplegic refraction and axial length (AL) measurement using Nidek AL-Scan optical biometer (Nidek CO, LTD.). OCT measurements were performed with Cirrus HD-OCT. Right eye of each subject was selected for analysis.

**Results:** The mean age of the children was 9.62 ± 4.10 years (range, 3–17 years). The mean spherical equivalent (SE) was −0.06 ± 1.51 Diopters (D). The mean AL was 23.02 ± 1.00 mm. The mean macular thickness and volume, the mean foveal thickness, the mean inner and outer macular segmental thicknesses were found as; 279.0 ± 14.0 μm, 9.96 ± 0.50 mm³, 245.5 ± 21.2 μm, 335.3 ± 13.9 μm, and 278.2 ± 13.6 μm, respectively. The mean RNFL and GC-IPL thickness were 96.6 ± 10.8 μm and 83.4 ± 5.5 μm. There were significantly negative correlations between AL and the average macular thickness, outer macular segments, non-temporal RNFL quadrants and average RNFL (p < 0.001). There was significantly positive correlation between age and foveal thickness and inner segment of macula (p < 0.001). GC-IPL thickness was significantly associated with mean RNFL thickness, AL, SE, central foveal thickness, rim area and disc area (p < 0.001).

**Conclusions:** The pediatric normative database using SD-OCT may provide to diagnosis and monitoring of macular diseases, optic nerve diseases and glaucoma in children. In addition, the age, AL and refraction may affect the measurements of macular parameters and RNFL obtained by means of OCT.

**Keywords:** Pediatric OCT, Cirrus HD-OCT, Normative Database.

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**Results of Diod Laser Photocoagulation in the Treatment of Retinopathy of Prematurity**

Seyhan Dikçi, Oguzhan Genç, Turgut Yılmaz, Penpe Gül Firat, Soner Demirel

Department of Ophthalmology, Turgut Özal Medical Center, Inonu University, Malatya, Turkey

**Introduction:** Retinopathy of prematurity (ROP) is a complex and multifactorial disease of the developing retinal vasculature and it may lead to blindness in premature babies. Low birth weight, low gestational week and oxygen therapy are well known risk factors in the development of disease. We evaluated the results of diode laser photocoagulation (DLPC) in treatment of ROP.

**Methods or Study Design:** 81 eyes of 42 ROP patients treated with DLPC that were referred to our hospital or already hospitalized in Neonatal Intensive Care Units between January 2012-June 2014 were investigated. The patients were examined in term of birth weights, gestational weeks, stage of retinopathy, number of laser spots and complications of DLPC.

**Results:** 25 of 42 (59.5%) patients were female, 17 (40.4%) were male. The mean gestational weeks of patients were postmenstrual 27.66 ± 0.7 (23–33) while the mean birth weights were 990 ± 127.27 (540–1980) grams. Pre-threshold disease was observed in 68 of 81 (83.9%) eyes applied DLPC, while in 13 eyes (16%) aggressive pos-
Retinal Diagnostics and/or Treatments

13 Macular Thickness Measurements in Healthy Turkish Subjects via Optical Coherence Tomography: Changes with Age and Gender
Ihsan Yilmaz, Abdullah Ozkaya, Ahmet Taylan Yazici
Beyoglu Eye Training and Research Hospital, Istanbul, Turkey

Introduction: To evaluate normal macular thickness in Turkish population and compare macular thickness in age decades and gender groups.

Methods or Study Design: Two hundred eyes of 100 patients (54 female, 46 male) were included in this retrospective cross-sectional study. All patients were over 20 years old and they had no ocular disorder rather than low refractive error. Macular thickness measurements were measured via Stratus OCT.

Results: The mean age was 50.7 ± 17.8 years (range 20–89). The mean foveal thickness was 199.2 ± 24.7 μm (range 138–276) in the study population, 195.8 ± 26.9 μm (range 138–276) in females and 203.2 ± 21.2 μm (range 163–268) in males. Males had thicker macula at fovea, inner temporal quadrant and outer temporal quadrant than females (p = 0.035, p = 0.015, p = 0.025). There was no difference in macular thickness between age decades.

Conclusions: This study presented normal macular thickness in our region. Additionally, it showed that macular thickness may not change with ageing and males may have thicker macula than females.

Keywords: Macular Thickness, Optical Coherence Tomography, OCT.

27 Intravitreal Ranibizumab in the Treatment of Peripapillary Choroidal Neovascularization Secondary to Morning Glory Syndrome in a Child
Abdullah Ozkaya, Ihsan Yilmaz, Yalcin Karakucuk, Zeynep Alkin, Ahmet Taylan Yazici
Beyoglu Eye Training and Research Hospital, Istanbul, Turkey

Introduction: Congenital optic nerve abnormalities may rarely cause choroidal neovascularization (CNV). In this case report we aimed to present the outcomes of intravitreal ranibizumab treatment in a child with CNV secondary to morning glory syndrome.

Methods or Study Design: Case report.

Results: A 7-year-old boy admitted with a complaint of visual blurring since 5 days in the right eye (OD). Visual acuity was 0.2 snellen equivalent OD. Biomicroscopic anterior segment evaluation was normal. Fundus examination revealed morning glory optic disc with a yellowish lesion at the temporal margin of the disc. Optical coherence tomography revealed a peripapillary CNV and intraretinal fluid, and also fluoroscein angiography showed leakage from the CNV. The patient underwent 0.5 mg/0.05 ml intravitreal ranibizumab injection under general anesthesia. After a month from the injection visual acuity increased to 0.4 snellen equivalent, and OCT showed no subretinal fluid around the CNV.

Conclusions: To our knowledge this is the first case of CNV secondary to morning glory syndrome in a child. Peripapillary CNV secondary to optic nerve abnormalities may be succesfully treated with intravitreal ranibizumab injections.

Keywords: Choroidal Neovascularization, Morning Glory Syndrome, Ranibizumab.

30 Escherichia Coli Metastatic Bilateral Endophthalmitis After Shock Wave Lithotripsy in a Diabetic Patient
Nakhléh E. Abu-Yaghi, Ahmed N. Shokry, Ayman F. Ghanem
The University of Jordan, Amman, Jordan

Introduction: A 57 year-old male diabetic patient with a history of recurrent renal stones presented to the retina service with sudden bilateral visual loss a few days after a session of extracorporeal shock wave lithotripsy. He had an unremarkable past ophthalmic history.

Methods or Study Design: Observational case report and review of literature.

Results: Slit lamp examination revealed a picture of severe bilateral endophthalmitis with a visual acuity of hand motions in the right eye and no light perception in the left eye. B scan ultrasoundography confirmed the presence of vitreous inflammation in both eyes. Systemic work up revealed uncontrolled blood sugar and a mixed urosepsis. The patient was managed with topical steroids, antibiotics, cycloplegics along with broad spectrum intravenous antibiotics and antifungals. He underwent vitreous tap and...
 injection of intravitreel vancomycin, ceftriaxone and variconazole along with subconjunctival dexamethazone. Vitreous cultures were positive for Escherichia coli, and the patient received further intravitreal antibiotic injections. The right eye stabilized but required cataract extraction, intra-ocular lens implantation and a pars plana vitrectomy for persistent vitreous haze six months after presentation. Visual acuity improved and remained stable at counting fingers at 3 meters. The left eye could not be salvaged.

Conclusions: Bilateral metastatic endogenous endophthalmitis is a rare but devastating entity that can follow certain medical or surgical interventions like extracorporeal shock wave lithotripsy. Clinicians should be aware of such a risk especially in susceptible patients. A high index of suspicion and aggressive management can be helpful to salvage visual function.

Keywords: Endogenous Endophthalmitis, Extracorporeal Shock Wave Lithotripsy, Escherichia Coli, Intravitreal Injection, Pars Plana Vitrectomy.

31 Study of the Effect of Intravitreal Dexamethasone Implant in Pseudophakic Macular Edema: Preliminary Results
Teresa Diago, Leticia Ortega-Evangelio, Juan Miguel Tomás
Hospital Universitario de La Ribera, Alzira, Valencia, Spain

Introduction: The objective of the study is to evaluate the efficacy of intravitreal dexametasone implant on the treatment of pseudophakic macular edema (PME).

Methods or Study Design: Retrospective, observational, descriptive study in the period of one year (from 1st January 2013 to 31st December 2013) in 4 patients who received an intravitreal injection of dexametasone implant due to PME in Hospital Universitario de La Ribera (Alzira, Valencia, Spain). A complete ophthalmic examination was practised in these patients. Best-corrected visual acuity (BCVA), macular thickness (MT) and duration of the effect of the treatment were studied.

Results: At baseline, the mean MT was 414 μm. After dexametasone implant, mean values of MT decreased to 330.25 μm at month 1. The mean change from baseline MT was 83.75 μm. The baseline mean BCVA was 0.3 and improved to 0.575 at month 1. The mean change from baseline was 0.275. The mean duration of the effect of the treatment was 3.5 months.

Conclusions: The intravitreal dexametasone implant is a possible treatment for Irvine-Gass syndrome due to the improvement of the visual acuity and the reduction of the macular thickness of these patients.

Keywords: Dexametasone Implant, Pseudophakic Macular Edema.

33 Retinal Damage in Chloroquine Maculopathy. Case Report Utilizing Heidelberg Spectralis OCT
Stefano Della Maggiore, Simona Trivella, Andrea Vento
Versilia Hospital, Lucca, Italy

Abstract A 65-years-old woman admitted to our observation mourning for increasing and rapid visus wasting on last two months. In addition to routine testing she has, in our division, Visual field control, SD-OCT, fluorescein angiography and fundus autofluorescence. In another division she has mERG. She is suffering from rheumatoid arthritis and taking hydroxychloroquine since twenty years without any toxicity problems and having periodic ophthalmologic controls.

Keywords: Hydroxychloroquine, Fundus Autofluorescence, SD-OCT.

34 Electrophysiological Testing in Sporadic North Carolina Macular Dystrophy with Asymmetric Findings
Gokcen Gokce, Cem Ozgonul, Ali Hakan Durukan
1Sarikamis Military Hospital Department of Ophthalmology, Kars, Turkey; 2Anittepe Dispensary Department of Ophthalmology, Ankara, Turkey; 3Gulhane Military Medical Academy Department of Ophthalmology, Ankara, Turkey

Introduction: This study aims to describe clinical characteristics, electrophysiological and color vision testing in a patient with sporadic North Carolina Macular Dystrophy (NCMD) with asymmetric findings.

Methods or Study Design: The chart of a 20 year old male patient which was admitted to our retina department with a complaint of bilateral decreased vision since his childhood was reviewed. Fundus photography image, fluorescein angiography (FA), optical coherence tomography (OCT), Farnsworth-Munsell (FM) 100 hue test, electrooculography (EOG), multifocal and flash electoretinography (Mf-ERG and F-ERG) data were also obtained.

Results: On ophthalmologic examination, best corrected visual acuity (BCVA) was 20/100 in the right eye (RE) and 20/100 in the left eye (LE). Biomicroscopic evaluation was unremarkable. Dilated fundoscopic exam revealed fine drusen-like lesions at the level of the retinal pigmented epithelium in the right central macular area (NCMD, Grade 1) and well-demarcated, 3 disc diameter, central chorioretinal degeneration with hyperpigmentation at the border of the lesion resembling macular coloboma (NCMD, Grade 3). FA showed no choroidal neovascularization. OCT demonstrated retinal atrophy in the RE and full-thickness chorioretinal defect in the LE. FM 100 hue test revealed low color discrimination. F-ERG was normal in both eyes. Mf-ERG detected a central depression in both eyes. EOG showed depressed arden ratio in the LE. No affected individuals have been identified in patients’ family.
Cone Dystrophy with Supernormal Rod Electroretinogram: Report of Five Cases
Gokcen Gokce1, Cem Ozgonu2, Gungor Sobaci3
1Sarikamis Military Hospital, Department of Ophthalmology, Kars, Turkey; 2Anittepe Dispensary, Department of Ophthalmology, Ankara, Turkey; 3Hacettepe University, Faculty of Medicine Department of Ophthalmology, Ankara, Turkey

Introduction: Cone dystrophy with a supernormal rod electroretinogram (ERG) is a rare form of cone dystrophy which is characterized by reduced visual acuity, specific elevated scotopic b-wave amplitudes. The purpose of this study was to present the clinical details and electrophysiological features in cone dystrophy with supernormal rod ERG.

Methods or Study Design: Five male patients from four families between 20 and 26 years of age were included in this study. All patients were admitted to our retina department with a complaint of bilateral decreased vision, increased light sensitivity and nyctalopia. The onset of symptoms was in the first and second decades of life. All patients underwent a detailed ophthalmological evaluation including color vision testing, Goldmann visual field test, multifocal and full-field ERG (in accordance with ISCEV protocol), dark adaptometry, electrooculogram, fundus autofluorescence imaging, and optical coherence tomography.

Results: On ophthalmologic examination, best corrected visual acuities ranged from 20/200 to 20/100. Biomicroscopic evaluation was unremarkable. Dilated retinal examination revealed pigment epithelial changes at the fovea. Fundus autofluorescence imaging revealed perifoveal ring. All patients have variable degree of color vision defects and reduced color discrimination. Visual field test revealed central scotoma. Optical coherence tomography demonstrated retinal atrophy. All patients presented with characteristic ERG findings. Scotopic responses were markedly delayed. Photopic amplitudes and 30 Hz flicker response were severely reduced. Scotopic b-waves elevated steeply.

Conclusions: The clinical phenotype of the patients with cone dystrophy with supernormal rod ERG can be variable. Characteristic ERG changes may be helpful in evaluating the course of the disease and KCNV2 mutation enables the final diagnosis.

Keywords: Cone Dystrophy, Supernormal Rod Electroretinogram, Nyctalopia, Perifoveal Ring, KCNV2 Mutation.

Nab-Paclitaxel Induced Cystoid Macular Edema: Clinical Experience with Intravitreal Implant of Dexamethasone vs Topical Dorzolamide
Vito Fenicia, Sara Verrilli, Santi Maria Recupero
Sapienza University of Rome, Rome, Italy

Introduction: To compare the efficacy of intravitreal dexamethasone implant to dorzolamide (Trusopt) eye drops in the treatment of nab-paclitaxel induced cystoid macular edema (CME).
**Methods or Study Design:** Interventional case report of a patient with bilateral CME after starting nab-paclitaxel therapy (Abraxane) for metastatic breast cancer treated with intravitreal dexamethasone implant in the right eye and topical dorzolamide in the left eye. Visual acuity and macular thickness (assessed by spectral-domain optical coherence tomography, SD-OCT) were evaluated before and after treatment at 10 and 30 days.

**Results:** A 40-year-old patient with recurrent, metastatic breast cancer presented with bilateral visual loss 4 months after nab-paclitaxel was initiated. Baseline visual acuity (VA) was 20/32 in the right eye (OD) and 20/40 in the left eye (OS). Fundus exam showed marked CME in both eyes (OU). Fluorescein angiography demonstrated the presence of petalloid CME without late-phase capillary leakage. SD-OCT showed cystoid spaces predominantly involving the outer and inner nuclear layers with a foveal thickness of 544 μm in OD and 514 μm in OS. Intravitreal dexamethasone implant in the right eye and topical dorzolamide in the left eye were administered. One month later visual acuity was almost 20/20 in OD and 20/20 in OS. Macular thickness improved to 376 μm in OD and 284 μm in OS with a relevant reduction of cystoid macular edema.

**Conclusions:** Off-label use of topical dorzolamide proved more effective than intravitreal dexamethasone implant in the treatment of non-leaking CME secondary to nab-paclitaxel. The persistence of CME suggests that additional non-inflammatory mechanisms are involved. Understanding of the mechanisms underlying nab-paclitaxel associated CME is needed.

**Keywords:** Angiographically Non-Leaking Cystoid Macular Edema, Nab-Paclitaxel, Intravitreal Dexamethasone Implant, Dorzolamide, Metastatic Breast Cancer.

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**40 Intravitreal Ranibizumab in the Treatment of Choroidal Neovascularization in Idiopathic Angioid Streaks Keywords: Ranibizumab, Angioid Streaks**

Fatih Cakir Gundogan¹, Umit Yolcu², Oktay Diner¹

¹GATA Medical School, Ophthalmology, Ankara, Turkey; ²Siirt Military Hospital, Ophthalmology, Siirt, Turkey

A 28-year old man applied with bilateral visual loss. Visual acuity was 0.3 in OD and 0.7 in OS. Fundoscopy and fluorescein angiography showed angioid streaks encircling optic discs in both eyes. Optical coherence tomography showed bilateral serous retinal elevation. Systemic and ocular screening tests showed no specific cause for angioid streaks. Upon intravitreal injection of ranibizumab (twice in OD, once in OS), subretinal fluid almost disappeared in OU. Visual acuities increased to 0.7 in OD and 0.9 in OS. Three months later, no worsening in function and structure occurred.

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**43 Subfoveal Choroidal Thickness Change After Combining Treatment of PDT and Intravitreal Ranibizumab for Idiopathic Serum Retinal Pigment Epithelium Detach Ment**

Xu Li, Cui Li Hong, Liu Dong Ning

Shenyang the fourth people hospital, Shenyang, China

**Introduction:** To investigate changes in subfoveal choroidal thickness (SFCT) after the combining treatment of PDT and intravitreal injections of ranibizumab for idiopathic serum retinal pigment epithelium detachment (ISRPED).

**Methods or Study Design:** The prospective consecutive case series study included 13 patients (17 eyes) with ISRPED, eyes were treated with a single intravitreal injection of 0.5 mg ranibizumab combining with a single PDT (full time, half dosage). Intravitreal injection was followed as needed at each month, and PDT at three months respectively. Subfoveal choroidal thickness was measured using enhance depth imaging optical coherence tomography.

**Results:** The mean total follow-up time was 12 ± 1.5 months. The mean times of intravitreal injection and PDT was 3 ± 1.3 and 1 ± 0.5 respectively. In the treated eyes, the SFCT decreased not significantly at 1 month later (P > 0.05), but significantly at 3 month later (P < 0.05). Change in SFCT was marginally (P = 0.12) associated with the change in PED. The change of SFCT at 12 month was not significantly compared with the chang at 3 month (P > 0.05). In the unilateral ISRPED, the SFCT did not change significantly during follow-up (P = 0.81).

**Conclusions:** 1. In the patients with ISRPED, the dilatation of the choroidal capillary vessel may be the reason of the disease followed by the damage of the RPE’s function. 2. The combining treatment of the PDT and intravitreal injection of ranibizumab for the ISRPED maybe better. 3. The potential role of SFCT as an additional non-invasive marker for the diagnosis and follow-up of ISRPED maybe examined in future studies.

**Keywords:** Subfoveal Choroidal Thickness, PED, Ranibizumab, PDT.

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**46 Macular Thickness Measurement via Heidelberg Spectralis SD-OCT in Pediatric Patients**

Ihsan Yilmaz, Abdullah Ozkaya, Zeynep Alkin, Irfan Perente, Cengiz Alagoz, Ahmet Taylan Yazici

Beyoglu Eye Training and Research Hospital, Istanbul, Turkey

**Introduction:** We aim to determine the normative values of the macular thickness measurements via spectral-domain optical coherence tomography (SD-OCT) in healthy pediatrics.

**Methods or Study Design:** Sixty eyes of 30 healthy pediatric patients (20 females, 10 males) were included in this prospective study. Macular thickness measurements were performed via Spectralis SD-OCT. The average retinal thicknesses of the nine macular sectors as defined by the Early Treatment Diabetic Retinopathy Study and central macular volume were recorded.
Results: The mean age was 10.8 ± 3.1 years (range 6–15). The mean central macular thickness was 261 ± 27 μm (range 223–434). The mean central volume was 8.66 ± 0.32 mm³ (range 8.01–9.54). The mean thickness was 342 ± 13 μm for superior inner, 327 ± 15 μm for temporal inner, 341 ± 22 μm for inferior inner, 339 ± 20 μm for nasal inner, 300 ± 11 μm for superior outer, 286 ± 15 μm for temporal outer, 291 ± 11 μm inferior outer, 315 ± 23 μm for nasal outer segment.

Conclusions: The means and normative reference ranges are provided for Spectralis OCT in healthy pediatrics, between 6–15 years old, and this values can be used as a standard to compare those of children suspected of having retinal or optic nerve abnormalities.

Keywords: Macular Thickness, Optical Coherence Tomography, OCT, SD-OCT.

48 Two-Year Results of Intravitreal Ranibizumab in Patients with Myopic Choroidal Neovascularization
Andrey G. Shchuko, Natalya V. Zaytseva, Igor V. Zlobin
Irkutsk Branch of S. Fyodorov Eye Microsurgery Federal State Institution, Irkutsk, Russia

Introduction: Choroidal neovascularization (CNV) is one of the vision-threatening complications of pathologic myopia. The use of anti-VEGFs is a novel therapeutic strategy in the treatment of this group of patients. Purpose. To assess the efficacy and safety of ranibizumab in the treatment of CNV caused by pathologic myopia (myopic CNV) during 24-months follow-up.

Methods or Study Design: 38 eyes of 37 patients with myopic CNV were treated by intravitreal ranibizumab 0.5 mg. Inclusion criterion was disease activity: recent decrease of best-corrected visual acuity (BCVA); metamorphopsia, scotoma; fluorescein angiography (FA) and optical coherence tomography (OCT) signs of CNV activity. After the initial injection re-treatment was performed as ‘pro re nata’ when the signs of disease activity were present.

Results: 3 patients were men and 34 were woman, the mean age was 47.1 (range 27–66) years. Mean refractive error was –10.6 (range –1.6 to –16.5) D, mean axial length 27.1 mm (range 24.7–30.5). The mean BCVA at baseline was 0.2 (SD 0.02, LogMAR equivalent 0.7). The mean follow-up was 24 months. The mean number of injections was 2.2 (range 1 to 5) during the 1st year. In 37 eyes additional injections were not required in the 2nd year. The final BCVA improved to 0.4 (SD 0.04, LogMAR equivalent 0.4) (p < 0.001) and reached >0.5 (LogMAR equivalent <0.3) in 50% of patients. Central macular thickness assessed by OCT reduced from 353.3 (SD 18.22) to 253.1 (SD 8.4) μm (p < 0.001). Subretinal neovascular membrane height and length reduced by 20%. By the end of follow-up OCT- and FA-disease activity was suppressed in all patients. No ocular and systemic side effects were observed.

Conclusions: Ranibizumab have been shown to be highly effective in the treatment of myopic CNV with good safety profile and a mean of 2.2 injections in 2 years of treatment in the most of patients.

Keywords: Myopic CNV, Ranibizumab.

54 Spectral Domain-Optical Coherence Tomographic Findings in Patients with Ankylosing Spondylitis Under Anti-Tumor Necrosis Factor-Alpha Therapy
Nilufer Ilhan1, Nilgül Ustun2, Esra Ayhan Tuzcu3, Mesut Coskun1, Abdullah Erman Yagiz2, Oezgur Ilhan3, Nhiha Parlakfirer1
1Mustafa Kemal University, Faculty of Medicine, Department of Ophthalmology, Hatay, Turkey; 2Mustafa Kemal University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, Hatay, Turkey

Introduction: The aim of the present study was to evaluate the effect of tumor necrosis factor-alpha (TNF-a) blockade on the thickness of the peripapillary retinal nerve fibril layer (RNFL), the ganglion cell-inner plexiform layers (GCIPL), and the macula in ankylosing spondylitis (AS) patients under anti-TNF-a therapy.

Methods or Study Design: Twenty-one patients with AS received etanercept, or adalimumab, or infliximab for at least six months. Erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) levels, and Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) scores were measured before and six months after the treatment. Peripapillary RNFL, four regional fields (superior, inferior, nasal, and temporal), GCIPL, and macular thicknesses of the patients were analyzed by optic coherence tomography before the treatment and three and six months later.

Results: The mean BASDAI, ESR, and CRP values were 5.2 ± 1.5, 31.6 ± 21.7, and 15.7 ± 13.9, respectively, at the beginning of the treatment and 2.3 ± 1.7, 21.3 ± 15.1, and 10.1 ± 10.3, respectively, six months after the treatment. There were significant differences between the mean BASDAI, ESR, and CRP values at the beginning of treatment and six months later (p < 0.001, p = 0.007, and p = 0.009, respectively). There were no significant differences between peripapillary RNFL (p = 0.24), four regional fields (p = 0.98, p = 0.23, p = 0.09, p = 0.47), GCIPL (p = 0.25), or macular (p = 0.33) thicknesses of the patients during anti-TNF-a treatment. In addition, the mean intraocular pressure levels throughout the followup did not show significant variation on repeated-measures ANOVA (p = 0.77).

Conclusions: TNF-a blockade does not seem to influence RNFL, GCIPL, or macular thickness of patients with AS in the short term.

Keywords: Spondylitis, Ankylosing; Tomography, Optical Coherence; Tumor Necrosis Factor-Alpaha.
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Leber’s Idiopathic Stellate Neuroretinitis: A Case Report
Defne Nmn Kalayci, Semra Nmn Koca, Kurtulus Nmn Serdar
Department of Ophthalmology, Ankara Numune Training and Research Hospital, Ankara, Turkey

Introduction: In this article we report a rare case of bilateral Leber’s idiopathic stellate neuroretinitis (LISN) which is characterised by poor visual recovery associated with massive foveal hard exudates.

Methods or Study Design: Retrospective case report.
Results: A 35-year-old female patient presented with decreased vision in her left eye since 1 month. She had a history of visual loss in her right eye a year ago with poor recovery. She was diagnosed as bilateral Leber’s idiopathic stellate neuroretinitis after clinical and laboratory evaluation and low vision in the right eye with former involvement was related to the residual hard exude mass at the fovea. On follow up after 3 years, the foveal hard exudate mass decreased in size with visual improvement in the right eye, whereas visual recovery remained poor with a plaque of foveal hard exude in the left eye and normal appearing optic discs bilaterally.

Conclusions: Visual prognosis may be guarded in some cases of Leber’s idiopathic stellate neuroretinitis. The patient reported herein is noteworthy because poor visual prognosis is associated with hard exude deposition at the fovea rather than serious optic nerve involvement as has previously been reported as the cause of unfavorable outcome.

Keywords: Leber’s Idiopathic Stellate Neuroretinitis, Macular Hard Exudate, Neuroretinitis.

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The Causes of Hyperreflective Dots in Optical Coherence Tomography Excluding Diabetic Macular Edema and Retinal Venous Occlusion
Burak Turgut, Hakan Yildirim
Firat University, Elazig, Turkey

Introduction: We aimed to investigate the causes of hyperreflective dots (HRDs) in optical coherence tomography (OCT) excluding diabetic macular edema (DME) and RVO (retinal vein occlusion).

Methods or Study Design: The medical records of 56 patients with HRDs documented by OCT were reviewed retrospectively. The patients with DME and RVO were excluded from the study in order to prevent misdiagnosing hard exudates or HRDs. The causes, unilaterality or bilaterality of HRD and demographic properties of the patients with HRD were evaluated.

Results: Sixty four eyes of 56 patients having HRDs were included in this study. Of the patients with HRD, 17 (30.56%) were women and 39 (69.44%) were men. The ages of patients were between 13 to 84 years (median 60.18 years). The causes of HRD were as follows: papilledema in 4 eyes (6.25%), active neovascular age related macular degeneration (AMD) in 33 eyes (51.56%), familial dominant drusen in 2 eyes (3.13%), central serous chorioretinopa-
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**Comparison of Spectral Domain Optical Coherence Tomography and Heidelberg Retinal Tomograph III Retina Module in the Measurement of Clinically Significant Diabetic Macular Edema**

*Mustafa Guzyet, Fatih Mehmet Adibelli, Huseyin Ozcan*

1Harran University School of Medicine, Department of Ophthalmology, Sanliurfa, Turkey; 2M. Akif Inan Education and Research Hospital, Department of Ophthalmology, Sanliurfa, Turkey

**Introduction:** The most efficient tool for preventing vision loss from diabetic retinopathy is screening and early identification of diabetic macular edema. The purpose of the study was to quantitatively assess the central macular edema using Heidelberg Retinal Tomograph III (HRT III) Retina Module and its correlation with macular thickness measurements with Optical Coherence Tomography (OCT) in patients with clinically significant diabetic macular edema (CSDME).

**Methods or Study Design:** In a single-centre prospective clinical trial, 36 eyes of 31 patients with type 2 diabetes with CSDME were included. Macular edema index (MEI) measurements with HRT® III (Heidelberg Engineering) Retina Module and central foveal thickness measurement with spectral domain OCT (Spectralis® Heidelberg Engineering) was performed in same study population.

**Results:** The mean MEI value ± SD of the central foveal sector was 1.71 ± 0.58 by HRT III and the mean central foveal thickness of the entire group was 296.81 ± 143.55 μm by OCT measurements. There was a significant overall correlation between HRT and the OCT measurements (p < 0.001).

**Conclusions:** Central MEI measurement by HRT III Retina Module significantly correlates with central foveal thickness by spectral domain OCT. HRT III Retina Module is a useful tool for monitoring macular thickness in diabetic patients with CSDME. But HRT is more prone to erroneous and missing real thickness readings particularly under heterogeneous and difficult vitreoretinal interface measuring conditions.

**Keywords:** Optical Coherence Tomography, Heidelberg Retinal Tomograph III Retina Module, Diabetic Macular Edema.

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**Vitreous Incarceration After Ranibizumab Injection: An Ultrasound Biomicroscopy Study**

*Sezer Helvacı, Nedime Sahinoglu-Keskek, Mustafa Kızıloglu*

Adana Numune Education and Training Hospital, Adana, Turkey

**Introduction:** Intravitreal injections have become a mainstay of medical therapy for the management of retinal diseases including diabetic retinopathy, age related macular degeneration, macular edema and retinal vein occlusion. Vitreous incarceration at the injection site is thought to lead to higher risk for possible complications like infection, retinal breaks, retinal detachment, vitreous hemorrhage and fibrovascular proliferation at the injection site particularly in diabetic patients. In the current research we aimed to study vitreous incarceration at the injection site using ultrasound biomicroscopy (UBM).

**Methods or Study Design:** The study included 39 eyes of 34 patients with intravitreal injection of ranibizumab. Existence of vitreous incarceration at the pars plana site of intravitreal injection of 0.05 ml of drug was studied by UBM (50 MHz probe of the HiScan Optikon) the day after surgery.

**Results:** The mean age of the patients was 59.7 (±10.1) years. 58.9% patients were female. Vitreous incarceration into pars plana site was detected by UBM in 6 eyes (15.3%), the day after intravitreal injection.

**Conclusions:** Vitreous incarceration at the injection site after intravitreal injections is thought to lead to higher risk for possible complications. To our knowledge it is the second study about the rate of vitreous incarceration after intravitreal injections. The clinical importance of vitreous incarceration after injection of drug is a matter of fact. Further long-term prospective studies are recommended.

**Keywords:** Age Related Macular Degeneration, Anti-Vascular Endothelial Growth Factor, Branch Retinal Vein Occlusion, Cystoid Macular Edema.
ranibizumab. This is an early, but also encouraging and promising result of intravitreal aflibercept, that may be a good alternative management for CNV secondary to anjoid streaks. It also demonstrates switching anti-VEGF agents may also have favourable outcomes in such cases. Further prospective studies on a larger number of patients with a longer follow-up should help to establish the real therapeutic effect of this agent.

**Keywords:** Aflibercept, Anjoid Streaks, Choroidal Neovascularization.

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**Effect of Ranibizumab Injection on Ocular Blood Flow in Patients with Neovascular Age-Related Macular Degeneration**

Selcuk Sizmaz, Ebru Esen, Nihal Demircan
Cukurova University School of Medicine, Department of Ophthalmology, Adana, Turkey

**Introduction:** The aim of this study is to evaluate the effect of single injection of intravitreal ranibizumab on ocular blood flow in neovascular age-related macular degeneration.

**Methods or Study Design:** Patients that underwent intravitreal 0.5 mg ranibizumab injection for unilateral nAMD were enrolled in this prospective cross-sectional study. Peak systolic velocity, end-diastolic velocity, time averaged maximum velocity, pulsatility index, and resistivity index of ophthalmic and central retinal arteries of both eyes at baseline and at the first month visit were measured by By coloured Doppler imaging (CDI). The readings in the injected eye were compared with the readings in the fellow eye. Flow velocities were measured in centimeters per second.

**Results:** Seventeen patients (9 females, 8 males; age 67.7 ± years [mean ± standard deviation] were enrolled. Peak-systolic velocity, end-diastolic velocity, time averaged maximum velocity, pulsatility index, and resistivity index of the injected eye at baseline were 42.2 ± 17.7, 11.8 ± 6.9, 22 ± 11.6, 1.5 ± 0.5, 0.7 ± 0.1 and 143 ± 5.7, 3.6 ± 2.2, 7.5 ± 3.4, 1.5 ± 0.6, 0.7 ± 0.1, respectively. These parameters were 37.4 ± 10, 10 ± 4.7, 19 ± 7.2, 1.5 ± 0.6, 0.7 ± 0.1 and 14.7 ± 5.5, 3.7 ± 2.6, 7.9 ± 3.5, 1.5 ± 0.5, 0.8 ± 0.1 respectively in the fellow eye. Baseline measurements of both eyes did not differ significantly (p > 0.05, for all). One month following injection, peak-systolic velocity, end-diastolic velocity, time averaged maximum velocity, pulsatility index, and resistivity index in the ophthalmic and central retinal arteries were 37.5 ± 13.9, 9.1 ± 3.4, 18.6 ± 5.9, 1.5 ± 0.4, 0.7 ± 0.1 and 14.4 ± 5.9, 3.1 ± 1.4, 7.7 ± 2.9, 1.4 ± 0.3, 0.8 ± 0.1, respectively. There was no significant change due to intravitreal ranibizumab injection (p > 0.05, for all). Also, the fellow eye revealed no significant changes at the 1st month visit (p > 0.05, for all).

**Conclusions:** Intravitreal injection of 0.5 mg ranibizumab causes no significant alteration in ocular blood flow in patients with neovascular age-related macular degeneration. Larger series assessing the effect of multiple injections would be beneficial.

**Keywords:** Neovascular AMD, Ranibizumab, Ocular Blood Flow, Colored Doppler Imaging, Peak-Systolic Volume.

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**Quercetin Protects Retina by Reducing Apoptosis Due to Ischemia and Reperfusion Injury**

Sedat Arikan, Ismail Ersan, Selcuk Kara
Department of Ophthalmology, Canakkale Onsekiz Mart University School of Medicine, Cankkale, Turkey

**Introduction:** Flavonoids are the plant derived substances which posses a noteworthy amount of antioxidative properties. Among the flavonoids especially quercetin is known as a powerful antioxidant and free radical scavenging substance. Although there can be encountered to studies which evaluate the antiapoptotic effect of quercetin, there is not enough study about the antiapoptotic effect of quercetin against retinal I/R injury in the literature. In this current study we aimed to evaluate whether quercetin reduces the apoptotic cell loss or not in a retinal I/R injury model of rats.

**Methods or Study Design:** Twenty-four rats were divided into four equal groups as control, ischemic, solvent and treatment with quercetin. In all groups I/R injury model was performed by elevating the intraocular pressure above the perfusion pressure. At 48 hour after I/R injury, histopathologic examination of all groups were done. In histopathologic examination, the thickness of retinal ganglion cell layer, inner nuclear layer, inner plexiform layer, outer plexiform layer, and outer nuclear layer were measured in all groups. Also the number of TUNEL positive cells and the number of caspase-3 that was counted in the inner nuclear layer and outer nuclear layer of retinas were evaluated.

**Results:** The thicknesses of retinal ganglion cell layer, inner nuclear layer, inner plexiform layer, outer plexiform layer and outer nuclear layer of the retina that were measured in the treatment with quercetin group were significantly higher than the other experimental groups. On the other hand, the number of TUNEL positive cells and the number of caspase-3 that was counted in the inner and outer nuclear layers of the retina was significantly low in the treatment with quercetin group when compared with the other experimental groups.

**Conclusions:** Apoptotic cell loss is especially important for ischemic retinal diseases and it can be partially prevented by the use of antioxidative substances like quercetin.

**Keywords:** Quercetin, Ischemia And Reperfusion, Retinal Neuroprotection.

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**S100 Marker in the Diagnosis of Ocular Ischemic Syndrome**

Dilbar Kamaldjanovna Makhkamova
Tashkent Institute of Postgraduate Medical Education, Tashkent, Uzbekistan

**Introduction:** The purpose of this study was to investigate the content of marker S-100 in blood serum and tear fluid of patients with ocular ischemic syndrome.

**Methods or Study Design:** Material and methods. We observed 45 patients aged 59 to 81 years, mean age 67.5 ± 2.71 years.
Control group consisted of 12 volunteers without ophthalmic symptoms. The main group consisted of 33 patients with OIS. The marker S100 were investigated in blood serum and tear fluid.

**Results:** Results. The study found that in patients of the control group the content of marker were within the normal range: S-100 in the tear fluid – 0.0671 ± 0.00329 mgk/l, in the blood serum 0.0507 ± 0.00239 mgk/l. In patients of the main group the indicators of protein in the tear fluid were elevated in all patients – 3.12 ± 0.246 mgk/l (p < 0.005). The normal levels in blood serum of marker S-100 was in 30 patients – 0.0589 ± 0.00303 mgk/l, while, in 2 patients protein S-100 were raised and averaged 0.2175 ± 0.00725 mgk/l. There was a significant increase in 31 times the content neurospecific protein S-100 in the tear fluid of the main group patients compared with controls. Tendency to increase the content of this protein in the tear fluid was relatively unexpressed in patients without concomitant diseases (18 patients) – 2.100 ± 0.196 mgk/l. In the presence of patients with concomitant diseases such as diabetes type II and hypertension (14 patients) the content of the marker increased 45 times, which compose 4.521 ± 0.112 mgk/l.

**Conclusions:** Thus, changes in the concentration of S100 in the tear fluid in patients with ocular ischemic syndrome allow to identify as marker of nerve cells damage of the eye, contributing to the definition in conjunction with other signs of stage and etiology of the disease.

**Keywords:** Ocular Ischemic Syndrome, Marker S100, Diagnosis of Ocular Ischemic Syndrome.

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**The Role of the Detection of Antibodies to the Tissues of the Optic Nerve at the Optic Neuritis**

Gavhar Khusanovna Khamraeva,
Halidjan Mahamadjanovich Kamilov

Tashkent institute of Postgraduate Medical Education, Tashkent, Uzbekistan

**Introduction:** The purpose of the study, Evaluate the diagnostic value of the detection of antibodies to the tissues of the optic nerve at the optic neuritis (ON) for early diagnosis of inflammatory process in the healthy eye.

**Methods or Study Design:** Material and methods. We observed 82 patients with optic neuritis. All patients underwent standard ophthalmic and special methods of investigation. Immunological studies were carried out by detection of antibodies to tissue antigens of the optic nerve by the method of indirect hemagglutination in peripheral blood serum and tear fluid of the healthy and diseased eye, the norm accepted titer of 1:16.

**Results:** 1:64 ratio of antibody titer in the blood serum observed in 45 patients, while in tear fluid on the affected eye titer was 1:64, 1:32 on the healthy eye. This indicates the beginning of the transition of the inflammatory process in healthy eyes. Antibody titer to the tissues of the optic nerve in the blood serum 14 patients was extremely high: 1:256, 1:512, 1:1024, but tear fluid is not exceeded 1:64. In a patient with antibody titer in the blood serum 1:1024 was diagnosed neuritis of the left optic nerve, he spent two months suffered neuritis of the facial nerve on the left. In tear fluid left eye antibody titer was 1:64, 1:32 right eye. It should be noted that such a high titer of antibodies associated with combined lesions of inflammation near lying cranial nerves. When optic neuritis toxoplasmosis and viral etiology in 23 patients the antibody titer was 1:256 in the blood serum, after treatment titer decreased to 1:64.

**Conclusions:** Simultaneous testing of tear fluid in both eyes and blood serum significantly increases the information content of immunological studies and allows you to build diagnostic and treatment and rehabilitation measures.

**Keywords:** Optic Neuritis, Antibodies To Tissue of The Optic Nerve.

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**Diagnostic Criteria and Clinical Manifestations of Presumed Latent Tuberculosis-related Uveitis in a Bacille Calmette-Guerin Vaccinated Community**

Ozlem Sahin1, Eda Karaismailoglu2

1Dunya Goz Hospital Department of Uveitis and Ocular Immunology, Ankara, Turkey; 2Hacettepe University Medical Faculty Department of Biostatistics, Ankara, Turkey

**Introduction:** Presumed latent tuberculosis-related uveitis has been underdiagnosed for decades. Recently approved interferon-gamma release assays including QuantiFERON-TB Gold In-Tube, (Cellestis, Australia) and T-SPOT. TB (Immunotec, UK) are considered more specific for latent tuberculosis infection. The purpose of this study is to describe the ocular manifestations and to assess the correlation between induration value of tuberculin skin test and tuberculosis antigens tube value of QuantiFERON-®-TB Gold In-Tube test of patients with presumed latent tuberculosis-related uveitis from Bacille Calmette-Guerin (BCG) vaccinated community.

**Methods or Study Design:** Prospective non-randomized clinical trial included the patients with ocular involvement of presumed latent tuberculosis. The serum levels of angiotensin converting enzyme and lysozyme were analyzed by enzyme-linked immunosorbent assay. Tuberculin skin test and QuantiFERON-®-TB Gold In-Tube were performed for all patients. Statistical analysis was performed by using SPSS for Windows 13.0.1 (SPSS Inc., Chicago, IL, USA) p < 0.05 was considered as significant.

**Results:** A total of 85 patients were included of whom 55.3% were female. 50.6% of patients had bilateral involvements. The most common ocular manifestation was anterior uveitis (78.8%) followed by vitritis, panuveitis, papillitis, vasculitis, chorioretinitis and scleritis. The mean (SD) of tuberculin skin test was 16.53 (6.05) mm and the mean (SD) of QuantiFERON-®-TB Gold In-Tube was 8.06 (4.53). There was no statistically significant correlation between TST and QST. (p = 0.498, r = 0.105).

**Conclusions:** A wide range of manifestations were seen in ocular involvement of presumed latent tuberculosis-related uveitis. However, anterior uveitis was the most common presentation. The absence of correlation between tuberculin skin test and QuantiFeron-®-TB Gold in endemic community revealed that both tests should be done for each patient for the diagnosis of presumed latent tuberculosis.

**Keywords:** Tuberculosis, Uveitis, QuantiFeron, Tuberculin Skin Test.
Combined Half Dose Photodynamic Therapy with Verteporfin and Intravitreal Bevacizumab for Chronic Central Serous Chorioretinopathy

Erol Coskun¹, Bulent Gurler², Ibrahim Erbagci¹
¹Gaziantep University Faculty of Medicine Ophthalmology Department, Gaziantep, Turkey; ²Fatih University Faculty of Medicine Ophthalmology Department, Istanbul, Turkey

Introduction: Aim of this study to evaluate outcomes of combined half dose photodynamic therapy with verteporfin (PDT) and intravitreal bevacizumab (IVB) in patients with chronic central serous chorioretinopathy (CCSC).

Methods or Study Design: Prospective interventional comparative case series of eyes with symptomatic CCSC (duration = 6 months). Patients were randomly assigned to the study group, eight eyes of the eight patients, and the control group, seven eyes of seven patients. After the infusion of half-dose verteporfin (3 mg/m²) PDT was delivered at standard fluence in both groups. 1.25 mg bevacizumab was injected into vitreous 3 days after PDT in the study group. Follow-up visits were scheduled at 1, 3, 6 and 12 months. Patients were randomly assigned to the study group, eight eyes of the eight patients, and the control group, seven eyes of seven patients. After the infusion of half-dose verteporfin (3 mg/m²) PDT was delivered at standard fluence in both groups. 1.25 mg bevacizumab was injected into vitreous 3 days after PDT in the study group. Follow-up visits were scheduled at 1, 3, 6 and 12 months.

Results: The mean age was 56.1 ± 7.5 and 46.5 ± 11.5 years in the study and control group, respectively (p = 0.12). The mean CCSC duration was 12.8 ± 10.4 and 10.1 ± 6.5 months in the study and control group, respectively (p = 0.95). The mean follow up time 12 and 9.9 ± 2.3 months in the study and control group, respectively (p = 0.07). In the study group, the mean logarithm of the minimum angle of resolution (logMAR) best-corrected visual acuity (BCVA) improved from 0.69 ± 0.43 to 0.36 ± 0.25 (p = 0.012). Central macular thickness (CMT) decreased from 290 ± 43 μ to a CMT of 203 ± 45 μ (p = 0.012). In the control group, the mean logMAR BCVA improved from 0.35 ± 0.20 to 0.06 ± 0.15 (p = 0.018). CMT decreased from 308 ± 65 μ to 187 ± 15 μ (p = 0.018). Subretinal fluid resolved completely in 7 eyes (88%) in the study group and in 6 eyes (86%) in the control group at 12 months after the treatment (p = 0.36). There are no significant difference observed in increment of BCVA in both groups (p = 0.094).

Conclusions: There are no significant difference observed in increment of BCVA and recurrence rate of the disease eyes with CCSC treated with combined half dose PDT and intravitreal bevacizumab and half dose PDT in 12 months follow up.

Keywords: Chronic Central Serous Chorioretinopathy, Photodynamic Therapy, Bevacizumab.

To Estimate Prognostic Importance of the Neuron-Specific Enolase (NSE) in Blood Serum and Lachrymal Fluid in Diagnosis of the Optic Neuritis

Halidjan Mahamadjanovic Kamilov, Munirahon Sadicjanovna Kasimova, Gavhar Khusanovna Khamraeva
Tashkent Institute of Postgraduate Medical Education, Tashkent, Uzbekistan

Introduction: Early diagnosis of optic neuritis is essential to prevent or limit the structural damage and permanent loss of visual function. The aim of this study was to estimate prognostic importance of the neuron-specific enolase (NSE) in blood serum and lachrymal fluid in diagnosis of the optic neuritis (ON).

Methods or Study Design: The clinical-diagnostic examination was performed on patients with optic neuritis (ON), including optic coherent tomography, as well as analysis of NSE content in blood serum and in lachrymal fluid. The level of NSE in lachrymal fluid and blood serum were measured by standard technique on the automatic electrochemiluminescent immunoanalyzer Cobas e 411 for chemiluminescent immunoanalysis (Roche Diagnostics, Switzerland).

Results: There was revealed reduced content of NSE in lachrymal fluid in the patients with acute stage of ON (was lower than norm 19 times (p < 0.05). It is probably due to increased degree of hypoxia and activation of anaerobic glycolysis in the nerve cells. In the second group of patients with ON at the stage of transition into atrophy of optic nerve disk the parameter of NSE increased in 1.22 times (p < 0.05), we consider it was connected to the beginning of destructive processes in nerve tissue with gradual destruction of neurons at neurodegeneration, that results in the output of NSE from the damaged cells into the extracellular medium.

Conclusions: At the acute stage the parameter of NSE reduces, on the average, 0.964 ± 0.24 ng/ml, and at gliosis-atrophic stage increases in 19.42 ± 1.32 ng/ml (15.7–17.0 ng/ml is normal), that, probably, connected to the intensified disintegration of nerve fibers. The comparative analysis has shown the rather increased level of NSE at ON at the stage of transition into atrophy in comparison with the acute form of disease.

Keywords: Optic Neuritis, Lachrymal Fluid, Neuron-Specific Enolase.

Early Neuroprotection of Optic Neuritis

Gavhar Khusanovna Khamraeva, Guzal Khusanovna Khakimova
Tashkent Institute of Postgraduate Medical Education, Tashkent, Uzbekistan

Introduction: In optic neuritis (ON) neuroprotection is appointed after the removal of the acute inflammatory process. However, this time for 38% dying nerve fibers irreversibly. In this connection, the question was exploring the possibility of an earlier application of neuroprotective agents.
Methods or Study Design: We observed 147 patients with ON and divided into 2 groups. The control group consisted of 73 patients who received standard treatment. The patients of the main group (74 patients), other than the above complex, took a course gliatilin tablets of 0.4 g 3 times a day for 2 months.

Results: The VEP latency in the main group before treatment increased to 127.3 ± 2.7 ms (norm 102 ms). After treatment, the marked decreased in latency index of 15.1 ms (12%) after 10 days, at 18.8 ms (16%) after 6 months. After treatment in the control group, the latency decreased by an average of 7.9 ms (6%) after 6 months of data indicator deteriorated by 4.9 ms, compared with the data obtained after 10 days of treatment. After treatment the VEP amplitude in the main group increased by an average of 0.73 mcV, and 1.03 mcV at 6 months (norm 8.4 mcV). While in the control group this parameter increased by 0.34 mV at 10 days after treatment. After 6 months, the amplitude component VEP decreased by 0.96 mcV (14%).

Conclusions: This method of treatment results in an increase in visual acuity, high sensitivity of the retina, and reduces the depth of the absolute and relative cattle and improves electrophysiologic parameters of the optic nerve.

Keywords: Optic Neuritis, Neuroprotection, Choline Alphosceratus, Gliatilin.


100 Ranibizumab in Macular Edema Following Scleral Buckling in Patients with Rhegmatogenous Retinal Detachment

Evgenyi Smirnov, Sergey Abramov, Valeriy Chernykh
Novosibirsk Branch of S. Fyodorov Eye Microsurgery Federal State Institution, Novosibirsk, Russia

Introduction: The purpose of the study was to investigate the effect of ranibizumab on macular edema (ME) after scleral buckling in eyes with rhegmatogenous retinal detachment.

Methods or Study Design: Patients with retinal detachment who underwent scleral buckling and developed macular edema postoperatively. All patients received intravitreal ranibizumab injections. Outcome was measured by visual acuity (VA) and central retinal thickness (CRT) changes.

Results: 300 patients with rhegmatogenous retinal detachment underwent scleral buckling from January to December, 2013. ME developed in 6 of them: 3 men, 3 woman, mean age ± SD 54.8 ± 12.3. Mean CRT ± SD on the development of ME was 601 ± 262 μm, VA ± SD – 0.22 ± 0.2. After 1st ranibizumab injection VA improvement was achieved in 2 patients, VA remained the same in 2 patients, and in other 2 patients VA decreased. In mean values VA insignificantly changed from 0.22 ± 0.2 to 0.21 ± 0.2, CRT – from 601 ± 262 μm to 628 ± 219 μm. CRT decreased in 4 patients. Mean number of injections was 2.2 (range, 1–5). After all ranibizumab injections mean VA was 0.25 ± 0.2, CRT – 654 ± 234. The improvement of both VA and CRT (p > 0.05) was observed in 3 patients (but CRT did not reach normal values), the stability – in 1 patient and deterioration – in other 2 patients.

Conclusions: Intravitreal injections of ranibizumab may lead to improvement in functional (VA) and morphologic parameters (CRT) and visual acuity stabilization in a number of patients. Considering a small number of patients and controversial results further investigations are required.

Keywords: Scleral Buckling, Macular Edema, Ranibizumab.

102 Simultaneous Central Retinal Arter and Branch Retinal Vein Occlusion in Patient with Homosisteinemia

Erdinc Aydin1, Levent Kazanci2, Hasan Aytogan2
1Izmir Katip Celebi University, Faculty of Medicine, Department. of Ophthalmology, Izmir, Turkey 2Izmir Katip Celebi University, Ataturk Training and Research Hospital, Izmir, Turkey

Introduction: To report simultaneous central retinal artery and branch retinal vein occlusion in the Patient with homosisteinemia.

Methods or Study Design: On the ophthalmologic examination, the patient was diagnosed with central retinal artery and
branch retinal vein occlusion and that rare situation is confirmed via fundus fluorescein angiography and spectral-domain Optical Coherence Tomography.

**Results:** Hyperhomocysteinemia is a well-known risk factor for thromboembolism. A 29-year-old man was admitted with a blurred vision in the right eye. On the ophthalmologic examination, the patient was diagnosed with central retinal arter and branch retinal vein occlusion and that rare situation is confirmed via fundus fluorescein angiography and spectral-domain Optical Coherence Tomography. Physical and laboratory examinations disclose MTHFRC677T homozygotic polymorphism.

**Conclusions:** Hyperhomocysteinemia has been reported as a potential risk factor requiring treatment and a significant association has been determined between this condition and vascular thrombosis in the retina. Pathologic underlying factors should be investigated in all patients as our case.

**Keywords:** Branch Retinal Vein Occlusion, Central Retinal Artery, Homocysteinemia.

### 106 Adverse Effects of Fluorescein Angiography: Reducing the Dose

**Dania Al-Nuaimi, Rita Mclauchlan, Sajjad Mahmood**

Manchester Royal Eye Hospital, Manchester, United Kingdom

**Introduction:** Although there is no licensed product for this indication, manufacturers usually recommend the dose of 500 mg fluorescein for fluorescein angiography (FFA). Manchester Royal Eye Hospital (MREH) had traditionally administered a dose of 625 mg. The aims of the study were: 1. To obtain a snapshot of the adverse event rates at MREH with the 625 mg dose. 2. To establish the adverse event rates at MREH with the dose of 625 mg and compare this with a reduced dose of fluorescein of 300 mg.

**Methods or Study Design:** Three methods were used: 1. Telephone survey of a random cross-section of UK hospitals to determine the intravenous dose of fluorescein administered. 2. Retrospective review of reported adverse reactions during FFA over a one year period at MREH with the 625 mg dose. 3. A prospective questionnaire looking at adverse events during and immediately after FFA was given to patients attending for FFA over a 4-week period. The questionnaire was administered for the 625 mg dose. The dose of fluorescein was subsequently reduced to 300 mg and the prospective questionnaire was repeated.

**Results:** The dose of fluorescein administered in 20 hospitals varied from 300 mg to 1000 mg. 35% of hospitals administered 1000 mg fluorescein. 60% of hospitals administered 500 mg fluorescein. The retrospective review of 2003 patients revealed an adverse event rate of 5.04%. The most common adverse events experienced were nausea and vomiting. The overall adverse event rate during FFA was 7% at a dose of 625 mg compared to 6% with 300 mg. The rate of nausea improved from 4.7% to 1% with the reduced dose. The vomiting rate improved from 1.15% to 1%.

**Conclusions:** Adverse event rates most commonly reported are nausea. The intravenous dose administered is variable throughout the UK. A reduction in dose at MREH to below the current commonly used doses led to a reduction in the nausea rate with no reported decrease in image quality.

**Keywords:** Fluorescein Angiography, Retinal Imaging, Fluorescein Adverse Effects, Fluorescein Dosage.

### 112 Sins Following Intravitreal Anti-VEGF Injection

**Amrit Singh Dhillon, Shahzad Shafquat, Aaron Thye Wang Ng**

The Dudley Group NHS Foundation Trust, Dudley, United Kingdom

**Introduction:** Intravitreal injections represent a key component in the armament of the modern day retinal specialist as many contemporary treatments are delivered via this route of administration. Therefore an awareness of potential complications associated with these injections and their management is essential.

**Methods or Study Design:** We share a case of a 64-year-old Caucasian, male who reported deteriorating vision in his left eye. Presenting Snellen visual acuity was 6/30. Other than high myopia of –16.0 spherical refractive error, there was no significant ophthalmic history. Clinical examination, fundus fluorescein angiography and optical coherence tomography revealed a type 2 chorioidal neovascular membrane secondary to myopic chorioretinal degeneration. He was enlisted for intravitreal Lucentis injections, the second of which was administered through the left infero-temporal quadrant. 3 days following the second injection, he presented with redness, soreness and swelling around the injection site; anterior chamber and vitreous was quiet. He was initially treated with intensive topical and systemic antibiotics for a suspected scleral abscess. No clinical improvement was achieved. Further examination revealed a creamy, well demarcated, oedematous, poorly perfused scleral lesion approximately 5 mm in length directly overlying the second injection site. The conjunctiva and sclera was deeply injected and there were no stigmata of ocular infection. High dose oral Prednisolone was started for surgically induced necrotizing scleritis (SINS) secondary to intravitreal Lucentis injections. On subsequent follow-ups, progressive resolution of pain, erythema and oedema with reperfusion of previously pale sclera was observed.

**Results:** After a comprehensive literature review, we believe the above to represent the first reported case of SINS following any intravitreal injection highlighting a potentially serious condition.

**Conclusions:** It demonstrates the need to differentiate between infective (endophthalmitis and scleral abscess) and non-infective acute post-intravitreal injection complications (SINS and Anti-VEGF allergy) and the benefits of instituting prompt and correct treatment.

**Keywords:** SINS, Intravitreal, Anti-VEGF Injection.
113 Intravitreal Ranibizumab for the Treatment of Choroidal Neovascularization Associated with Central Serous Chorioretinopathy

Sibel Kadayifcilar, Bora Eldem
Hacettepe University, Ankara, Turkey

Introduction: We assessed the safety and efficacy of intravitreal ranibizumab for the treatment of choroidal neovascularization (CNV) secondary to central serous chorioretinopathy (CSCR).

Methods or Study Design: This retrospective clinical case series from a single center included 8 eyes of 8 patients with CNV secondary to CSCR treated with intravitreal ranibizumab injections. At baseline, best corrected visual acuity (BCVA) was measured with ETDRS chart and fundus examination, fundus fluorescein angiography (FFA) and optical coherence tomography (OCT) were performed. Monthly follow-up visits included BCVA measurement, fundus examination and OCT. Injection was repeated if neovascular activity persisted or recurred.

Results: Six females and two males with a mean age of 57.88 ± 5.16 years (range: 35–69) at the time of CNV diagnosis were included in the study. The mean follow-up was 31.38 ± 19.77 months (range: 11–59) months. Mean BCVA at baseline was 53.86 ± 9.23 (range: 45–70) letters. The mean number of intravitreal injections was 4.5 ± 2.69 (range: 1–9). The final BCVA was 72.29 ± 11.52 (range: 50–85) letters. More than 15 letters improvement was observed in 6 eyes and no patient lost more than 15 letters. Mean central macular thickness (CMT) measured with OCT was 359.63 ± 108.92 micrometers (range: 240–559) at baseline and decreased at the final follow-up to 239.75 ± 63.16 micrometers (range: 139–339). Persistent intraretinal or subretinal fluid on OCT was present in 3 eyes at the last follow-up visit. No significant ocular or systemic side effect was encountered.

Conclusions: Intravitreal ranibizumab appeared to be an effective and safe treatment for CNV related to CSCR. However, residual intraretinal or subretinal fluid persisted in some cases. Prospective controlled studies are warranted to evaluate the long-term safety and efficacy of intravitreal ranibizumab.

Keywords: Choroidal Neovascularization, Central Serous Chorioretinopathy, Ranibizumab.

121 Morfo-Functional Aspects of a Case of Relapsing Bilateral Acute Retinal Pigment Epithelitis (ARPE) and Effects of Treatment Using Dexamethasone 0.7 mg Intravitreal Implant

Patrizio Magliozzi1, Gennaro Ambrosio2, Lucia Ambrosio2
1Ospedale Evangelico Villa Betania, Napoli, Italy 2Department of Ophthalmology University of Naples Federico II, Napoli, Italy

Introduction: The aim of this case-report is to describe the morfo-functional aspects of a case of relapsing and aggressive bilateral ARPE and the effects of treatment using dexamethasone 0.7 mg intravitreal implant.

Methods or Study Design: A 69 year old woman complaining of a sudden drop in bilateral visual acuity came to our attention (BCVA RE 20/200 LE 20/150). She had a history of viral conjunctivitis as well as a temperature that had occurred in previous days. Laboratory tests, autoimmune screening, ophthalmoscopy, AF, FA, SD-OCT, mfERG were performed. Bilateral ARPE was diagnosed.

Results: SD-OCT showed an interruption of the IS/OS junction and a thinning and rippling of RPE associated with its reduction. mfERG showed a morphological alteration in the N1P1 wave and a reduction in P1 amplitude for the central ring of both eyes. After 4 weeks of systemic corticosteroid therapy the BCVA recorded an improvement of up to 20/80 in both eyes. After 6 months from the onset of the acute illness, the patients complained of a new decline in visual acuity (BCVA OU 20/120). The scenario was compatible with a recurrence of ARPE. Because of the inner retinal layers being affected in the form of macular edema, dexamethasone 0.7 mg intravitreal implant was applied in both eyes. A week after BCVA improved up to 20/50 in RE and 20/60 in LE. At 12-month follow-up BCVA is stable, SD-OCT shows the rearrangement of the EPR and the IS/OS junction with preservation of the foveal depression contour and the absence of intra-retinal fluid, mfERG showed an improvement in both eyes of the signal amplitude of the central ring electroretinogram and of the N1P1 wave morphology.

Conclusions: ARPE may not have a self-limiting course and visual recovery may not be complete depending on the presence of an inflammatory process. In cases with intraocular inflammation and the consequent presence of intra-retinal fluid, dexamethasone 0.7 mg intravitreal implant has proven effective in the short and long-term improvement of symptoms.

Keywords: ARPE, Dexamethasone, SD-OCT, MfERG, Relapsing.

125 Intraocular Pressure After Intravitreal Injection of Ranibizumab with and Without Paracentesis in Patients with Retinal Vein Occlusion

Anastasia Kulagina
Eye Microsurgery Center of Railway Hospital, Novosibirsk, Russia

Introduction: The purpose of the study was to determine intraocular pressure (IOP) changes after intravitreal ranibizumab injections (IVI) in patients with retinal vein occlusion and macular edema (ME) and to assess the need of paracentesis as a prevention of IOP elevation.

Methods or Study Design: Design: Prospective study. 40 patients (mean age ± SD = 53 ± 9 years) without prior history of glaucoma were included to the study. All patients were divided into 2 groups: 20 patients underwent paracentesis before IVI, in other 20 patients paracentesis was not performed. Average volume of fluid removed by paracentesis was 0.05 ml. IOP measurement was done before IVI, then 1 minute, 1 hour and 1 day after IVI.

Results: In the group where paracentesis was not done mean IOP before IVI was 17 mm Hg, 1 minute after − 29 mm Hg (p < 0.05), but in 1 hour IOP returned to normal values − 18 mm Hg.
After 1 day after the injection IOP was within normal values in all the patients. The return of IOP to baseline figures in 1 hour after IVI may reflect normal flow of intraocular fluid. Mean IOP before paracentesis and IVI was 17 mm Hg, 1 minute after IVI –19 mm Hg, and 1 hour and 1 day after IVI mean IOP was 18 mm Hg.

Conclusions: In the group of patients without paracentesis transitory IOP elevation was observed with return to normal values in 1 hour. Starting 1 hour after the injection IOP was not significantly differ in both groups. The results indicate that an additional manipulation (paracentesis) is not required before IVI in patients with retinal vein occlusion and ME without preexisting glaucoma.

Keywords: Intravitreal Injection, Paracentesis.

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The Comparison of Reduced-Fluence Photodynamic Therapy with 577 nm Yellow-Wavelength Pattern Micropulse Laser Therapy in Cases with Chronic Central Serous Chorioretinopathy: Short Term Results
Sibel Demirel, Emin Özmert, Figen Batioglu
Ankara University Medical Faculty, Ankara, Turkey

Introduction: To evaluate the effectiveness and safety of 577 nm yellow-wavelength micropulse laser photocoagulation (MPL) compared with low-fluence photodynamic therapy (PDT) in eyes with chronic central serous chorioretinopathy (CSC).

Methods or Study Design: In this prospective study, 33 eyes with chronic CSC were included. Patients were assigned to either low-fluence PDT (17 eyes) or MPL therapy (16 eyes). The treatment was repeated at 3 month intervals if residual fluid was observed. Follow-up visits were scheduled at 1, 3 and 5 months follow-up. The main outcome measures included changes in best corrected visual acuity (BCVA) and resolution of subretinal fluid.

Results: In the PDT group, the BCVA (ETDRS letters) improved from 60.3 ± 17 to 63.3 ± 17.9 at 1st month, 61.2 ± 24.8 at 3rd month, 64.7 ± 19.3 at 5th month. In MPL group the BCVA improved from 60 ± 16.1 to 63.7 ± 16 at 1st month, 65 ± 15.6 at 3rd month and 64.8 ± 15.7 at 5th month. The subretinal fluid was 115 μm (±58.9) at baseline and then decreased to 30.6 μm (±39.8) at 1st month, 27.1 μm (±44.3) at 3rd month and 13.4 μm (±44.6) at 5th month in PDT group (p = 0.03). In MPL group preoperative subretinal fluid value diminished from 141 μm (±109.1) to 79.9 μm (±101.07) at 1st month, 67 μm (±81.7) at 3rd month, 30 μm (±46.5) at 5th month (p = 0.01). The difference between the groups regarding SRF resorption was not significant (p < 0.05). At 5 months, subretinal fluid resolved completely in 13 eyes (76.5%) and in 9 eyes (56.2%), in the PDT group and the MPL group, respectively.

Conclusions: Micropulse laser is as effective as PDT for resolution of subretinal fluid secondary to chronic CSC. MPL also offers the advantage of avoiding laser-induced retinal scarring while enhancing visual acuity in the management of CSC. The use of MPL as a monotherapy should be investigated in further studies.

Keywords: Central Serous Chorioretinopathy, Micropulse Laser, Photodynamic Therapy.

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Fundus Autofluorescence and Progression of Early Age Related Macular Degeneration
Figen Batioglu, Pinar Bingöl-Kızıltunç, Sibel Demirel
Ankara University Medical Faculty, Ankara, Turkey

Introduction: To describe the fundus autofluorescence (FAF) characteristics and progression of early age-related macular degeneration (AMD) with the changes of FAF abnormalities.

Methods or Study Design: Fundus autofluorescence images of 150 eyes with early AMD were evaluated retrospectively. The classification of the International Fundus Autofluorescence Classification Group was used for the description of the FAF patterns. Correlation between patterns and visual acuity, focal atrophy development and pattern alterations during the follow up period were evaluated. The mean follow-up was 36 months.

Results: At initial examination, the most frequent pattern in 150 eyes with early AMD was reticular pattern in 27 eyes (18.0%) followed by focal increased pattern in 22 eyes (14.7%) and patchy pattern in 17 eyes (11.3%). The remaining 50 eyes (33.3%) had normal background autofluorescence. There was no correlation between autofluorescence patterns and visual acuity at initial visit. Two patterns of FAF changes was found in the same eye in 4.6% of the eyes and reticular pattern was the most frequent (85.7%) accompanying pattern at initial examination. During the follow up, the baseline pattern changed in 8 (5.3%) of the 150 eyes. Transformation to reticular pattern or addition of reticular pattern to the initial pattern were seen in the 50% of the altered patterns. Focal atrophy developed in the 13.3% of the eyes and it was higher in the eyes with focal increased (45%) and reticular patterns (30%) at baseline.

Conclusions: Different patterns of FAF abnormalities can be obtained in eyes with early AMD. Reticular pattern is the most frequent pattern at initial examination and presence of reticular pattern may be a risk factor for the progression of FAF findings in early AMD. Fundus autofluorescence imaging using cSLO is a useful technique to identify the progression in patients with early AMD.

Keywords: Fundus Autofluorescence, Dry Age-Related Macular Degeneration, Patterns, Atrophy.

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Dexamethasone Intravitreal Implant for the Treatment of Bilateral and Recalcitrant Pseudophakic Cystoid Macular Edema in Irvine-Gass Syndrome
Alejandro Higueras Esteban, Ana María Gómez Ramírez, María Paz Villegas Pérez
1Clinica Novovisión Ramón Gutiérrez, Murcia, Murcia, Spain
2Universidad de Murcia, Murcia, Murcia, Spain

Introduction: Pseudophakic cystoid macular edema (PCME), also known as Irvine-Gass syndrome, may occur after uneventful cataract surgery and is one of the most common causes of early
postoperative visual loss after cataract surgery. Increased vascular permeability due to inflammatory mediators that regulate blood-aqueous and blood-retinal barriers has been proposed as the major cause of this syndrome. Most patients with PCME experience a spontaneous improvement by 3 to 12 months after surgery and the treatment of chronic pseudophakic CME is not well standardized.

Methods or Study Design: We present a case of bilateral and longstanding pseudophakic CME refractory to several topical and intravitreal treatments that showed a complete and stable resolution of CME one year after intravitreal injection of a sustained release dexamethasone implant (Ozurdex®).

Results: Four weeks after uneventful bilateral cataract surgery the patient experienced moderate bilateral visual loss. Optical coherence tomography (OCT) confirmed the diagnosis of PCME in both eyes. At this time, best-corrected visual acuity (BCVA) was 0.4 in the right eye (RE) and 0.3 in the left eye (LE), and central macular thickness (CMT) was 498 and 579 μm in the RE and LE, respectively. The patient was treated with topical and oral NSAIDs followed by intravitreal injections of triamcinolone acetonide (Trigon® Depot) and bevacizumab (Avastin®) during a period of eighteen months. Although all the treatments were initially effective, the effect was transient. Finally, a single bilateral application of a dexamethasone implant showed a complete resolution of the edema that continued for the 12 months of follow up. At present, BCVA is 0.9 and 0.8 and CMT is 286 and 285 μm in the RE and LE, respectively. No side effects were found with any of the treatments.

Conclusions: Chronic PCME is a difficult-to-treat condition. Intravitreal sustained release dexamethasone implants appear to be an effective and long-lasting treatment for this condition.

Keywords: Irvine-Gass, Macular Edema, Intravitreal Dexamethasone Implant, Ozurdex.
When comparing Group 1 and 5, there was a significant difference between the increase of 3rd month OCT measurements (p < 0.0025).

Conclusions: Use of ketorolac tromethamine following the phacoemulsification was found effective to prevent the increase of macular thickness.

Keywords: Phacoemulsification, Optical Coherence Tomography, Macular Edema.

152 Intravitreal Injection of Ranibizumab for Myopic Choroidal Neovascularization – Case Series of Treatment in a Real Life Setting

Rita Flores¹, Ana Cabugueira¹, Joana Mesquita²

¹Centro Hospitalar de Lisboa Central, Lisboa, Portugal; ²CICS-UBI Centro de Investigação em Ciências da Saúde, Universidade da Beira Interior, Covilhã, Portugal

Introduction: Myopic CNV (mCNV) is one of the most common vision-threatening complications of pathologic myopia. It has a high prevalence in people aged 50 or less years old, leading to loss of visual acuity and consequently to a reduced quality of life. If left untreated, long-term visual outcomes of myopic CNV are extremely poor. Standard care for mCNV has been photodynamic therapy with verteporfin (PDT), however intravitreal injections of anti-vascular endothelial growth factor (anti-VEGF) demonstrated to be effective, with significant visual acuity (VA) improvement. The aim of this report is demonstrate the efficacy and safety of intravitreal ranibizumab in the treatment of mCNV in a real life setting.

Methods or Study Design: We performed a retrospective analysis of eight eyes from five patients with mCNV from the routine clinical practice, to determine mean VA gains after first ranibizumab treatment and at 12 months of follow-up in comparison with baseline. VA was measured using the Snellen chart. All patients were treated with ranibizumab.

Results: The variation of the average VA between the baseline (visit 1) and visit 2 (after first ranibizumab treatment) was 0.14 and between the baseline (visit 1) and visit 6 (at 12 months follow-up) was 0.29. There was an improvement in VA in the V1 vs. V2 (Z = -1.841, p = 0.066) and V1 vs. V6 (Z = -2.371, p = 0.018) and these results are statistically significant. The mean number of intravitreal injections at 12 months was 2.1. No new serious adverse events were observed during the reported period.

Conclusions: Ranibizumab therapy leads to improvement and maintenance of visual acuity in patients with visual loss due to myopic CNV. Following a single initial injection, low number of additional injections were required to maintain visual acuity gains. Anti-VEGF therapies show promising results, and may provide rapid and sustained visual improvement in patients with myopic CNV.

Keywords: Anti-VEGF, Ranibizumab, Neovascularization, Juxta-Foveal, Myopic CNV.

154 (Rapid Fire Presentation)
Safety of Bilateral Treatment with Ranibizumab in Age-Related Macular Degeneration and Diabetic Macular Edema: Retrospective Analyses from the 2-Year Epicohort and Retain Studies

Katja Hatz¹, Sergio Pagliarini², Philippe Margaron³, Vladimir Bezlyak⁴, Christine Thorburn⁴

¹Department of Ophthalmology, Vista Klinik, Binningen, Switzerland; ²University Hospitals Coventry & Warwickshire, Hospital of St Cross, Rugby, United Kingdom; ³Novartis Pharma AG, Basel, Switzerland; ⁴Novartis Pharmaceuticals UK Ltd, Frimley Business Park, Surrey, United Kingdom

Introduction: Patients treated with anti-vascular endothelial growth factor agents may have disease present in both eyes and may require bilateral-treatment (BT). This retrospective analysis evaluated the safety of BT with ranibizumab, compared with unilateral-treatment (UT), in patients with wet age-related macular degeneration (wAMD) and diabetic macular edema (DME).

Methods or Study Design: Treatment exposure, and ocular and systemic AEs were assessed for patients who received BT and UT in the observational EPICOHORT study (wAMD; N = 755) and the investigational RETAIN study (DME; N = 370).

Results: Overall, 18% (n = 133) patients from EPICOHORT and 45% (n = 166) patients from RETAIN received BT (administered <28 days apart in 77% of patients). Reporting rates for systemic AEs were similar for BT and UT in EPICOHORT (31.6% cf. 31.2% of patients) and RETAIN (77.7% cf. 73.5%), with cerebrovascular thromboembolic events observed in 0.8% of patients on BT and 1.1% on UT in EPICOHORT, and 3.0% on BT and 2.5% on UT in RETAIN. Ocular AEs were reported in slightly more patients on BT (39.1%) than UT (34.1%) in EPICOHORT, with the rate for the first treated eye in BT patients being 32.3%. This difference was more marked in DME patients, with 65.1% on BT and 47.5% on UT reporting ocular AEs in RETAIN. Conjunctival hemorrhage was the most frequent ocular AE: 11.3% patients on BT and 7.4% on UT in EPICOHORT, and 10.2% on BT and 5.4% on UT in RETAIN. This difference was likely due to the higher mean number of intravitreal injections received by patients on BT cf. UT (12.4 cf. 6.0 in EPICOHORT; 18.9 cf.10.9 in RETAIN).

Conclusions: Rates of systemic AEs were similar in patients who received BT (irrespective of dosing interval) and UT with ranibizumab. Proportion of patients with ocular AEs was higher for BT than UT, consistent with the higher number of intravitreal injections received by those patients.

Keywords: Age-Related Macular Degeneration, Bilateral Treatment, Diabetic Macular Edema, Ranibizumab, Unilateral Treatment.
The Efficacy and Safety of Valproic Acid in the Treatment of Retinitis Pigmentosa

YükSEL TOTAN, EMRE GÜLER, ASLIHAN YÜCE, MEHMET SERDAR DERVISOGULLARI

Turgut Özal University Medical Faculty Department of Ophthalmology, Ankara, Turkey

Introduction: The purpose of this study was to determine the efficacy and safety of valproic acid (VPA) treatment in patients with retinitis pigmentosa.

Methods or Study Design: Prospective evaluation of 48 eyes of 24 patients (13 male, 11 female) with a diagnosis of retinitis pigmentosa prescribed VPA was performed. The length of VPA treatment was 6 to 12 months. Parameters evaluated were best corrected visual acuity (BCVA) (LogMAR), visual field analyses (VFA) with Humprey automated perimetry, multifocal electroretinography (ERG) with Roland-RETI scan and VPA side effects.

Results: Mean age of the patients was 34.3 ± 10.3 years (range 18–56 years). Eleven of the patients (22 eyes) had two ERG and VFA tracings allowing comparison between baseline and follow-up (range 6–12 months). Mean BCVA before and after VPA therapy was 0.36 ± 0.38 and 0.36 ± 0.37, respectively, and was not different statistically (p = 0.32). Quantitative perimetric indices including mean deviation (MD) and pattern standard deviation (PSD) were not significantly changed after VPA therapy (p > 0.05). P1 amplitudes (in terms of nV/deg2 and mV) of ERG waves and their P1 latencies were not significantly changed in all the rings after VPA therapy (p > 0.05). Similarly, there was no significant change in N1 amplitudes and N1 latencies after VPA therapy in any of the rings (p > 0.05).

Conclusions: In this prospective study, no significant difference was observed in BCVA, VFA and ERG parameters following VPA therapy, yet requires to be verified by the future larger studies.

Keywords: Valproic Acid, Retinitis Pigmentosa, Visual Field Analyses, Multifocal Electroretinography.

Abstracts

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Early Diagnosis of Ocular Toxicity on Patients Under the Treatment of Hydroxychloroquine
Mustafa Eren, Oktay Diner, Ali Hakan Durukan
Gulhane Military Medical Academy, Ankara, Turkey

Introduction: We aimed to determine which test is more valuable in revealing early toxicity signs due to hydroxychloroquine medication.

Methods or Study Design: Only the patients who receive hydroxychloroquine for at least one year and underwent static perimetry (10-2), spectral optic coherence tomography, multifocal electroretinography and microperimetry tests annually were included.

Results: Our patient group consists of 70 patients, 60 (85.7%) of whom were female and 10 (14.3%) were male and control group consists of 31 healthy subjects, 26 (83.9%) of whom were female and 5 (16.1%) were male. The distribution of gender was homogeneous among patient and control groups (p > 0.771). Mean ages of patients and controls were 49.8 ± 12.7 and 52.8 ± 11.1 respectively. The distribution of age was homogenous among patient and control groups (p > 0.254). The mean duration of drug treatment was 7 ± 4.05 (1–15) years, and mean drug treatment dose was 4.9 ± 1.6 (2.1–8.6) mg/kg/day. Total cumulative dosage was 819.6 ± 555 (73–2190) grams. Comparison of the control group’s and patient group’s both eyes revealed a statistically significant difference in central macular thickness and macular sensitivity in both central and paracentral microperimetric values. Especially decreased N1 amplitude and prolonged P1, N1 latencies were statistically significant in mfERG testing when compared with the control group.

Conclusions: Spectral OCT, microperimetry and multifocal ERG test results are affected before irreversible changes happen, therefore these tests should be used in routine examinations for these patients.

Keywords: Hydroxychloroquine, Toxic Retinopathy, Microperimetry.

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Comparison of Ocriplasmin Treatment Guidelines by European Regulatory Agencies
Anat Loewenstein
Tel Aviv Medical Center, Tel Aviv, Israel

Introduction: Ocriplasmin is a novel pharmacological therapy indicated in the EU for treatment of vitreomacular traction (VMT) including when associated with macular hole (MH) = 400 μm. This analysis provides a comparison of the guidance from different countries where ocriplasmin has recently been approved and describes the overall recommendations for treatment based on these guidelines.

Methods or Study Design: Critical phase 3 clinical trials (MIVI-TRUST) demonstrated the efficacy and safety of ocriplasmin for the treatment of symptomatic VMA/VMT. These results were used as the basis for the analysis and treatment recommendations by the National Institute for Health and Care Excellence (NICE), the French National Health Authority (Haute Autorité de Santé, or HAS), and the Institute for Quality and Efficiency in Healthcare (Institut fur Qualitat und Wirtschaftlichkeit im Gesundheitswesen, or IQWiG). Different subgroups were analyzed based on the presence or absence of anatomic features and visual acuity.

Results: The 3 regulatory agencies recommend ocriplasmin for the treatment of VMT including when associated with MH = 400 μm. Based on the NICE appraisal, ocriplasmin is recommended as a VMT treatment option in adults only if an epiretinal membrane is absent, with or without severe symptoms. The HAS recommends ocriplasmin treatment for adult patients with VMT at the earlier stages of disease where a vitrectomy is not required for the symptoms. IQWiG also indicated that for patients with mild (VA >60 ETDRS letters) to moderate visual impairment (VA 35-60 ETDRS letters), ocriplasmin treatment provided an added benefit.

Conclusions: The benefit of ocriplasmin for treatment of VMT including when associated with MH = 400 μm has been evaluated and endorsed by leading regulatory agencies in Europe. There are minimal differences in the recommendations from each country, which are based on anatomic features (ERM absence), visual acuity, and severity of symptoms.

Keywords: Ocriplasmin, Vitreomacular Adhesion, Macular Hole, Vitreomacular Traction.

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Negative Electroretinograms in the Military Personnel Complaining Night Blindness in the Military
Mustafa Eren1, Gökhan Ozge1, Güngör Sobaci2
1Gulhane Military Medical Academy, Ankara, Turkey;
2Hacettepe University Faculty of Medicine, Ankara, Turkey

Introduction: To assess the frequency of negative waveform electroretinograms (ERGs) complaining night blindness in a tertiary referral center for Turkish Armed Forces.

Methods or Study Design: Retrospective chart review of all patients who had an ERG performed for differential diagnosis of night blindness at the electrophysiology clinic at GATA Military Medical Academy, Ankara, Turkey, from January 2003 through December 2012, were included in the study. Patients with b-wave amplitude = a-wave amplitude during the dark-adapted bright flash recording, in at least one eye, were identified as having a ‘negative ERG’. Clinical information, such as age, symptoms, best corrected visual acuity (BCVA), and diagnoses were recorded for these patients when available.

Results: A total of 2495 male patients underwent ERG testing during the last decade Age ranged from 15 to 40 years. All were man. BCVA ranged from 0.1 to 0.0. Of those, 102 patients had a negative ERG, for a frequency of 0.4%. Of those patients, the most common diagnoses associated with a negative ERG were congenital stationary night blindness (CSNB, n = 93) in 91.9%, X-linked retinoschisis (XLRs, n = 7) in 6.8%, high myopia (15 dpt) in 1%, and muscular dystrophies in 1%.

Conclusions: The overall frequency of negative ERGs in this retrospective review was 4%. CSNB appear to be the most likely...
diagnoses among male military personnel who had a negative ERG.

**Keywords:** Negative Electroretinogram, Night Blindness.

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**Ocriplasmin Safety Overview from Clinical Trials and Postmarketing Data**

*Paolo Lanzetta*

University of Udine, Udine, Italy

**Introduction:** Ocriplasmin is an intravitreal injection indicated for the treatment of vitreomacular traction, including when associated with macular hole of diameter = 400 microns. Here we present an update on the safety profile of ocriplasmin, including reported adverse events for both the clinical trials program and events spontaneously reported post-marketing globally.

**Methods or Study Design:** The 2nd Periodic Benefit-Risk Evaluation Report (PBRER2) data was collected from October 17, 2012 to October 16, 2013. The PBRER provides new information on risks and benefits and is submitted to European Union authorities and the Food and Drug Administration in the United States every 6 months. Data from the 12 month reporting period and data from completed clinical trials of ocriplasmin are compared.

**Results:** The total (cumulative) post-approval eye exposure was estimated at 6903 eyes, with eye exposure during the second reporting period estimated at 4704 eyes, including 3577 eyes in the USA and 1127 eyes in the EU. For the ocriplasmin clinical trial program, a total of 1017 subjects were exposed to intravitreal ocriplasmin. Retinal edema had a reported frequency of 9.5% from the clinical trials and 0.2% from the postmarketing period. Development of new macular hole or progression of macular hole size had a clinical trial incidence of 6.7%, and a postmarketing period reported frequency of 0.4%. Photoreceptor alterations, including changes in the ellipsoid zone (IS/OS junction) were reported in 14 patients during the postmarketing period, with no data available from the clinical trial program.

**Conclusions:** Despite the significant differences in methodology in data capture between the clinical trial program and the postmarketing analyses, the frequency of adverse events was low for the majority of events reported. The data obtained during this reporting period does not change the benefit-risk ratio of ocriplasmin, which remains favourable.

**Keywords:** Ocriplasmin, Vitreomacular Adhesion, Macular Hole, Vitreomacular Traction, OCT.

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### 196

**Uveitis Types in Young Men and Uveitis Examinations for the Systemic Diagnosis**

*Soner Guven, Mustafa Eren, Ali Hakan Durukan*

Gulhane Military Medical Academy, Ankara, Turkey

**Introduction:** To determine the types of uveitis in young men and investigate the utility of uveitis examinations for the systemic diagnosis.

**Methods or Study Design:** We reviewed the records of 101 patients in our uveitis clinic between 2010–2014. The data including sex, age, uveitis type, vision acuity, affected eye and uveitis examinations which are pathergy test, HL A-27, HLA B-5, HLA A-29, p-ANCA, c-ANCA, anti ds DNA, ANA, Rheumatoid factor (RF), anti cardiolipin, toxoplasma ig-M, toxoplasma ig-G, HSV ig-G, HSV ig-M, CMV ig-G and CMV ig-M antibodies were recorded.

**Results:** The mean age was 21 years and all the patients were male. Panuveitis was the most common form of uveitis with 59.4%, followed by anterior uveitis 23.7%, posterior uveitis 11.8%, intermediate uveitis 3.9% and 0.09% keratouveitis. The percentage of patients with a systemic diagnosis for uveitis was 44.5%. Behcet’s disease 48.4% was the most frequent cause of uveitis diagnosed, followed by seronegative arthritis 20%, ocular toxoplasmosis 13.3%, Fuchs uveitis syndrome 6%, herpetic uveitis 4%, multifocal choroiditis and panuveitis 2% and birdshot chorioretinopathy 2%. Idiopathic uveitis 44.4% was the most frequent cause of granulomatous uveitis, followed by herpetic uveitis 22.2%, ocular toxoplasmosis 22.2% and multifocal choroiditis and panuveitis 11.1%. The number of patients which had a HLA-B5 examination was 79 and 32.9% of them were positive. The ratio of Behcet’s disease among the HLA-B5 positive patients was 53.8%. Ninety patients had a HLA-B27 examination and 12.2% of them were positive. The ratio of seronegative arthritis among the HLA-B27 positive patients was only 63.6%.

**Conclusions:** The leading cause of uveitis in young male patients is Behcet’s disease in our country like reported before. Rheumatoid factor (RF), c-ANCA, p-ANCA, ANA, anti ds DNA, CMV ve HSV antibodies did not provide additional benefits for the systemic diagnosis but they can be examined only if there is a suspicion.

**Keywords:** Uveitis, Young Men, Uveitis Examinations.

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### 200

**The Natural History of Lamellar Macular Holes: A Spectral Domain Optical Coherence Tomography Study**

*Göktug Seymenoglu, Fatih Balli, Esin Baser*

Celal Bayar University Medical School, Manisa, Turkey

**Introduction:** The purpose of the study is to evaluate the natural course of lamellar macular holes (LMHs) using spectral domain-optical coherence tomography (SD-OCT).

**Methods or Study Design:** Thirty-one consecutive patients diagnosed with a LMH were followed prospectively at Celal Bayar University Hospital. Inclusion criteria were a foveal defect on SD-
OCT with residual foveal tissue above the retinal pigment epithelium. LMHs were quantitatively and qualitatively characterised by SD-OCT in terms of base and apex diameter and residual foveal thickness. Best corrected visual acuity (BCVA) and SD-OCT findings were collected and compared at baseline and at final examination.

Results: The patients included 15 males and 16 females with a mean age of 63.9 ± 2.15 years. The mean follow-up period was 21.95 months (range 12–79 months). The mean BCVA (logMAR) at baseline was 0.45 ± 0.18, and at final examination it was 0.42 ± 0.11 (p > 0.05). Residual Foveal thickness at baseline (184.25 ± 31.25 μm), was also stable at the final visit (182 ± 22.36 μm, p > 0.05). Moreover, we did not observe statistically significant differences regarding apex (589 ± 82.20 vs 615 ± 93.25 μm, p > 0.05) and base (828 ± 76.14 vs 842 ± 80.65 μm, p > 0.05) diameters. Any patient developed a full thickness macular hole during the follow-up period.

Conclusions: Most lamellar macular holes do not progress anatomically and do not contribute to a significant decrease in visual acuity during the follow-up period. Vitrectomy should be considered only in the presence of progressive thinning of foveal thickness and/or decrease of visual acuity during the follow-up of the disease.

Keywords: Lamellar Macular Hole, Optical Coherence Tomography, Natural Course.

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206 Anatomic and Functional Responses in Clinically Relevant Subgroups of the Mivi-Trust Clinical Trials After Ocriplasmin Treatment

Paolo Lanzetta
University of Udine, Udine, Italy

Introduction: Ocriplasmin is a pharmacological agent indicated in the EU for treatment of VMT including when associated with macular hole = 400 μm. Posthoc subgroup analysis to determine VMA resolution rates in patients with baseline characteristics considered predictive of favourable outcomes by a UK health-technology appraisal. These subgroups include VMT without ERM, VMT with ERM, and VMT with MH.

Methods or Study Design: Data from the two pivotal phase 3 studies was used in this posthoc analysis. The primary endpoint was the proportion of patients who achieved VMA resolution at day 28 in ocriplasmin and placebo injected patients. Visual function endpoints included the proportion of patients with visual acuity improvement of ≥ 10 or 15 letters and the visual function questionnaire at month 6.

Results: For the posthoc analysis, patient distribution of the three subgroups was: (1) VMT without ERM (N = 266); (2) VMT with ERM (N = 229); (3) VMT with MH (N = 153). The proportion of patients who achieved VMA resolution at day 28 in the three subgroups was: (1) 29.8% vs. 14.2%, p = 0.001; (2) 7.8% vs. 1.6%, p = 0.085; (3) 50.0% vs. 25.5%, p = 0.006 (ocriplasmin vs placebo). The proportion of patients at month 6 with non-surgical improvement in BCVA = 10 letters was (1) 17.5% vs. 6.3%, p = 0.04; and (3) 32.1% vs. 17.0%, p = 0.05. The proportion of patients at month 6 with non-surgical improvement in BCVA = 15 letters was (1) 9.6% vs. 3.8%, p = 0.07; (2) 2.4% vs. 0.0%, p = 0.23; (3) 21.7% vs. 8.5%, p = 0.05. The VFQ-25 general vision subscale score at month 6 in score was greater for ocriplasmin than placebo for subgroup (1) 6.3 vs. 2.1; (2) 3.7 vs. 2.1; (3) 9.7 vs. 2.0.

Conclusions: This analysis supports the NICE recommendation of ocriplasmin use in patients with VMT without ERM who have severe symptoms and/or VMT associated with a MH = 400 μm.

Keywords: Ocriplasmin, Vitreomacular Adhesion, Macular Hole, Vitreomacular Traction, OCT.

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209 Ocular Decompression Retinopathy Following Anterior Chamber Paracentesis in a Patient with Neovascular Glaucoma Associated with Diabetic Retinopathy

Semra Nmn Koca, Defne Nmn Kalayci, Zeynep Nmn Duru
Department of Ophthalmology, Ankara Numune Training and Research Hospital, Ankara, Turkey

Introduction: To describe a case of consecutive bilateral decompression retinopathy following anterior chamber paracentesis due to high intraocular pressure in a patient with neovascular glaucoma associated with diabetic retinopathy. Arterial pulsation persisted despite antiglaucomatous medical therapy, therefore anterior chamber paracentesis was performed to salvage central retinal arterial flow. The fellow eye received intravitreal anti-VEGF therapy followed by intolerably high intraocular pressure which was lowered by anterior chamber paracentesis. Hyphema and multiple widespread retinal hemorrhages occurred in both eyes consecutively following paracentesis.

Conclusions: Anterior chamber paracentesis is often performed for intolerably high intraocular pressure following intravitreal anti-VEGF injection. It may also be rarely required for a patient admitting with high intraocular pressure compromising central retinal arterial flow. Decompression retinopathy may occur as a complication of anterior chamber paracentesis especially in the eye with defective vascular autoregulation due to diabetic eye disease and associated neovascular glaucoma.

Keywords: Intravitreal Injection, Neovascular Glaucoma, Ocular Decompression Retinopathy, Paracentesis.
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Diagnostics of Rhegmatogenous Forms of Retinal Peripheral Dystrophies Using Optical Coherent Tomography
Oleg Vladimirovich Kolenko
The Khabarovsk branch of the State Institution Eye Microsurgery Complex named after S.N. Fyodorov, Khabarovsk, Russia

Introduction: Analysis of identification of dangerous rhegmatogenous forms of retinal peripheral dystrophies by the method of optical coherent tomography of peripheral and equatorial segments of retina.

Methods or Study Design: Prognostic danger of peripheral dystrophies is defined by existence of vitreoretinal tractions and defects of retina. The main method of diagnostics of rhegmatogenous peripheral dystrophies is various techniques of ophthalmoscopy which doesn’t not allow always to tap vitreoretinal tractions, defects of retina in the area of peripheral dystrophy. For detailed research of a site of a peripheral dystrophy we used the optical coherent tomography (OCT) (5 Line Raster protocol, Cirrus HD-OCT, ‘Carl Zeiss’). We used the scan size 9 mm long. Research was conducted always after achievement of the maximum mydriasis. Having received a sharp image of the central segments of an eye ground, we used the device of external bracing of a look. Removing the mark of external bracing of a look we output the site of a peripheral dystrophy on the monitor, then scanning of a site of a peripheral dystrophy was carried. Analysis of the scanning images was made with the protocol of the image analysis High Definition Images.

Results: Use of the OCT method allows tapping objectively existence and degree of expression of vitreoretinal tractions and defects of retina in the area of the peripheral dystrophy of a retina. OCT allows determining the exact sizes of sites of a peripheral dystrophy and dynamic observation over a site of a peripheral dystrophy of a retina.

Conclusions: OCT is an effective method of identification of dangerous rhegmatogenous forms of peripheral dystrophies of a retina and allows defining indications to barrier laser coagulation.

Keywords: OCT – Optical Coherent Tomography.

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Fundus Autofluorescence Changes After Ranibizumab Treatment for Myopic Choroidal Neovascularization
Maurizio Battaglia Parodi1, Riccardo Sacconi1, Pierluigi Iacono1, Bruno Falcomatà2, Federico Selvi1, Matteo Scaramuzzi1, Francesco Bandello1
1Department of Ophthalmology, University Vita-Salute, Ospedale San Raffaele, Milan, Italy; 2Azienda Ospedaliera Bianchi-Melacrino-Morelli, Unità Operativa Complessa Oculistica, Reggio Calabria, Italy

Introduction: To correlate the patterns on short-wavelength (SW) and near-infrared (NIR) fundus autofluorescence (FAF) with the morpho-functional outcomes in eyes affected by Stargardt disease.

Methods or Study Design: Fifty-four eyes of 27 patients were prospectively enrolled. All patients underwent a complete ophthalmologic examination including SW-FAF, NIR-FAF, microperimetry, and spectral-domain optical coherence tomography (SD-OCT). Main outcome measures: Identification of a relationship between NIR-FAF and SW-FAF patterns within the foveal region with the best corrected visual acuity (BCVA) value. Secondary outcomes measures: Correlation of FAF patterns with SD-OCT findings and retinal sensitivity on microperimetry.

Results: Eyes showing a pattern of foveal hyper-FAF on NIR-FAF had a higher BCVA with respect to eyes with reduced FAF.
signal (0.44 ± 0.23 LogMAR vs 1.08 ± 0.19, p < 0.001). Similarly, mean sensitivity within the 2° of the foveal region was significantly better (6.45 ± 2.39 dB) in eyes with hyper-FAF with respect to eyes with hypo-FAF (0.23 ± 0.45 dB, p < 0.001). Moreover, eyes with hyper-FAF on SW-FAF did not present a significant difference with regard to BCVA (0.73 ± 0.31 vs 0.83 ± 0.43, p = 0.335), and mean retinal sensitivity (4.34 ± 3.91 dB vs 2.33 ± 2.96, p = 0.07) in comparison to the subgroup with foveal hypo-FAF. Integrity of both the photoreceptor inner/outer segment junction, and the photoreceptor outer segment/retinal pigment epithelium junction, were significantly correlated to a preserved BCVA and to a foveal hyper-FAF pattern on NIR-FAF.

Conclusions: Our data suggest that NIR-FAF patterns correlate with the morpho-functional outcomes in eyes affected by STGD. Longitudinal investigations are warranted to more precisely assess the actual contribution of NIR-FAF in the clinical characterization of STGD.

Keywords: Fundus Autofluorescence, Optical Coherence Tomography, Microperimetry, Stargardt Disease.

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224 Treatment Strategy for Myopic Choroidal Neovascularization Based on the Response to the First Ranibizumab Injection

Pierluigi Iacono1, Maurizio Battaglia Parodi1, Bruno Falcomatà2, Riccardo Sacconi3, Matteo Scaramuzzii, Federico Selvi3, Francesco Bandello1
1Department of Ophthalmology, University Vita-Salute, Ospedale San Raffaele, Milan, Italy; 2Azienda Ospedaliera Bianchi-Melacrino-Morelli, Unità Operativa Complessa Oculistica, Reggio Calabria, Italy

Introduction: To evaluate the efficacy of a treatment strategy based on the response of the myopic choroidal neovascularization (CNV) to the first intravitreal ranibizumab injection.

Methods or Study Design: Following a comprehensive ophthalmological examination, including best-corrected visual acuity assessment (BCVA), fluorescein angiography and optical coherence tomography, each patient received a first ranibizumab injection. At the 1-month examination, eyes with no CNV activity followed a PRN regimen from the 1st month on (PRN Group); eyes with persistent CNV activity completed the loading phase and were afterwards included in a PRN strategy (LOAD+PRN Group). Main Outcome Measure was the mean changes in the BCVA.

Results: Fifteen and 12 patients were assigned to PRN and to LOAD+PRN Groups, respectively. At the baseline, the median BCVA was 0.70 (LogMAR) in both Groups. At the 1-month examination, the BCVA showed a statistically significant improvement in both Groups. At 3 months, the PRN Group maintained the initial statistically improvement and a final median 3 lines gain was registered at 18-months examination (p = 0.0002). At 3 months, the LOAD ± PRN Group lost the statistically significant improvement and a clinical stabilization was observed during the follow-up (final median BCVA: 0.7, p = 0.13). Post-treatment analysis evidenced that the presence of CNV activity at 1-month examination was associated with longer symptoms duration, greater CNV area at the baseline and older age of patients. Multiple stepwise linear regression analysis identified age (p = 0.008) and baseline BCVA (p = 0.0001) as the explanatory variables for the final BCVA.

Conclusions: Ranibizumab was effective in improving and maintaining the BCVA in patients with myopic CNV. However, younger patients with better BCVA showed a greater chance of obtaining a visual improvement.

Keywords: Myopic Choroidal Neovascularization, Treatment Strategy, Ranibizumab.
**Keywords:** Partial Posterior Vitreous Detachment (PPVD), Spectral-Domain OCT (SD-OCT), Vitreomacular Traction Syndrome.

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**The Effects of Blood Donation on Ocular Parameters: A Spectral-Domain Optical Coherence Tomography Study**

*Nihat Sayın\(^1\), Bilge Araz Ersan\(^2\), Sadık Ertuğrul Bayramoğlu\(^3\), Dilara Pirhan\(^4\), Necip Kara\(^5\), Kamuran Sanlı\(^6\)*

\(^1\)Istanbul Kanuni Sultan Suleyman Education and Research Hospital, Department of Ophthalmology, Istanbul, Turkey; \(^2\)Kocaeli Derince Education and Research Hospital, Department of Ophthalmology, Kocaeli, Turkey; \(^3\)Kocaeli University Medical Faculty, Department of Ophthalmology, Kocaeli, Turkey; \(^4\)Gaziantep University Medical Faculty, Department of Ophthalmology, Gaziantep, Turkey; \(^5\)Istanbul Kanuni Sultan Suleyman Education and Research Hospital, Department of Microbiology, Istanbul, Turkey

**Introduction:** The purpose of the current study is to investigate the effects of blood donation on ocular parameters measured by optical coherence tomography.

**Methods or Study Design:** This prospective, observational study included one eye of 30 healthy men between 20–40 years of age; who have donated 500 ml of blood. The ocular parameters including ocular perfusion pressure (OPP), intraocular pressure (IOP), axial length (AL), central corneal thickness (CCT), choroidal and retinal thicknesses, retinal nerve fiber layer (RNFL) were measured at baseline and 10 minutes after blood donation.

**Results:** The mean baseline OPP was 43.4 ± 4.9 mm Hg, after blood donation it was measured 40.8 ± 4.6 mm Hg (p = 0.003). The mean baseline subfoveal choroidal thickness was 330.3 ± 14.7 μm, nasal choroidal thickness was 286.8 ± 81.5 μm, and temporal choroidal thickness was 295.9 ± 83.1 μm. After blood donation, these thicknesses were 294.7 ± 15.5 μm, 263.0 ± 87.0 μm ve 265.7 ± 91.6 μm; respectively (p < 0.001). There was no difference in AL, CCT, RNFL, retinal thicknesses were 294.7 ± 15.5 μm, 263.0 ± 87.0 μm ve 265.7 ± 91.6 μm; respectively (p > 0.05). There was no difference in AL, CCT, RNFL, retinal thicknesses and IOP measurements performed before and after blood donation (p > 0.05).

**Conclusions:** The mean OPP and choroidal thickness showed significant decrease after 500 ml blood donation, however no significant changes were observed in AL, CCT, RNFL, retinal thicknesses and IOP.

**Keywords:** Blood Donation, Choroidal Thickness, Retinal Thickness, Ocular Perfusion Pressure.

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**A Quantitative Evaluation of the Anterior and Posterior Segment of the Eye in Patients with Polycystic Ovary Syndrome**

*Nihat Sayın\(^1\), Sadık Ertuğrul Bayramoğlu\(^1\), Dilara Pirhan\(^2\), Bilge Araz Ersan\(^3\), Mehmet Erdogan\(^4\), Necip Kara\(^5\), Gonca Yıldırım\(^6\)*

\(^1\)Istanbul Kanuni Sultan Suleyman Education and Research Hospital, Department of Ophthalmology, Istanbul, Turkey; \(^2\)Kocaeli University Medical Faculty, Department of Ophthalmology, Kocaeli, Turkey; \(^3\)Kocaeli Derince Education and Research Hospital, Department of Ophthalmology, Kocaeli, Turkey; \(^4\)Gaziantep University Medical Faculty, Department of Ophthalmology, Gaziantep, Turkey; \(^5\)Istanbul Kanuni Sultan Suleyman Education and Research Hospital, Department of Obstetrics and Gynecology, Istanbul, Turkey

**Introduction:** The purpose of the current study is to evaluate the anterior and posterior segment of patients with polycystic ovary syndrome (PCOS) and compare them with healthy subjects.

**Methods or Study Design:** In this prospective study 54 patients with PCOS (study group) and 50 age-matched healthy individuals (control group) were enrolled. Choroidal thickness (CT) was measured at the fovea by enhanced-depth imaging optical coherence tomography (EDI-OCT) and the thicknesses of the retinal nerve fiber layer (RNFL), and macula were measured with spectral domain OCT. All subjects also underwent the following ophthalmologic evaluation: Axial length (AL), central corneal thickness (CCT), Schirmer I test, tear-film breakup time (TBUT).

**Results:** The mean subfoveal CT values of the study group were thicker than those of the control groups, and this difference was statistically significant (p > 0.05). TBUT value was significantly lower in the study group than in the control group (P > 0.05). There were no significant differences between groups in Schirmer I test results, CCT, AL, RNFL, and retinal thickness (P > 0.05).

**Conclusions:** Our results suggest that CT increases and TBUT values decrease in patients of PCOS patients compared to age-matched healthy individuals, whereas Schirmer I test results, CCT, AL, RNFL, and retinal thickness are comparable.

**Keywords:** Choroidal Thickness, Polycystic Ovary Syndrome, Retinal Nerve Fiber Layer, Schirmer Test, Tear-Film Breakup Time.

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**Changes in Choroidal and Macular Thickness After Cataract Surgery: Early Results**

*Hanife Tuba Akçam\(^1\), Mehmet Cüneyt Özmen\(^2\), Kübra Serbest Ceylanoglu\(^3\), Emin Esra Karaca\(^3\), Nuriye Gökçen Yalçın\(^2\), Bahri Aydın\(^2\)*

\(^1\)Cankiri State Hospital, Cankiri, Turkey; \(^2\)Gazi University Medical Faculty, Ankara, Turkey; \(^3\)Sorgun State Hospital, Yozgat, Turkey

**Introduction:** The aim of this study is to evaluate changes in choroidal and macular thickness following cataract surgery.

**Methods or Study Design:** Twenty eyes from 20 patients who had experienced uneventful cataract surgery (group 1) in Gazi...
University Medical School and twenty eyes from 20 age- and sex-
matched healthy volunteers (group 2) were recruited in the study. All study participants underwent complete ophthalmic examination as well as central foveal thickness (CFT) measurement using spectral domain optical coherence tomography (OCT) and choroidal thickness (CT) measurement by enhanced depth imaging (EDI) method of the same OCT system. The CT was measured in 5 points including foveal center and 1 and 2 millimeter (mm) nasal and temporal to the fovea. EDI measurements were obtained 1 day, 1 week and 1 month postoperatively and compared with the preoperative and control values. The statistical assessment was performed with the assistance of Pearson Chi-Square, Mann-Whitney U, Kruskall-Wallis and T tests.

Results: There was no statistically significant difference between groups in terms of mean age parameter (p = 0.2). The central foveal thickness values were similar throughout the follow-up (p > 0.05). A statistically significant increase in CT at macular and temporal 1 mm region is observed in 1 week following surgery; however, in 1 month period after surgery, it decreased according to preoperative values (p < 0.05).

Conclusions: Change in choroidal thickness has occurred in early period following uncomplicated cataract surgery. The relation between long term functional results and choroidal thickness can be detected using larger sample size and prospective approach.

Keywords: Cataract Surgery, Choroidal Thickness, Optical Coherence Tomography.

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Ranibizumab Pre-Filled Syringe Versus Ranibizumab Vial: Syringe Preparation Time in Real-World Clinical Practice
Eric Souied1, Sylvia Nghiem-Buffet1, Claudia Leteneux1, Sascha Bayer2, Audrey Derveley3, Alexandros Sagkriotis4, Guido Becker5, Salomon-Yves Cohen2

1Centre Hospitalier Intercommunal Creteil, Creteil, France; 2Centre Ophthalmologique d’Imagerie et de Laser, Paris, France; 3Novartis Pharma AG, Basel, Switzerland; 4Q_PERIOR AG, Zurich, Switzerland; 5Novartis Pharma France, Paris, France; 6Q_PERIOR AG, Munich, Germany

Introduction: Until recently, ranibizumab was available only in single-use vials, which necessitate several pre-injection preparation steps before intravitreal injection. A recently developed ranibizumab pre-filled syringe (PFS) may improve convenience and reduce syringe preparation time (SPT). The objective of this study was to compare SPT using the ranibizumab vial and PFS in a real-world clinical setting.

Methods or Study Design: Data on the preparation time for injections using the ranibizumab vial and ranibizumab PFS were collected during standard treatment sessions at two centres (C1 and C2) in France. No randomization of preparation method was performed. For each procedure, one independent observer recorded the duration of each step required to prepare the syringe from starting to remove the vial or PFS from its packaging to having the dose ready to inject (four steps using the PFS versus seven using the vial). At each centre, total SPT (mean total duration of all syringe preparation steps in seconds [s]) for each method was compared using a two-tailed t-test.

Results: Using the vial, 24 (C1) and 16 (C2) valid measurements of SPT were made. For the PFS, 39 (C1) and 18 (C2) valid measurements were made. In C1, SPT was 46 s using the PFS versus 75 s using the vial (difference, 29 s; p < 0.001). In C2, SPT was 46 s using the PFS versus 63 s using the vial (difference, 17 s; p < 0.001). These results represent a 27–39% reduction in SPT using the PFS compared with the vial. The main driver of these results was the reduction in number of syringe preparation steps associated with the PFS compared with the vial.

Conclusions: These results suggest that use of the ranibizumab PFS statistically significantly reduces SPT for intravitreal injections compared with the ranibizumab vial. The time saved by using the PFS may benefit physicians, nurses and patients.

Keywords: Anti-VEGF, Intravitreal, Retinal Conditions.

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Complications of Intravitreal Dexamethasone Implant Injections
Sertoğ Argun Kivonç, Berkant Kaderli, Vusale Asadova, Özgür Yalçınbayır, Ahmet Ali Yücel
Uludag University, Bursa, Turkey

Introduction: Macular oedema is a pathology known to cause visual impairment and can develop secondary to various retinal pathologies. Recently intravitreal dexamethasone implant (IDI) injection is a treatment option for macular oedema. In this study we evaluated the complications related to intravitreal dexamethasone implant injections.

Methods or Study Design: Patients with macular oedema related to different diseases underwent IDI injection with subconjunctival anesthesia. One hundred five eyes of 101 patients were included to the study. Complete ocular examination, intraocular pressure (IOP) measurements, anterior and posterior segment evaluation were done to all patients before and after the injections. Complications were recorded. Patients were divided to 2 groups according to the diagnosis: Group 1, patients with retinal vein occlusions, and Group 2, patients with macular oedema due to other disorders.

Results: Mean follow-up period was 4.9 months. The mean IOP values were 13.2, 13.1, 14.0, 14.9, 16.5, 13.8, 14.5 and 16.3 mm Hg at the initial examination, post-injection 1st day, 1st week, 1st, 2nd, 3rd, 4th and 5th months, respectively. The mean IOP value at 2 months was statistically significantly higher than the pre-injection IOP (p = 0.009). In group 1, the mean IOP (11.3 mm Hg) at 1 week was lower than the pre-injection (14.5 mm Hg) (p = 0.012). In group 2, the mean IOP (16.3 mm Hg) at 1 month was significantly higher than the pre-injection IOP (11.9 mm Hg) (p = 0.02). The IOP exceeded 21 mm Hg in 19 (18%) of cases. Other complications were; intraoperative subconjunctival hemorrhage in 62 eyes (59%), corneal epithelial erosion in 1 eye (1%), inadvertent extraocular injection of IDI in 1 eye (1%), and endophthalmitis in 1 eye (1%).

Conclusions: The most common complications of to intravitreal dexamethasone implant injections are subconjunctival hemor-
rhage and IOP elevation. However, serious complication like infectious endophthalmitis is also observed and should be kept in mind.

**Keywords:** Intravitreal Dexamethasone Implant, Intraocular Pressure, Macular Oedema, Retinal Venous Occlusion.

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**270 Macular Pigment Optical Density’s Relationship Age and Gender**

Zeliha Yazar, Aycan Uysal, Nil İrem Uçgün, Mehmet Onen, Hikmet Yavuz Sarıkatipoğlu

Ankara Numune Education and Research Hospital
Ophthalmology Department, Ankara, Turkey

**Introduction:** The aim of prospective study is to determine whether macular pigment optical density (MPOD) shows changes with age and to establish the association with gender in healthy people.

**Methods or Study Design:** This study was performed on healthy volunteers who; were not taking medication or nutritional support that could affect the macula, not weak or non-obese, did not have ocular or systemic diseases that affect central vision, glaucoma, diabetes, degenerative myopia, uveitis or cataract, or had NO I/II, C1/II or P1/II standard lens opacities according to the classification of Locs III, have not undergone ophthalmic surgery, and had dark iris color. MPOD values were measured without pupil dilatation in all eyes with MPS II (Macular Pigment Screener-Electron Technology) device, the new application of heterochromatic flicker technology. The results obtained are grouped in terms of age and gender, statistical analysis was performed with SPSS for Windows version 11.0.

**Results:** A total number of 146 eyes of 73 people were in the study. MPOD values of 46 eyes of 23 people under the age of 40 (10 male/13 female) (group 1), 64 eyes of 32 people between the age of 40–59 (13 male/19 female) (group 2) and 36 eyes of 18 people 60 and over (11 male/7 female) (group 3) were measured. Average MPOD values of 0.69 ± 0.13 (0.43–1.06) in Group 1, 0.60 ± 0.11 (0.46–0.84) in group 2 and, 0.56 ± 0.12 (0.34–0.80) in Group 3 were found. There was a statistically significant difference between groups (p = 0.015). There were also significant differences between groups 1 and 2 (p < 0.001) and between groups 2 and 3 (p = 0.043). Considering all groups, the mean MPOD levels of male [0.61 ± 0.14 (0.43–1.06)] and female [0.60 ± 0.13 (0.34–0.91)] were not significantly different (p = 0.748). This condition was similar when male and female in the groups were evaluated separately (for Group 1, 2, and 3 respectively p = 0.131, p = 0.323, p = 0.860). Average MPOD values of all persons participating in the study showed no significant difference between the right (0.613 ± 0.143) and left eyes (0.604 ± 0.126) (p = 0.522).

**Conclusions:** In healthy people, the amount of MPOD found in similar proportions in both eyes does not show gender differences. However, MPOD is decreasing with age, so with age, diet or supplementation to increase macular pigment may be considered.

**Keywords:** Age, Gender, Heterochromatic Flicker Technology, Macular Pigment Optical Density.

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**275 A Case Report of a 28-Year Old Patient with Behcet Retinal Vasculitis**

Katja Kuhta¹, Mateja Naji², Petra Skitek¹, Dušica Pahor¹

¹University Clinical Centre Maribor, Maribor, Slovenia;
²Health Centre Dr. Adolfa Drolca, Maribor, Slovenia

**Introduction:** Behcet disease is an autoimmune, rare and severe multisystemic vasculitis of unclear origin. Retinal vasculitis is an important component of Behcets disease.

**Methods or Study Design:** A 28-year old female patient presented with decreased vision in her left eye. Slit lamp examination revealed vitreous inflammation in both eyes (cells 2+). Fundus examination demonstrated sheathing surrounding retinal veins and arteries from the posterior pole to periphery with retinal hemorrhages in both eyes and macular edema in left eye. Fluorescein angiography showed occlusive retinal vasculitis. Systemic evaluation for vasculitis was performed. The patient had a history of recurrent oral ulcers, pustular skin lesions that resemble acne and deep vein thrombosis, but no other systemic manifestations of Behcets disease on presentation. Laboratory examinations including serology revealed no abnormal findings except positive HLA-B51. A diagnosis of Behcets disease was made using the international criteria following rheumatology consultation.

**Results:** The patient was treated with systemic steroid administration. Systemic steroids were slowly tapered and azathioprine was added. The patient responded well to treatment. During follow-up retinal inflammation completely resolved.

**Conclusions:** A careful history and positive HLA-B51 are helpful to establish an early diagnosis of Behcets disease.

**Keywords:** Retinal Vasculitis, Behcets Disease.

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**277 HBO in Late Period of Retinal Artery Occlusion**

Ayse Metin Kayhan, Irem Uçgün, Zeliha Yazar, Mehmet Onen

Ankara Numune Eğitim Arastırma Hastanesi, Ankara, Turkey

**Introduction:** Retinal artery occlusion (RAO) is an ophthalmological emergency that causes a major decrease of visual parameters in most of the cases. At emergency treatment as well as ocular massage, topical and oral antiglaucoma agents, hyperbaric oxygen (HBO) is expected to be effective. In late applications of RAO HBO’s effect is controversial. Purpose of this study is to evaluate the effect of HBO on visual acuity in patients which apply late (after 24 hour).

**Methods or Study Design:** Patients with acute central or branch artery occlusion (CRAO/BRAO) consecutively admitted to our hospital were offered HBO. Complete ophthalmologic examination for all patient was maden. VA was measured according to the log-MAR. The interval between RAO and time of acceptance to the hospital was noted. Standard therapy for all patients consisted of ocular massage for 3 minutes, topical antiglaucoma medications and oral acetazolamide. After the standard therapy all of them treated with HBO. Patients took treatment for 10 days, 2 times a day, 2 ATA HBO (100% oxygen). At the end of treat-
ment, patients were re-examined and the follow up was at least 3 months.

Results: There were 1 female 5 male cases. The average age of patients 72.2 (45–73) There was 6 patients; in which 3 CRAO, 1 BRAO, 2 cilioretinal artery occlusion present. Patients had an average of 72 hours after HBO, (min 6 hours…-max 120 hours). The mean best corrected visual acuity was 2.86 (log-MAR) at admission, before HBO and 2.13 (log-MAR) at the last examination, after HBO. One of CRAO patients showed increase in VA, 2 of CRAO patients showed unchanged VA after HBO. In BRAO patient VA was improved after HBO. Patient with cilioretinal artery occlusion, one of them had no improvement after HBO, but in one VA was improved.

Conclusions: HBO treatment for RAO which began even in the late period, may be give positive results in terms of improvement of visual acuity. Investigations with more patients are necessary to prove this observation.

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Analysis of the Retinal Nerve Fiber Layer and Macular Ganglion Cell Layer of Patients with Vascular Lesions of the Posterior Visual Pathway
Rita Anjos, Ana Cabugueira, André Vicente, Livio Costa, Luisa Vieira, Arnaldo Santos, Joana Ferreira, Duarte Amado, Jodo Paulo Cunha
Centro Hospitalar Lisboa Central, Lisboa, Portugal

Introduction: The purpose of this study was to determine if transneural retrograde degeneration (TRD) consequent to lesions in the posterior visual pathway due to vascular events could be detected by analysis of the retinal nerve fiber layer (RNFL) and macular ganglion cell layer (GCL). Additionally, we explored the association between thinning of RNFL and GCL with visual field defects.

Methods or Study Design: Data from 25 patients with posterior visual pathway lesions with vascular etiology were analyzed. All patients were submitted to a complete ophthalmological evaluation. In addition, automated computerized perimetry (Octopus Perimetry®, Haag-Streit) and OCT (OCT SPECTRALIS® – Heidelberg Engineering Gmb) of the macula and peripapillary areas were performed.

Results: Peripapillary RNFL and macular GCL thicknesses were reduced in the temporal quadrants in the ipsilateral eye and in the nasal quadrants in the contralateral eye (p < 0.05). There was an association between the affected visual field quadrant and corresponding thickness of RNFL and macular GCL quadrants.

Conclusions: TRD may play a role in physiopathology of lesions of the posterior visual pathway. Both RNFL and macular GCL analysis may be used in the evaluation of these patients.

Keywords: Retinal Nerve Fiber Layer, Macular Ganglion Cell Layer, Visual Fields, Stroke.

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Placebo-Controlled Study of Nepafenac Ophthalmic Suspension 0.1% for Ocular Pain Associated with Dexamethasone Intravitreal Implant
Muammer Ozcimen1, Serap Ozcimen2, Yasar Sakarya1, Rabia Sakarya1, Halil Ibrahim Yener, Ismail Senol Ivacik, Erkan Erdogan1
Konya Training and Research Hospital, Konya, Turkey

Introduction: The aim of this study was to assess the effects of a single drop of nepafenac ophthalmic suspension 0.1% for the control of pain experienced after Ozurdex injections.

Methods or Study Design: This randomized, double-masked, placebo-controlled study included 32 adults receiving Ozurdex injection. Patients were randomly assigned to receive nepafenac ophthalmic suspension 0.1% or balanced salt solution placebo. They were asked to assess the level of pain using a visual analog scale (VAS) for pain, at 1, 6 and 24 hours following the injection.

Results: At 1 hour after the injection, there was a course toward less pain scores in the nepafenac group; however, statistical significance was not reached. At 6 and 24 hours, the nepafenac group had significantly lower pain scores than those receiving placebo.

Conclusions: A single drop of nepafenac ophthalmic suspension 0.1% is effective in reducing pain experienced after Ozurdex injections.

Keywords: Nepafenac, Ozurdex, Pain, Visual Analogue Scale.

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Ocular Penetration of Intravenously Administered Colistin in Rabbit Uveitis Model
Muammer Ozcimen1, Serap Ozcimen2, Yasar Sakarya1, Rabia Sakarya1, Seran Goktas1, Ismail Alpfidan1, Erkan Erdogan1
1Konya Training and Research Hospital, Konya, Turkey; 2Konya State Hospital, Konya, Turkey

Introduction: The purpose of this study was to evaluate the ocular distribution of intravenously administered colistin in a rabbit uveitis model.

Methods or Study Design: Colistin, a polypeptide antibiotic against to the multidrug resistant (MDR) gram-negative organisms, was given intravenously to rabbits at 5 mg/kg of body weight starting 24 h after induction of uveitis by intravitreal endotoxin injection. Colistin concentrations were determined by high performance liquid chromatography-mass spectrometry (LC-MS) assay in the aqueous humor, vitreous humor, and plasma 0.5, 3, 6, and 24 h after administration of a single dose.

Results: The maximum colistin concentrations (mean ± standard deviation) were found 0.5 h after the end of the intravenous administration and were 9.48 ± 2.0 μg/mL in plasma and 0.62 ± 0.07 μg/mL in the aqueous humor of the inflamed eye. After 24 h no drug was detectable in the aqueous of the inflamed eyes. Colistin was undetectable in the aqueous of contralateral normal eyes at all time points. Drug concentrations in all the vitreous samples from both inflamed and normal eyes were undetectable except at
3 h inflamed eye group, colistin concentration of 0.02 ± 0.01 μg/ml was found. Plasma levels of colistin fell to 0.93 ± 0.07 μg/ml and 0.24 ± 0.08 μg/ml after 3, 6 h respectively and was not detectable 24 h after the given dose.

Conclusions: In our model, colistin did not reach therapeutically relevant levels in the aqueous and in the vitreous humor of rabbit eyes. The findings suggest a limited role for intravenously administered colistin in the treatment of gram negative bacterial endophthalmitis.

Keywords: Colistin, Endophthalmitis, Liquid Chromatography-Mass Spectrometry, Ocular Penetration, Pharmacokinetics.

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Clearance of Intravitreal Daptomycin in Uveitis Induced Rabbit Model
Muammer Ozcimen¹, Yasar Sakarya¹, Serap Ozcimen², Rabia Sakarya¹, Sertan Goktas¹, Ismail Alpfidan¹, Ercan Erdogan¹
¹Konya Training and Research Hospital, Konya, Turkey; ²Konya State Hospital, Konya, Turkey

Introduction: The purpose of the study was to investigate the elimination rate of daptomycin after intravitreal injection in uveitis induced rabbits.

Methods or Study Design: Intravitreal injection of the single dose of 200 μg/0.05 mL daptomycin was administered to rabbits starting 24 hours (h) after induction of uveitis by an intravitreal endotoxin injection. Aqueous humor and vitreous humor samples of 8 eyes per time point were collected at selected time intervals (1, 3, 6, 24, 48, 72 and 96 hours) and the in vitreous half-life was calculated. Daptomycin concentrations in vitreous and aqueous humor were assayed with high performance liquid chromatography–mass spectrometry (LC-MS).

Results: The vitreous concentration was noted to decline slowly with time. The mean vitreous concentration was 146.25 ± 22.02 μg/mL and 139.75 ± 24.60 μg/mL 1 h after injection and declined to 41.00 ± 9.89 μg/mL and 30.50 ± 13.43 μg/mL at 48 h and 23.25 ± 10.99 μg/mL and 11.10 ± 3.33 μg/mL at 96 h in experimentally inflamed and normal eyes respectively. The vitreous daptomycin concentration showed an exponential decay with a half-life of 25.67 hours in normal eyes and 34.6 hours in inflamed eyes. The aqueous levels of daptomycin in normal eyes was low at 1 h after injection but remained significantly high for at least 48 h. Daptomycin was detected in the aqueous of inflamed eyes at much lower levels.

Conclusions: The vitreous concentrations achieved in 96 h were greater than the previously reported minimum inhibitory concentrations (MICs) of organisms most involved in Gram positive bacterial endophthalmitis. Daptomycin should therefore be considered for the treatment of intraocular infections caused by Gram-positive bacteria.

Keywords: Daptomycin, Endophthalmitis, Clearance, Liquid Chromatography-Mass Spectrometry, Antibiotic Resistance.

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Peripapillary Choroidal Thickness in Patients with Chronic Obstructive Pulmonary Disease
Muammer Ozcimen¹, Yasar Sakarya¹, Ercan Kurtipek¹, Taha Tahir Bekci¹, Sertan Goktas¹, Rabia Sakarya², Halil Ibrahim Yener²
¹Konya Training and Research Hospital, Konya, Turkey; ²Konya Eye Clinic, Konya, Turkey

Introduction: The purpose of this study is to evaluate the peripapillary choroidal thickness of patients with chronic obstructive pulmonary disease (COPD) via enhanced depth imaging optical coherence tomography (EDI OCT).

Methods or Study Design: A total of 80 patients with COPD (80 eyes) and 50 control subjects (50 eyes) were enrolled. Choroidal scans and the retinal nerve fiber layer (RNFL) thickness were obtained for all eyes using OCT.

Results: The average peripapillary choroidal thickness measurements of the COPD group (147.58 ± 53.53 μm) were significantly lower than the control group (160.84 ± 44.73 μm) (p < 0.001). Inferior segment thicknesses were significantly thinner than the other segments (p < 0.05). Subfoveal choroidal thickness and RNFL thickness measurements of the COPD group were also lower than those of the control group.

Conclusions: Hypoxia in COPD seems to affect the choroidal thickness. Thinning of the choroid may be attributed to increased vascular resistance and reduced blood flow in patients with COPD.

Keywords: Choroid, Optical Coherence Tomography, Hypoxia, Pulmonary Disease.

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Pharmacokinetics of Intravenously Administered Tigecycline in Eye Compartments: An Experimental Study
Muammer Ozcimen¹, Yasar Sakarya¹, Sertan Goktas¹, Rabia Sakarya¹, Serap Ozcimen²
¹Konya Training and Research Hospital, Konya, Turkey; ²Konya State Hospital, Konya, Turkey

Introduction: The purpose of this study was to evaluate the ocular distribution of intravenously administered tigecycline in a rabbit uveitis model.

Methods or Study Design: Tigecycline, which has a broad spectrum of activity against many gram-positive, gram-negative, and anaerobic organisms was given intravenously to rabbits at 7 mg/kg of body weight starting 24 h after induction of uveitis by intravitreal endotoxin injection. Tigecycline concentrations were determined by high performance liquid chromatography-mass spectrometry (LC-MS/MS) assay in the aqueous humor, vitreous humor, and plasma 1, 3, 6, and 24 h after administration of a single dose.

Results: The maximum concentrations were found within 1 h after the end of the intravenously given tigecycline and were 1308.60 ± 301.76 ng/mL in plasma, 181.40 ± 51.32 ng/mL in vitreous humor and 145.00 ± 55.29 ng/mL in aqueous humor of the inflamed eye. After 24 h no drug was detectable in the aqueous and
vitreous of the normal eyes whereas little amounts of drug was detectable in inflamed eyes and in plasma.

Conclusions: Tigecycline did not reach therapeutically significant levels in the aqueous and the vitreous humor of rabbit eyes. The findings suggest a limited role for intravenously administered tigecycline in the treatment of bacterial endophthalmitis.

Keywords: Animal Model, Endophthalmitis, Ocular Penetration, Pharmacokinetics, Tigecycline.

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Evaluation of Peripapillary Choroidal and Retinal Nerve Fiber Layer Thickness in Eyes with Tilted Optic Disc
Muammer Ozcimen, Yasar Sakarya, Sertan Goktas, Rabia Sakarya, Ismail Senol Ivacik, Abdulkadir Bukus
Konya Training and Research Hospital, Konya, Turkey

Introduction: The aim of this study was to evaluate retinal nerve fiber layer (RNFL) and peripapillary choroidal thickness in eyes with tilted optic disc in order to identify characteristic RNFL and peripapillary choroid patterns verified by optical coherence tomography (OCT).

Methods or Study Design: Twenty-nine eyes of 29 patients with tilted optic discs were studied with spectral domain (SD) OCT and compared with age and sex-matched control subjects in a prospective design. The imaging of retinal nerve fibre layer (RNFL) was performed by using three circular scans of a diameter of 3.4 mm around the optic disc using OCT. For measurements of peripapillary choroidal thickness, a 360-degree 3.4 mm diameter peripapillary circle scan was performed using the standard protocol for retinal nerve fibre layer (RNFL) assessment.

Results: The RNFL thickness was significantly decreased in the superotemporal area and the global RNFL was significantly lower in the tilted disc group than those of the control group (P < 0.001). Peripapillary choroid was significantly thicker at the site of the elevated rim of eyes with tilted disc (P < 0.001).

Conclusions: This study demonstrated a clinical characterization of the main tilted disc morphologies that may be helpful in differentiating a tilted disc from other altered disc morphologies. It would be contributory the comparison between glaucoma and tilted disc groups in latter studies.

Keywords: Choroid; Enhanced Depth Imaging; Nerve Fiber; Optical Coherence Tomography; Tilted Optic Disc.

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The Efficacy of Photodynamic Therapy in a Von Hippel Lindau Patient with Retinal Haemangioma
Gökhan Özge, Mustafa Eren, Dorukcan Akincioglu, Seçkin Aykas
Gülhane Military Medical Academy Dept. of Ophthalmology, Ankara, Turkey

Introduction: Von Hippel Lindau (VHL) disease is a rare genetic disorder characterized by visceral cysts and benign tumors in multiple organ systems that have subsequent potential for malignant change. Retinal capillary hemangioma is one of the most common and often the earliest manifestation of VHL disease. We report a rare case of VHL disease with central retinal hemangioblastoma treated with photodynamic therapy (PDT).

Methods or Study Design: A 25-year-old female patient diagnosed with VHL disease retrospectively evaluated. The visual acuity was perception negative in the right eye and counting fingers in the left eye. Right eye developed phthisis bulbi years ago. There was a peripapillary mass in the left eye. Fundus fluorescein angiography (FFA) showed late stage hyperfluorescence relating to vascular peripapillary mass. Optic coherence tomography revealed subretinal fluid and therefore we planned intravitreal ranibizumab treatment. Due to no significant change following intravitreal ranibizumab injections, we planned photodynamic therapy.

Results: There was no change in visual acuity but late hyperfluorescence due to vascular leakage disappeared 3 months later and subretinal fluid significantly reduced.

Conclusions: Although being a rare genetic disorder, retinal manifestations may cause blindness in VHL patients. PDT must be kept in mind in the treatment regimen for retinal angio-

Keywords: Haemangioma, Photodynamic Therapy, Von Hippel Lindau.

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Intravitreal Ranibizumab Treatment for Macular Edema Associated with Central Retinal Vein Occlusion and Hemiretinal Vein Occlusion: Cases Reports
Joao Matias, Rita Matos
CHBV, Aveiro, Portugal

Introduction: Retinal vein occlusions are common retinal vascular disorders with the potential for significant vision-related morbidity. Retinal vein occlusions are classified as either branch retinal vein occlusion (BRVO), central retinal vein occlusion (CRVO), or hemiretinal vein occlusion (HRVO) based on the specific occlusion site. Decreased vision in patients afflicted with retinal vein occlusions result mainly from the macular edema.

Methods or Study Design: We describe three clinical cases of CRVO and two clinical cases of HRVO. All patients were treated with monthly intravitreal ranibizumab injections for 3 months and then with pro re nata retreatment on evidence of disease activity. The main outcome measures were change in the best corrected visual acuity (BCVA) and central macular thickness by optical coherence tomography.

Results: BCVA improved in three eyes (two of CRVO and one of HRVO) and the gain in visual acuity was at least 3 Snellen lines. One eye remained the same and 1 eye worsened. All injections resulted in reduction in central macular thickness as determined by optical coherence tomography. None patients developed neovascular complications.

Conclusions: Retinal vein occlusions are common retinal vascular disorder in which macular edema may develop, with a consequent reduction in visual acuity. Until recently there has been no treatment of proven benefit, repeated intravitreal injection of anti-
VEGF agents in eyes with CRVO/HRVO macular edema may improved visual outcomes, and growing evidence supports its use. **Keywords:** Central Retinal Vein Occlusion, Hemiretinal Vein Occlusion, Macular Edema, Ranibizumab.

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**Bilateral Symmetrical Temporal Retinal Hyperpigmentation in Hetrochromia Children**

Gholamhossein Yaghoobi

Birjand University of Medical Science, Birjand, Iran

**Introduction:** Retinal pigmentary change have reported in heterochromia, but symmetrical bilateral pigmentation pattern we describe in this report.

**Methods or Study Design:** Case report of fundusscopic and iris color descrition.

**Results:** A 9 year old boy broad to the ophthalmology clinic due to different iris color. Visual acuity without correction in the right blue eye was 10/10 and 10/10 also in the left brown eye. Biomicroscopic ophthalamic examination does not show any other lid or anterior segment abnormality except of homonymous symmetrical pattern of nasal retinal hypopigmentation versus temporal retinal hyperpigmentation. The children does not have any associated systemic finding too.

**Conclusions:** Bilateral symmetrical retinal pigmentary change in unilateral heterochromia iridis, may be conclude that retinal pigmentation have a different coding than the iris color.

**Keywords:** Retinal Pigmentation, Hererochromia, Symetrical.

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**Vitreoretinal Surgery**

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**Result of Transscleral Small Gauge Silicone Oil Removal Combine with Phacoemulsification**

Referano Agustiawan

Jakarta Eye Center, Jakarta, Indonesia

**Introduction:** To evaluate outcomes of small gauge silicone oil removal combine with phacoemulsification in eyes that developed cataract after silicone oil tamponade in vitreoretinal surgery.

**Methods or Study Design:** 38 eyes of 38 patients (23 male, 15 female; mean 44 age years) who underwent phacoemulsification with removal silicone oil through 23-gauge sclerotomy at our hospitals during 2013 were evaluated retrospectively. All operated by one surgeon. The reason for pars plana vitrectomy and silicone oil injection was rhegmatogenous retinal detachment in 36 eyes, rhegmatogenous retinal detachment with scleral rupture in 1 eye, and macular hole with RRD in one eye. All eyes had 1300 cs silicone oil. The mean duration of intraocular silicone oil tamponade was 5 months, with a mean postoperative follow up of 6 months. Intraocular lenses were implanted in all surgeries.

**Results:** Anatomic success after silicone oil removal, defined as a complete retinal attachment, was achieved in 35 of 38 patients (92%). Redetachment occurred in 3 eyes (8%). Ten patients (26.3%) had high intraocular pressure after silicone oil removal and well controlled with anti-glaucoma drug. Visual acuity improved or remained unchanged in 32 patients (84.2%). No complication occurred during phaco surgery.

**Conclusions:** Small gauge transscleral silicone oil removal combined with phacoemulsification is a safe and useful procedure. The most detected post-operative complication was high intraocular pressure. This combine procedure may reduce time and cost of surgery.

**Keywords:** Silicone Oil Removal, Phacoemulsification, Small Gauge.

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**The Development of a Delicate Procedure for Internal Limiting Membrane Peeling in Macular Pathology Surgery**

Iuriy Alexandrovich Belyi, Alexander Vladimirovich Tereschenko, Svetlana Alexandrovna Mirgorodskaya, Yuliya Aleksandrovna Sidorova, Ilya Sergeevich Kazakov

1 Kaluga branch of Federal state budget institution «Inter-branch research and technical complex «Eye Microsurgery» named after Academician S.N. Fedorov» of the Russian Federation Public Health Ministry, Kaluga, Russia; 2Federal state budget institution «Inter-branch research and technical complex «Eye Microsurgery» named after Academician S.N. Fedorov» of the Russian Federation Public Health Ministry, Kaluga, Russia; 3Samara Regional Clinical Ophthalmological Hospital named after T.I. Eroshevskiy, Samara, Russia

**Introduction:** The ongoing research for the best way to remove the internal limiting membrane (ILM) underlines the relevance of the development of new surgical techniques of delicate peeling of the ILM to minimize the trauma of the intervention and to achieve or maintain high functional results.

**Methods or Study Design:** 3 patients with cystic macular edema of various etiologies. According to the data from OCT all patients suffered from initial stage of fibrosis of internal limiting membrane. Taking into consideration high visual function (0.4–0.6 dezimal), the decision was made to carry out delicate internal limiting membrane peeling in order to minimize traumas of interference. In roundabout movements we carried out the peeling of particular parts of ILM, the number of which differed from 5 to 7 depending on the adhesion density to the retina, the intensity of fibrosis of ILM and the presence of epiretinal membranes tightly connected with the ILM. In the process of the last part removal, before interlocking circle edges we left a small intersection to prevent spontaneous peeling of central part of ILM. This method reminds the process of removal petals from a flower.

**Results:** In all cases surgical procedures were made according to the developed technology. One patient developed small preretinal hemorrhages, appeared as a result of mechanical pickups of...
internal limiting membrane, which disappeared in a week by itself. In the one month follow up examination one patent’s improved BCVA from 0.4 to 0.7. In all other cases BCVA remained the same. According to the data fovea structures could not been clearly differentiated, with different reflectivity levels in the photoreceptor layer from higher reflectivity of inner layers to low reflectivity of photoreceptor layer in foveola.

Conclusions: The suggested methodology could help minimise the traumatic interference and commends an additional tool in the hands of vitreoretinal surgeon for safer ILM removal.

Keywords: Delicate Internal Limiting Membrane Peeling.

Introduction: The goal of vitreous surgery used to treat macular holes is to release the vitre macular traction and to flattening the margins of the holes. Some adjunctive procedures as ILM peeling was added in addition to the vitrectomy to assist in hole closure.

Methods or Study Design: 20 cases of idiopathic & traumatic macular holes were evaluated preoperatively through biomicroscopy & OCT. All cases were subjected to vitrectomy with ILM peeling in 10 cases while non peeling occurred in 10 cases then gas tamponade & prone position to all of the 90 cases had been done. All cases were examined 1, 3, 6 weeks post operatively. VA, biomicroscopy & OCT had been done.

Results: The peeling group had recorded high success rate of hole closure with improved vision (90%) while the non peeling group had recorded 70% success rate with failed hole closure of large ones more than 400 um diameter.

Conclusions: Vitrectomy with ILM peeling is beneficial for macular hole closure especially large ones or recurrent ones without previous peeling.

85 Comparison of Outcomes of 23 and 25 Gauge High-Speed Transconjunctival Vitrectomy Surgery for Complications of Proliferative Diabetic Retinopathy
Semra Nmn Koca, Defne Nmn Kalayci, Burcu Nmn Gültekin
Department of Ophthalmology, Ankara Numune Training and Research Hospital, Ankara, Turkey

Introduction: To compare outcomes of 23 and 25 gauge (G) high-speed transconjunctival sutureless vitrectomy surgery for complications of proliferative diabetic retinopathy (PDR).

Methods or Study Design: Retrospective, consecutive case series including 118 eyes of 113 patients who had 23 or 25G primary pars plana vitrectomy (PPV) for complications of PDR by a single surgeon. Intraoperative complications, postoperative transient hypotony, sclerotomy suturation rate, anatomical success and functional outcome were compared between the two groups. Factors affecting the rate of complications and suture requirement were also evaluated.

Results: Forty-three eyes belonged to the 23 G group and 75 eyes to the 25 G group. LogMar visual acuity significantly improved from 2.1 to 1.0 post-operatively in the 23 and 25G groups. There were 15 (34.9%) and 18 (24%) instances of iatrogenic retinal breaks, 3 (7%) and 7 (9.3%) cases of hypotony, sclerotomies were sutured in 17 (39.5%) and 21 (28%) of cases in the 23 G and 25 G groups respectively. The difference between the groups was not significant. Number of surgeries needed for anatomical success was 1.09 and final anatomical success rate was 100% in the 23 G and 1.01 and 96% in the 25 G vitrectomies (p < 0.05).

Conclusions: Both 23 and 25 G transconjunctival high speed vitrectomy are equally safe and effective in the management of complications of PDR.

Keywords: Complication, Proliferative Diabetic Retinopathy, Pars Plana Vitrectomy.

65 Vitrectomy with iLM Peeling vs Non Peeling for Management of Macular Holes
Bahaa Abdalla Hassan
Research Institute of Ophthalmology, Cairo, Egypt

Introduction: To compare outcomes of ophthalmic microendoscope-assisted vitreoretinal surgery for ocular complications of Behçet’s disease.

Methods or Study Design: Methods: This retrospective study included 34 eyes of 30 consecutive Behçet patients, who underwent pars plana vitrectomy with the assistance of ophthalmic microendoscope for vitreoretinal complications despite maximum medical treatment. The changes in visual acuity, the number of severe uveitis attacks, postoperative medication and complications were reviewed before and after surgery.

Results: Indications for vitreoretinal surgery were dense vitreous opacities in 25 eyes, retinal detachment in 12 eyes, vitreous hemorrhage in 5 eyes, hypotony in 2 eyes, full thickness macular hole in 2 eyes, cystoid macular edema in 1 eye, macular pucker in 7 eyes, and vitreomacular traction in 1 eye. After microendoscope-assisted vitreoretinal surgery, visual acuity significantly improved (p < 0.001) and severe uveitis attacks significantly decreased (p < 0.01) in almost all eyes. The results were unfavorable in 5 eyes with recurrence of retinal detachment in 2 eyes, persistent severe hypotony in 1 eye, reopened macular hole in 1 eye and persistance rubosis iridis in 1 eye. Phthisis was not observed in any eye during postoperative period.

Conclusions: Conclusion: Vitreoretinal surgery with ophthalmic microendoscope assistance may be both safe and effective for the management of vitreoretinal complication, control of inflammation, and stabilization and improvement of visual acuity in Behçet’s disease. Phthisis, neovascular glaucoma, and severe hypotony were very rare and mostly related with the preoperative status of the eyes.

90 Ophthalmic Microendoscope-Assisted Vitreoretinal Surgery for Ocular Complications of Behçet’s Disease
Emin Özmert, Sibel Demirel, Figen Batıoglu
Ankara University Medical Faculty, Ankara, Turkey

Introduction: To evaluate the outcomes of ophthalmic microendoscope-assisted vitreoretinal surgery for ocular complications of Behçet’s disease.

Methods or Study Design: Methods: This retrospective study included 34 eyes of 30 consecutive Behçet patients, who underwent pars plana vitrectomy with the assistance of ophthalmic microendoscope for vitreoretinal complications despite maximum medical treatment. The changes in visual acuity, the number of severe uveitis attacks, postoperative medication and complications were reviewed before and after surgery.

Results: Indications for vitreoretinal surgery were dense vitreous opacities in 25 eyes, retinal detachment in 12 eyes, vitreous hemorrhage in 5 eyes, hypotony in 2 eyes, full thickness macular hole in 2 eyes, cystoid macular edema in 1 eye, macular pucker in 7 eyes, and vitreomacular traction in 1 eye. After microendoscope-assisted vitreoretinal surgery, visual acuity significantly improved (p < 0.001) and severe uveitis attacks significantly decreased (p < 0.01) in almost all eyes. The results were unfavorable in 5 eyes with recurrence of retinal detachment in 2 eyes, persistent severe hypotony in 1 eye, reopened macular hole in 1 eye and persistance rubosis iridis in 1 eye. Phthisis was not observed in any eye during postoperative period.

Conclusions: Conclusion: Vitreoretinal surgery with ophthalmic microendoscope assistance may be both safe and effective for the management of vitreoretinal complication, control of inflammation, and stabilization and improvement of visual acuity in Behçet’s disease. Phthisis, neovascular glaucoma, and severe hypotony were very rare and mostly related with the preoperative status of the eyes.
Postoperative Endophthalmitis: The Role of Vitrectomy

Keywords: Behçet’s Disease, Ophthalmic Microendoscope, Uveitis Complications, Vitreoretinal Surgery.

Introduction: Endophthalmitis remains the most severe intraocular infection and vision threatening complication for the ophthalmologist. Incidence of postoperative endophthalmitis decreased mainly due to disseminated use of prophylactic intracameral antibiotic regimens. The Endophthalmitis Vitrectomy Study compared systemic antibiotics, vitrectomy and vitreous tap for treatment of endophthalmitis following cataract surgery with intracocular lens implantation. It concluded that immediate vitrectomy is beneficial to patients presenting with light perception only. However, patients in this study eventually underwent vitrectomy as rescue treatment. Indications for vitrectomy in postoperative endophthalmitis ought to be reviewed.

Methods or Study Design: A retrospective analysis of data referring to all patients admitted for postoperative endophthalmitis in the Ophthalmology Department of Hospital São João from January 2000 through March 2014 was performed. Information on age, sex, comorbidities, presentation symptoms, surgery performed, causative agent, presenting visual acuity and visual acuity after treatment was recorded. All patients were treated with systemic antibiotics. Additional data from patients submitted to vitrectomy was collected: days from presentation until vitrectomy, comparative study performed in a tertiary eye care hospital from January 2000 through March 2014 was performed. Information on age, sex, comorbidities, presentation symptoms, surgery performed, causative agent, presenting visual acuity and visual acuity after treatment was recorded. All patients were treated with systemic antibiotics. Additional data from patients submitted to vitrectomy was collected: days from presentation until vitrectomy, photocoagulation or cryocoagulation and tamponade type. Statistical analysis was performed with SPSS v21.0.

Results: 111 cases of postoperative endophthalmitis were analyzed, 51.4% were males. At presentation the mean visual acuity was hand movements. All patients were admitted for intravenous antibiotics (vancomycin and ceftazidime). 55.9% received intravitreal injection of vancomycin and ceftazidime. 28.8% of patients underwent pars plana vitrectomy. Irrespective of treatment visual acuity improved and the difference was statistically significant (p < 0.01). Intravitreal injection of antibiotics showed a tendency for visual improvement but the difference was not statistically significant. Patients with visual acuity of light perception through 1/10. Final anatomic success was achieved in 13 of 22 patients in the first group (59%) and in 15 of 20 patients in the second group (75%). Final anatomic success was 100% with scleral buckling or vitrectomy. Final best corrected Snellen visual acuity was 0.1 or better in 64% and 75% of patients and 0.4 or better in 41% and 40% of patients in the first and second groups respectively. There was no significant difference in anatomic and functional success with pneumatic retinopexy between the 2 groups.

Conclusions: Outcome of pneumatic retinopexy is not different whether retinopexy is achieved by cryopexy at the same session with intravitreal gas injection or by cryopexy or laser photocoagulation after the retina has reattached by previously injected intravitreal gas injection.

Keywords: Cryopexy, Pneumatic Retinopexy.
August 2008 to November 2011. TA assisted 23G vitrectomy done in 74 complex retinal detachment (RD) (A, Primary, n = 43 & B, Failed, n = 31); divided into subgroup I: A (n = 21) & I: B (n = 17) where additional TA crystals applied on RR, after fluid air exchange and laser, just before injecting SO and subgroup II: A (n = 22) & II: B (n = 14) where no additional TA applied. Follow up done for 2 years after SO removal.

Results: Mean post-operative BCVA were 1.212 ± 0.39 LogMAR (Group IA) & 1.28 ± 0.40 LogMAR (Group IIA) and 1.02 ± 0.37 LogMAR (Group IB) & 0.91 ± 0.26 LogMAR (Group IIB). Mean pre & postoperative IOP in Group IA were 10.24 ± 5.75 & 13.38 ± 5.02 mm Hg; in Group IIA, 10.41 ± 5.88 & 12.59 ± 3.98 mm Hg; in Group IB, 6.53 ± 2.79 & 11.06 ± 5.78 mm Hg and in Group IIB, 7.64 ± 5.29 & 10.71 ± 4.83 mm Hg. Post SO removal epimacular membrane (EMM) noted in 19.05% (I) & 54.55% (II) [p < 0.05] (A) and 11.76% (I) & 64.29% (II) [p < 0.005] eyes (B). Marginal PVR changes noted in 9.52% vs 27.27% (A) and 17.65% vs 71.43% [p < 0.005] (B) eyes. Recurrent RD in 4.76% vs 13.64% (A) and 5.88% vs 28.57% eyes [p < 0.1 but >0.05, NS] (B).

Conclusions: Sub-silicone oil additional TA crystals over RR significantly decrease EMM formation in both primary and failed RD cases, but marginal PVR formation only in failed RDs. As RR in complex RDs increases further chance of postoperative PVR, sub silicone oil application of TA crystals directly over RR exert precise anti-PVR effect specially in initial periods when inflammatory activities are maximum & can significantly decrease EMM formation in both groups and marginal PVR in failed RDs, but not recurrence of RD.

Keywords: Sub Silicone Oil, Triamcinolone Acetonide Drops, Relaxing Retinotomy (RR), Proliferative Vitreoretinopathies (PVR), Complex Retinal Detachment.

119 Combined Phaco Emulsification Intra Ocular Lens Implantation and Transpupiller Silicone Oil Removal

Hatun Handan Bardak, Yavuz Bardak
Career Eye Hospital, Isparta, Turkey

Introduction: Safety and effectiveness of combined phaco emulsification (PE), intra ocular lens (IOL) implantation and transpupiller silicone oil (SO) removal operation was investigated in this study.

Methods or Study Design: Thirty patients having Pars Plana Vitrectomy (PPV), SO endo tamponate operation, without need for additional vitreoretinal surgery had the combined phaco emulsification (PE), intra ocular lens (IOL) implantation and transpupiller silicone oil (SO) removal operation. Preoperative, postoperative corrected visual acuity (CVA), intra ocular pressure (IOP), perioperative complications, time between SO implantation and removal were investigated.

Results: CVA before combined PE-IOL implantation and SO removal operation was 1.71 ± 0.87 (min-max: 0.56–3.0) Log Mar and CVA following the operation at 3th months control was 1.08 ± 0.90 (min-max: 0.15–2.65) Log Mar (p: 0.001). IOP before the operation was 19.21 ± 2.19 (min-max: 16–21) mm Hg and IOP following the operation at 3th months control was 17.32 ± 2.45 (min-max: 15–20) mm Hg (p: 0.001). Following the operation retinal redetachment rate was 6.66% and there was not any high IOP, IOP subluxation, IOL decentralization and significant corneal oedema.

Conclusions: In patients having no need for additional vitreoretinal surgery, the combined PE-IOL implantation and transpupiller SO removal operation is effective and safe procedure.

Keywords: Phaco Emulsification, Intra Ocular Lens, Silicone Oil, Combined.

158 Combined Scleral Encircling Band, Pars Plana Vitrectomy and 5500cst Silicone Oil in Eyes with Simultaneous Choroidal and Retinal Detachment

Volkan Dericioglu, Osman Cekic
Department of Ophthalmology, Marmara University Medical School, Istanbul, Turkey

Introduction: The management of simultaneous choroidal and retinal detachment remains controversial. We present our approach for 3 cases presenting both choroidal and retinal detachment at the same time.

Methods or Study Design: Three patients admitted to our clinic with choroidal and retinal detachment with PVR grade C. The patients underwent systemic steroid treatment initially. Choriocidals subsided within two weeks in all patients. Scleral encircling band and pars plana vitrectomy with silicone oil (5500cst) infusion were applied to eyes. Two phakic eyes underwent cataract extraction with phacoemulsification and intraocular lens implantation at the same session. Silicone oil was removed from the eyes during follow-up.

Results: Patients were followed-up at least 6 months (range 6–9 months). Anatomic success was 100%. The first case (female, age: 51) was only-eye patient that had also degenerative myopia and optic atrophy besides choroidal and retinal detachment. The final postoperative vision was hand movements that was similar to the baseline. The second case (male, age: 48) had idiopathic choroidal and retinal detachment with a baseline visual acuity of hand motions. The postoperative final visual acuity improved to 0.4. The third patient (female, age: 61) presented choroidal and retinal detachment with a visual acuity of light-perception. Her final visual acuity improved to counting fingers from 1 meter at the last follow-up.

Conclusions: Combined scleral encircling band and pars plana vitrectomy with silicone oil (5500cst) resulted in successful anatomic and functional results in simultaneous choroidal and retinal detachment.

Keywords: Choroid, Retina, Detachment, Treatment, Surgery.

Abstracts
**Abstracts**

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**Twilight Assisted Scleral Buckling for RRD Surgery**

Walid Saadeldien Mohamed Ibrahim

Assiut university Hospital, Assiut, Egypt

**Introduction:** This study was done for 20 eyes combining of rhegmatogenous retinal detachment surgery with the use of BIOM 3 and twin light instead of the indirect ophthalmoscope.

**Methods or Study Design:** This study was done in Teba eye Hospital for 20 patients complaining of RED with the use of BIOM 3, Eckardet chandelier twinligt & keeler cryo machine.

**Results:** This method has many advantages over the conventional method with the use of indirect ophthalmoscope as: – Easier & accurate localisation of retinal tears. – Better visualisation. – Easier manipulation as both hands of the surgeon are free. – less traumatic procedure.

**Conclusions:** Twin light assisted scleral buckling for RED surgery is better than the classic one with indirect ophthalmoscope.

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**Efficacy of Mid-Term Postoperative Perfluoro-Decaline Tamponade for Complex Retinal Detachments**

Huseyn Yetik1, Cezmi Dogan2, Sarkis Sirap3, Murat Gunay4

1Istanbul University, Cerrahpasa School of Medicine, Surp Pirgic Armenian Hospital, Istanbul, Turkey; 2Istanbul University, Cerrahpasa School of Medicine, Istanbul, Turkey; 3Istanbul University, Surp Pirgic Armenian Hospital, Istanbul, Turkey; 4Turkish Republic Ministry of Health Zeynep Kamil Gynocology and Pediatrics Education and Research Hospital, Istanbul, Turkey

**Introduction:** Aim of this study is to evaluate the efficacy of perfluorodecaline as a postoperative mid-term tamponade after vitrectomy in cases with complex rhegmatogenous and combined-rhegmatogenous-traction retinal detachments (RDs).

**Methods or Study Design:** Prospective, noncomparative, interventional case series. The medical records of 14 eyes of 14 patients whose age ranged from 6 months to 70 years were reviewed. The indications of vitrectomy were PVR, complicated multi-tear rhegmatogenous retinal detachments (5 eyes), combined traction-rhegmatogenous retinal detachments associated with severe proliferative diabetic retinopathy (4 eyes), early retinopathy of prematurity (2 eyes) and chronic recurrent toxoplasma chorioretinitis (1 eye). Perfluorodecaline mid-term tamponade was used in primary surgery in 2/5 of complicated rhegmatogenous RDs, 2/4 of severe PDR, 2/2 of late ROP, 2/2 of early ROP, 1/1 of toxoplasma chorioretinitis and it was removed 4 to 8 weeks after the operation. The patients were followed for 6 to 48 months.

**Results:** A mild-to-moderate postoperative anterior segment inflammatory reaction and low-normal IOP levels around 6–9 mm Hg were observed in 5/14 (36%) cases all of which had a superior aqueous humour-perfluorodecaline level. An epiretinal/epimacular membrane was formed in 5/14 (36%) of the cases. At the last examination, the retinas were reattached in 12/14 cases (86%). 2 cases of ROP, 1 early 1 late ROP-RD, were not attached. Best corrected visual acuity were ranging between hand-motion to 6/10.

**Conclusions:** Although there is a general acceptance that heavy perfluorocarbon liquids may be potentially harmful to retina and/or optic nerve mainly in a mechanical way, perfluorodecaline tamponade used in midterm, 1 to 2 months, may be effective to salvage otherwise inoperable severe RDs without any significant complication specifically attributable to perfluorocarbon itself and to increase the single-operation success rates it may have a potential to be used routinely even in less complicated cases.

**Keywords:** Retinal Detachment, Perfluorodecaline Tamponade, Retinopathy of Prematurity, Proliferative Retinopathy.

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**25-g Vitrectomy for the Treatment of Macular Holes**

Adam Klus, Mariusz Kosatka, Marek Rekas

Military Institute of Medicine, Warsaw, Poland

**Introduction:** Evaluation of the results of macular holes surgical treatment with the use of posterior 25-g vitrectomy.

**Methods or Study Design:** In a retrospective study there were evaluated the results of the surgical therapy of 56 patients with stage II-IV macular holes acc. to Gass. In all cases posterior 25-g vitrectomy was performed with inverted ILM flap and with SF6 gas endotamponade. In patients with coexisting cataract, additionally, phacoemulsification was performed and artificial lens was implanted. The best distance corrected visual acuity (CDVA) (acc. to Snellen), intraocular pressure (IOP) and anterior and posterior segment of the eye were evaluated to assess the occurring complications. Ophthalmological examination was performed prior to the surgery and 1, 7 days, then 1 and 6, 12 months after the procedure.

**Results:** Macular hole closure was achieved in 53 cases (94.6%). There occurred different types of hole closure, such as U, V, W. In two cases reoperations were performed which resulted in closure of the holes. Reoperation was not performed in one case due to the lack of the patient’s consent. A statistically significant improvement of the mean CDVA (p > 0.05) was observed in the whole group. No statistically significant differences were found in IOP values before and after the surgery (p > 0.05).

**Conclusions:** Posterior 25-g vitrectomy performed in the case of macular holes can improve visual acuity. The profile of the observed complications allows to state that vision-threatening consequences involve a small group of patients.

**Keywords:** Macular, Holes, Surgery.
Ganglion Cell-Inner Plexiform Layer Thickness After Internal Limiting Membrane Peeling During Vitrectomy for Idiopathic Epiretinal Membrane

Mehmet Onen, Ayse Kayhan Metin, Zeliha Yazar, Nil Irem Ucgun, Hikmet Sarikatipoglu, Ozlem Kemer
Ankara Numune Education and Research Hospital, Department of Ophthalmology, Ankara, Turkey

Introduction: To investigate the postoperative macular ganglion cell-inner plexiform layer (GCIPL) thickness change and visual recovery correlation after vitrectomy with internal limiting membrane (ILM) peeling in eyes with idiopathic epiretinal membrane (ERM).

Methods or Study Design: Twenty-six patients with unilateral idiopathic ERM who were followed for = 6 months after surgery were included in this study. The medical records of 26 patients were reviewed retrospectively to collect data on visual acuity (VA), central foveal thickness (CFT) and GCIPL thickness at baseline, 3 months, and 6 months after surgery. Macular GCIPL thickness in eyes with ERM was compared with that of the normal contralateral eyes 6 months after surgery. Macular GCIPL thickness was measured using spectral domain optical coherence tomography.

Results: Macular GCIPL thickness decreased after surgery to 54.3 ± 16.4 μm (p = 0.0001). Macular GCIPL thickness was significantly lower in eyes with ERM 6 months after surgery (54.3 ± 16.4 μm) than in the unaffected contralateral eyes (82.8 ± 10.3 μm; p = 0.0001). The macular GCIPL thickness in eyes with ERM did not significantly change between 3 and 6 months after surgery (55.87 ± 14.11 vs 54.3 ± 16.4 μm; p = 0.079). Post-operative VA gain did not correlate with GCIPL thickness (R < 0.01, p = 0.97). Preoperative CFT was 379.1 ± 66.5 μm and decreased to 305.9 ± 50.5 μm (p = 0.0001) after surgery. Mean logMAR visual acuity improved significantly at 6 months after surgery (p = 0.0001).

Conclusions: The postoperative GCIPL thickness was not correlated to postoperative VA after ERM surgery. A reduction of the GCIPL thickness was observed after vitrectomy with ILM peeling for idiopathic ERM.

Keywords: Ganglion Cell-Inner Plexiform Layer; Epiretinal Membrane; Optical Coherence Tomography; Internal Limiting Membrane.

Treatment of Hypotony with Trabecular Meshwork Photocoagulation

Xun Yang1, Hui Ren2, Shu Du2, Hui Xiao Tang2
1Lixiang Eye Hospital of Soochow University, Suzhou, China; 2Chengdu Aier Eye Hospital, Chengdu, China

Introduction: To observe and evaluate continuous intraocular injection of silicone oil in treating early atrophy of eyeball.

Methods or Study Design: Compared the pre- and postoperative changes of 5 atrophy eyeball eyes in IOP change, visual activity, axial length and CT scan. All the 5 eyes (5 patients) suffered from severe ocular trauma or uveitis and had 3–4 days long continuous intraocular injection of silicone oil.

Results: Five eyes (5 patients) with low IOP (2.7–9 mm Hg), CT or water sac ultrasound showed their axial length were shorter than that of the healthy eyes (the difference was 0.7 to 4.8 mm, 2.48 mm in average). 4 of them had corneal opacity. All of 5 eyes' retina attached in the surgery, and the amount of silicone oil injected into the eyes was from 2.3 to 4.8 ml (4.04 ml in average). At the end of surgery all of the eyes had no lens. The axial length of all the eyes increased after the surgery (1.34 mm, in average), and IOP of 4 eyes recovered to normal. The visual acuity was improved in 4 eyes, and not changed in the other.

Conclusions: Vitrectomy combined with continuous intraocular injection of silicone oil in early atrophy of eyeball can effectively restore the eye shape, restore the intraocular pressure, assist retina/choroid reattachment, maintain or improve the visual activity.

Keyword: Vitreoretinal Surgery.
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**The Effect of Photocoagulation of Retinal Pigment Epithelium on the Intraocular Pressure of Hypotonic Rabbit Eyes Due to Retinal Defect**

*Xun Yang*, **Hui Ren**, **Shu Du**, **Hui Xiao Tang**

1. Lixiang Eye Hospital of Soochow University, Suzhou, China; 2. Chengdu Aier Eye Hospital, Chengdu, China

**Introduction**: to explore the effect of the photocoagulation of retinal pigment epithelium on the intraocular pressure of rabbits due to retinal defect after vitrectomy lensectomy entire retinectomy combined with silicon oil tamponade.

**Methods or Study Design**: 30 Belgium rabbits were included. The right eyes of all the rabbits underwent vitrectomy lensectomy entire retinectomy and silicon oil tamponade under general anesthesia, 15 eyes underwent photocoagulation of retinal pigment epithelium (the experimental group) and the others didn’t (the control group), and underwent silicone oil removal surgery after 4 months. The intraocular pressure (IOP) was measured preoperatively, on the 2 week, 1 month, 2 month, 3 month, 4.5 month 5 month 6 month postoperatively by Schiotz tonometry. The IOP between preoperation and post-operation of each time point in each group and between two groups at each time point were analyzed statistically by t test.

**Results**: There was no statistically significant difference between the experimental group and the control group preoperatively (P > 0.01), but statistically significant difference was found between the experimental group and the control group on the 1 month, 2 month, 3 month postoperatively (P < 0.01), the average intraocular pressure of the experimental group was about 6~8 mm Hg higher than the control group corresponding to time point after the operation before silicone oil removal surgery. There was statistically significant difference between the preoperative IOP and the post-operative IOP of each time point in the experimental or control group. Compared with the IOP before silicone oil removal surgery, the IOP of the two groups at each time point after silicone oil removal surgery was all decreased, but the IOP of the experimental group reduced more rapidly.

**Conclusions**: Vitrectomy silicon oil tamponade combined with photocoagulation of retinal pigment epithelium can reduce the extent of the IOP decline effectively. The pathological section of rabbit’s eyes under the light microscope and electron microscope indicated that retinal pigment epithelium and choroid atrophy and proliferation or membrane on the internal surface of choroidal membrane were observed, it may maintain the IOP within certain range by preventing intraocular fluid from outflowing.

**Keyword**: Vitreoretinal Surgery.

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**Extraction 21 Intraocular Cilium During Endoscope-Assisted Vitrectomy in 12 Eyes**

*Shu Du*, **Xun Yang**, **Hui Ren**

1. Chengdu Aier Eye Hospital, Chengdu, China; 2. Lixiang Eye Hospital of Soochow University, Suzhou, China

**Introduction**: To analysis the value of ocular endoscope in detecting and extracting of intraocular cilium during vitrectomy, and the location of the cilium.

**Methods or Study Design**: Retrospectively analyze the location of 21 intraocular cilium, incidentally found during endoscope-assisted vitrectomy and undetectable by CT or B-ultrasound before the operation, in 12 ruptured/penetrated eyes. The corneas of 11 eyes were cloudy, 2 eyes combined with endophthalmitis, 9 eyes had retinal detachment, and 2 eyes had extracted other foreign bodies in previous surgeries.

**Results**: All the 21 cilium, 1–4 cilium in each eye, were extracted through direct sight under the ocular endoscope during vitrectomy 1–4 weeks after the injury. In 5 cases, at least 2 cilium were extracted. Most of the cilium foreign bodies were near or at the position of retinal injury parts and other foreign body (2 at the ciliary body, 1 in the anterior chamber Angle, 6 in the retinal wound, 7 at the same position of other foreign body, 1 in the curly retina, 4 on the back of the iris). 24 IOFBs, other than cilium, were extracted from 5 eyes during the surgeries. Postoperative visual acuity improved in 9 eyes, unchanged in 1 eye and decreased in 1 eye, and 1 case lost of fellow up, after 1 month to 7 years follow-up, the best was 0.2. Two eyes’ postoperative IOP was low (1 case was 7.2 mm Hg, 1 case was 5.8 mm Hg), the others were normal. And no eye has additional vitreous surgery during the follow-up.

**Conclusions**: Ocular endoscopy can discover and treat the undetectable, by imaging studies, intraocular cilium effectively. Exogenous endophthalmitis can be prevented, and vitrectomy can be performed without been puzzles by the cloudy cornea.

**Keyword**: Vitreoretinal Surgery.

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**Treatment of Rhegmatogenous Retinal Detachment Associated with Choroidal Detachment with Intravitreal Perfluoropropane (C3F8) Injection**

*Hui Ren*, **Xun Yang**, **Shu Du**

1. Chengdu Aier Eye Hospital, Chengdu, China; 2. Lixiang Eye Hospital of Soochow University, Suzhou, China

**Introduction**: To investigate the recovery of intraocular pressure (IOP) and choroidal reattachment after intravitreal perfluoropropane (C3F8) injection for rhegmatogenous retinal detachment associated with choroidal detachment.

**Methods or Study Design**: Retrospective, noncomparative case series. We included 14 eyes from 14 patients with retinal detachment associated with choroidal detachment managed with intravitreal perfluoropropane (C3F8) injection (0.5~1.0 ml) before...
vitreal retinal surgery between January 1, 2013 and June, 2013? They might be given anterior chamber paracentesis fluid therapy according to intraocular pressure. At the end of operation, their intraocular pressure were T + 1, all patients were treated with local anti-inflammatory drops, mydriatic cycloplegic drops after injection and examined by Non-contact tonometry indirect ophthalmoscopic examination every day, ultrasound biomicroscopy, B-scan ultrasound and before injection and on the 1–4 day after injection. The intraocular pressure and choroidal condition were observed. The observation last for 1~5 days.

**Results:** After injection, the IOP rose to normal or slightly higher than normal. Before injection, the IOP was 7.4 ± 1.5 mm Hg and was 19.5 ± 9.0 mm Hg after injection, there are statistically significant difference between the IOP before and after injection (P < 0.01). Choroidal detachment was rapidly and significantly improved after injection in all patients. In half of them, choroid were reattached completely, only limited localized cyclodialysis was observed in the other 7 eyes.

**Conclusions:** Before vitreoretinal surgery, the injection of pure C3F8 can reduce postoperative inflammation make intravitreal tamponade more effectively in vitreoretinal surgery and improve the success rate of retinal reattachment operation by quickly elevating intraocular pressure in the short term, significantly reducing choroidal detachment even reattached choroid completely.

**Keyword:** Vitreoretinal Surgery.

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**Scleral Surgery or Vitrectomy in Primary Rhegmatogenous Retinal Detachment**

Romualdo Malagola¹, D’Ambrosio Enzo Maria², Pattavina Luigi¹, Mafrići Marco³, Draghessi Gianluca⁴, Arrico Lorendana¹

¹Department of Sense Organs, University of Rome, Rome, Italy; ²University of Rome, Rome, Italy

**Introduction:** Introduction Several studies evaluated and compared the surgical success of the primary rhegmatogenous retinal detachment (PRRD) using scleral buckling (SB) procedure or pars plana vitrectomy (PPV) in randomized design in the attempt of define the superiority of one of the two techniques in absolute. In our study we consider the two techniques complementary, choosing the surgical procedure according to preoperative evaluation, and evaluated the rate of use of SB or PPV and the surgical results.

**Methods or Study Design:** Methods We retrospectively examined the clinical charts of patients underwent surgery for PRRD between the 2007 and 2012. We excluded patients with proliferative diabetic retinopathy, uveitis, and trauma. We collected the following data: sex, age, eye, surgical technique, duration of surgery, best corrected visual acuity preoperative, post op, and after 6 months, macular involvement, prior cataract surgery. We calculated the rate of SB (scleral operation rate SOR), the single operation success rate (SOSR) for both SB and PPV, and we performed a multivariate logistic regression to evaluate the influence of covariates on SOSR. With a multivariate proportional odds regression we analyzed the factors influencing the final BCVA. We considered statistically significative a p > 0.05.

**Results:** Results We included 161 eyes, 133 underwent to SB procedure (SOR 82.6%), with a SOSR of 88.7%, and a SOSR for PPV 89.3% with a non significative difference. In the multivariate analysis we report a significative influence on SOSR of the age and male sex, the surgical choice did not influenced the anatomical result, nor the pseudophachic status. The mean BCVA increment was postoperatively in all groups without any statistically significant difference. The multivariate analysis of BCVA after 6 months confirmed this finding. Although initial BCVA of the PPV group was significantly lower.

**Conclusions:** Conclusions This study highlight that the SB procedure is suitable to resolve the majority of the PRRD, choosing this technique after a thorough funds examination. The two techniques are to be considered complementary, preferring PPV in giant or posterior retinal tears, when the BCVA is lower. Then our data show there is not any difference in the surgical and functional outcomes. The rate of surgical success SOSR we report hereby are comparable and higher than the rates reported in the randomized trials, then we support an appropriate preoperative choose.

**Keywords:** Scleral Surgery, Vitrectomy, Rhegmatogenous Retinal Detachment.

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**Clinical Observation on Butterfly-Shaped Internal Limiting Membrane Peeling in the Treatment of Macular Hole**

Xun Yang¹, Shu Du², Hui Ren²

¹Lixiang Eye Hospital of Soochow University, Suzhou, China; ²Chengdu Aier Eye Hospital, Chengdu, China

**Introduction:** To observe the result of butterfly-shaped internal limiting membrane peeling in the treatment of macular hole.

**Methods or Study Design:** 8 eyes with macular hole were conducted 25-gauge vitreoretinal surgery. Coomassie brilliant blue staining was used in all 3 eyes. In the conduct of internal limiting membrane, part of internal limiting membrane near temporal and nasal macular were retained to make the internal limiting membrane appear as butterfly wing. Gas or silicone oil tamponade was applied at the end of surgery.

**Results:** Macular hole closed 3 to 7 days post-surgery and all the 8 eyes had better visual acuity than pre-surgery.

**Conclusions:** Butterfly-shaped internal limiting membrane peeling is a new method treating macular hole based on traditional internal limiting membrane peeling. It can keep horizontal tension by retaining part of internal limiting membrane near temporal and nasal which can promote closure of macular hole.

**Keyword:** Vitreoretinal Surgery.
Virtual Reality Simulation for Ophthalmic Vitreoretinal Surgery Training at VR Simulation Centre, Faculty of Medicine, University of Maribor, Slovenia

Dusica Pahor

Department of Ophthalmology, University Clinical Centre Maribor, Faculty of Medicine, University of Maribor, Maribor, Slovenia

Introduction: To present the use of VRMagic EYESi Ophthalmic Vitreoretinal Surgical Simulator (Mannheim, Germany) as a powerful education method for ophthalmic vitreoretinal surgery training.

Methods or Study Design: Vitreoretinal course is structured with educational concepts of step-by-step learning process, starting with training of basic instrument handling to complex advanced procedure. VR vitreoretinal course starts with basic surgical skills (VRT-A) such as instrument navigation in the vitreous with previous proper use of microscope and operating machine settings followed by VRT-B course for training different steps of vitreoretinal surgery and VRT-C course for advanced surgical skills to increasingly demanding conditions.

Results: Feedback is provided in the surgical goal, surgeon error or tissue injury and formative education feedback. Instrument interaction with tissue and ocular structure is simulated in real time. Courses can be individually tailored for trainees need relative to their current skill level. Required surgical skills can be isolated and train separately until they have been fully mastered. Detailed performance evaluation is possible over time to keep track of individual learning curves. The Eyes training report provides a view on the training status of users. With training history browser a detailed insight into the complete parameter set for further analysis is possible.

Conclusions: VRMagic EYESi Vitreoretinal Surgical Simulator is one of the well-developed simulators available currently and must be added to the residence education program by teaching the basic skills, such as hand-eye coordination, depth perception, navigation and anti tremor program. VR simulation can be made available to trainees anytime and anyplace and does not required any additional supplies or animal tissue. It is the ideal training tool. Simulation technology must be used to improve patient safety for surgical procedures such as vitreoretinal surgery in modern surgical education. Unfortunately the application of VR simulators is limited in most countries because of very high costs.

Keywords: Ophthalmic Virtual Reality (VR) Simulators, Vitreoretinal Surgical Training, Teaching, Education.

The Visual and Anatomical Outcomes After Epiretinal Membrane Peeling in Patients with and Without Diabetes

Yasin Toklu, Betül Seher Uysal, Mücella Arikan Yargun, Melek Mutlu

Ankara Ataturk Training and Research Hospital Eye Clinic, Ankara, Turkey

Introduction: Diabetes can affect the visual and anatomical outcomes of ERM surgery because it is a microangiopathic disease. The aim of this study is to compare the morphological features and visual characteristics of a series of patients with epiretinal membrane (ERM) with and without diabetes.

Methods or Study Design: Retrospective, comparative case series of patients with ERM. This study includes 8 patients with diabetes (group 1) and 18 patients without diabetes (group 2). None of the patients had neither diabetic macular edema nor vitreomacular traction syndrome in group 1. All patients included in the study undergone three-port pars plana vitrectomy for epiretinal membrane peeling by a single surgeon. Best-corrected visual acuity (BCVA) and the central foveal thickness (CFT) measured by spectralis domain optical coherence tomography were evaluated before surgery and postoperative 3 months after membrane peeling.

Results: The patients comprised 4 females (50%) in group 1 and 10 females (55%) in group 2 who were included in this study. The mean age was 55.28 ± 6.14 years in group 1 and 57.32 ± 4.15 years in group 2. There was no statistically significant difference between the two groups in terms of sex and age distribution (p > 0.05). The preoperative mean BCVA values in group 1 and 2 were 0.6 ± 0.3 and 0.8 ± 0.4 LogMAR, respectively (p > 0.05). The postoperative mean BCVA values in group 1 and 2 were 0.56 ± 0.28 and 0.49 ± 0.5 LogMAR respectively (p > 0.05). The postoperative mean CFT values in group 1 and 2 were 401.62 ± 71.21 and 472.18 ± 104.61 μm, respectively (p > 0.05). The improvement in BCVA and CFT values in both groups had no statistically significant difference. The recurrence of ERM was seen in only 1 patient in group 1 (p > 0.05).

Conclusions: Diabetes were found not to be effective on the results of the visual and anatomical outcomes of ERM peeling.

Keywords: Diabetes, Epiretinal Membran, Vitrectomy.

Our Epiretinal Membrane Surgery Results

Gökhan Özge1, Dorukcan Akincioglu1, Ali Hakan Durukan2

1Güllhane Military Medical Academy Dept. of Ophthalmology, Ankara, Turkey; 2Güllhane Military Medical Academy Dept. of ophthalmology, Ankara, Turkey

Introduction: We aimed to evaluate the efficacy of sulfur hexafluoride (SF6) endotamponade, as an adjunct to vitrectomy, for the treatment of epiretinal membrane.
Methods or Study Design: Our study was a retrospective interventional case series. We evaluated 24 eyes of 24 consecutive patients with epiretinal membrane whom treated with 23-gauge pars plana vitrectomy. 20% Sulfur hexafluoride was used in 11 patients as endotamponade. All patients underwent optical coherence tomography, best-corrected visual acuity (BCVA) measurement and dilated fundus examination both preoperatively and postoperatively.

Results: In this study mean follow-up time was 12 months. Nine (37.5%) of the group was men and fifteen (62.5%) were female. Preoperatively 7 (29.2%) patients had subfoveal Inner segment-outter segment (ISOS) band defect and 12 (50%) had retinal edema. Eight (33%) patients underwent combined phacoemulsification and pars plana vitrectomy. Statistical comparison of preoperative visual acuities and postoperative 1 month visual acuities were not significant (p > 0.05). But following visual acuity measurements in every follow-up exam after 1 month were statistically significant (p < 0.01). Postoperative success rates were similar between eyes with sulfur hexafluoride (SF6) gas and with no endotamponade, though visual acuities in 3rd and 6th months were better among eyes with sulfur hexafluoride (SF6) gas. None of the patients had any complication except for one who had rhegmatogenous retinal detachment and underwent pars plana vitrectomy with silicone endotamponade.

Conclusions: Epiretinal membrane surgery is beneficial in patients with visual symptoms and sulfur hexafluoride (SF6) endotamponade provide better visual results.

Keywords: Epiretinal, ILM, SF6.

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Comparison of Postoperative Complications of Phacoemulsification Between Sequential and Combined Procedures of 25 Gauge Pars Plana Vitrectomy and Cataract Surgery for Vitreous Hemorrhage

Mücella Arıkan Yorgun, Yasin Toklu, Melek Mutlu, Umut Ozen, Seher Uysal
Ankara Atatürk Training and Research Hospital, Yildirim Beyazit University, Ankara, Turkey

Introduction: Vitreoretinal diseases and cataracts frequently occur at the same time in patients, so management of phacoemulsification with vitreomacular surgery is a much discussed topic. The purpose of this study was to report postoperative complications in phagic eyes who underwent 25-gauge pars plana vitrectomy (PPV) alone or combined with phaco-vitrectomy surgery for vitreous hemorrhage (VH).

Methods or Study Design: A total of 82 patients (50 had phacovitrectomy and 32 had PPV only, 39 female, mean age: 58.4 ± 12.4) were enrolled in this retrospective analysis. The surgical approach was 25G PPV combined with cataract phacoemulsification and posterior chamber intraocular lens implantation (PC-IOL) implantation at the same time in eyes in group A and 25G PPV alone in eyes in group B. Postoperative VH, anterior chamber reaction, intraocular pressure (IOP) and best corrected logMAR visual acuity (BCVA) were the main outcomes of the analysis.

Results: Mean logMAR BCVA of group A and group B was 2.4 ± 0.7, 2.2 ± 0.9 at baseline, 1.6 ± 1.1, 1.7 ± 0.9 at postoperative 1st day, 1.1 ± 1.0 at first month and 0.8 ± 0.9, 0.7 ± 0.8 logMAR at 6 months. Between groups, there was no significant difference in mean BCVA examined at any control visit (p > 0.05). Postoperative transient above in intraocular pressure (>21 mm Hg) was occurred in 12 eyes (24%), mean 32.2 ± 10.8 in Group 1 and in 8 eyes (25%), mean 22.8 ± 2.2 in Group 2 (p = 0.001). Postoperative VH occurred in seven eyes (21.8%) in Group 1 and in 13 eyes (28.3%) in Group 2 (p > 0.05). Postoperative anterior chamber reaction occurred in 16 eyes (32%) in Group 1 and in 2 eyes (6.2%) in Group 2 (p = 0.006).

Conclusions: The combination of phacoemulsification with PPV for VH resulted in an increase in postoperative anterior chamber reaction compared to PPV alone performed in phagic eyes. Sequential surgery could be advantageous for phagic patients to minimize the postoperative anterior chamber inflammatory response.

Keywords: Pars Plana Vitrectomy, Phacoemulsification, Vitreous Hemorrhage.

Visual Rehabilitation

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The Efficiency and Reliability of Capsulovitrectomy Operation in Posterior Capsule Opacification
Hatun Handan Bardak, Yavuz Bardak
Career Eye Hospital, Isparta, Turkey

Introduction: The efficiency and reliability of capsulovitrectomy (CV) operation in posterior capsule opacification (PCO) following cataract operation is investigated in this study.

Methods or Study Design: Patients with PCO and who could not get effective Nd: YAG laser treatment were included in this retrospective study. 32 eyes of 30 patients had CV operations in between January 2009-June 2013. Pars plana or limbal CV operations were performed at least 6 months after cataract operation.

Results: In these 30 patients, Female/Male ratio was 17/13, mean age was 44, 7 years (4, 00–71, 00 years). Diagnoses before the cataract operation: pediatric cataract in 8 eyes (25%), complicated cataract in 15 eyes (46.87%) [Diabetic-vitrectomy in 12 eyes (37.5%), uveitis in 3 eyes (9.37%)] and senile cataract in 9 eyes (28.13%). The mean corrected visual acuity (CVA) before the CV operation was 0.37 ± 0.19 (0.00–0.70) (Log MAR). There was a significant (p: 0.01 paired t test) difference between preoperative and postoperative visual acuities and poestoperative 1 month visual acuities.

Abstracts
postoperative 6th months CVA. At postoperative 6th months, CVA increased in all eyes.

**Conclusions:** CV operation is efficient and reliable in PCO following cataract operation.

**Keywords:** Capsulovitrectomy, Posterior Capsule Opacification.

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**232 (Rapid Fire Presentation)**

**Causes and Characteristics of Low Vision Patients in Turkey**

Sezen Akkaya, Aysu Arsan, Yelda Özkurt, Sibel Aksoy
Fsm hospital, istanbul, Turkey

**Introduction:** To describe causes, characteristics and parental consanguineous marriage of low vision patients referred to our clinic for taking low vision aids in Turkey. Epidemiologic evaluation and investigating the causes and characteristics of visual impairment in any society is a matter of concern and has a direct effect on the country’s health care planning.

**Methods or Study Design:** We conducted a retrospective study of 236 low vision patients who visited to our clinics in Istanbul from 2009 to 2013. Age and sex distribution, cause of low vision, parental consanguineous marriage, type of prescribed low vision aids, and changes of the visions were reviewed. In this retrospective study, visual acuity was classified based on best-corrected visual acuity in the better eye according to the World Health Organization definition (blindness, visual acuity [VA] <20/400; severe visual impairment, VA < 20/200–20/400; mild to moderate visual impairment, VA < 20/60–20/200). The causes of blindness and low vision were determined using the 10th version of International Classification of Diseases based on the main cause in both eyes. Vision aids were prescribed based on visual acuity and patients’ requirements. To describe data, we used mean ± SD and frequency.

**Results:** The study included 236 patients, 65% male, with a mean age of 38.5 ± 24.2 years (range, 6 to 95 years). In result, male were more than female. The age group between 15 and 30-yr-old (35.6%) was the largest age group. Mild to moderate visual impairment, severe visual impairment and blindness were present in 122 (51.6%), 84 (35.6%) and 30 (12.7%) of the patients, respectively. Choroid and Retina diseases (62.7%) were main causes of low vision. Elderly low vision patients macular degeneration is becoming a leading cause of low vision (61.3%). The causes of visual impairment were retinal and choroidal diseases (62.7%), nistagmus (23.7%), optic nerve and optic tract diseases (11%), congenital cataract (0.8%), and glaucoma (1.7%). 88 (37.3%) patients Galilean type; 116 (49.2%) patients keplerian type telescopic glasses recommended. 18 (7.6%) patients had no improvement in visual acuity with LVA. 14 patients (5.9%) were approved the magnifier for near vision. In most patients, the use of LVAs improved both near and distance visual function. Parental consanguinity is present in 62 (26.3%) patients, most commonly between the ages of 15–30 were significantly higher in the group.(50%).

**Conclusions:** Diseases of the retina and choroid are the main cause over 14 years old groups, nistagmus is the most common cause under 15 years old group of visual impairment among patients referred to our clinic in Turkey. Parental consanguinity was significantly higher in macular dystrophy and retinitis pigmentosa groups. Of genetics in the etiology of these diseases are known to be effective. For this reason, parental consanguineous marriage is a big problem still in Turkey.

**Keywords:** Low Vision; Parental Consanguineous Marriage; Low Vision Aid.

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**RVO**

**10 Intravitreal Thrombin Activity and Retinal Vein Occlusion**

Thomas Bertelmann¹, Thomas Stief², Michael Koss²
¹Philips-Ls University, Marburg, Germany; ²Doheny Eye Institute, Los Angeles, United States

**Introduction:** Intravascular thrombin is the key player in promoting venous thrombosis. In retinal vein occlusion (RVO) intravitreal thrombin might furthermore be involved in the conversion of non-ischemic into ischemic-typed RVO as well as in sealing the disturbed blood-retina barrier (BRB). So far, intravitreal thrombin activity in healthy as well as in diseased eyes is totally unknown. The purpose of our investigation was to evaluate whether intravitreal thrombin activity is elevated in eyes with branch (BRVO) and central retinal vein occlusion (CRVO) in comparison to healthy controls.

**Methods or Study Design:** Prospective clinical case series of 19 patients with BRVO, 13 patients suffering from CRVO and 9 participants serving as controls. Vitreous taps were extracted from the central vitreous body and thrombin activity was determined chromogenically. Intravitreal levels of vascular endothelial growth factor (VEGF) to detect the severity of blood-retina-barrier (BRB) breakdown were measured by using EIA-technique.

**Results:** Intravitreal thrombin activity and VEGF levels were 1.6 ± 1.2 mIU/ml (MV ± SD; range: 0.2–4.2 mIU/ml) and 554 ± 568 pg/ml (range: 20–2005 pg/ml) in BRVO affected eyes, 2.6 ± 1.2 mIU/ml (range: 0.8–5.2 mIU/ml) and 1332 ± 1350 pg/ml (range: 58–3943 pg/ml) in eyes suffering from CRVO as well as 0.8 ± 0.8 mIU/ml (range: 0.2–2.7 mIU/ml) and 115 ± 120 pg/ml (range: 32–431 pg/ml) in controls. There are significant differences of intravitreal thrombin activity and intravitreal VEGF-levels between eyes with BRVO, CRVO and controls (p = 0.007 and p = 0.003, Kruskal-Wallis-Test). Intravitreal thrombin activity is significantly correlated with intravitreal VEGF-levels (r = 0.656; p < 0.001, Pearson correlation).

**Conclusions:** Intravitreal thrombin activity might serve as a new marker for BRB breakdown or macular fibrin deposition in ophthalmology. Significant differences of intravitreal thrombin activity between eyes with BRVO, CRVO and healthy controls might offer new therapeutic strategies for RVO-affected eyes. The effect of oral and intravitreally injected direct thrombin inhibitors needs to be evaluated in further investigations.
Keywords: Branch Retinal Vein Occlusion, Central Retinal Vein Occlusion, Thrombin, Vitrectomy, Direct Thrombin Inhibitor.

41 Antiphospholipid Syndrome Triggered by Cranial Trauma Keywords: Antiphospholipid Syndrome, Retinal Vein Occlusion
Fatih Cakir Gundogan¹, Koray Sevinc¹, Umit Yolcu²
¹GATA Medical School, Ophthalmology, Ankara, Turkey; ²Siirt Military Hospital, Ophthalmology, Siirt, Turkey

A 21-year old man applied with consecutive (6-days apart) bilateral visual loss after a head trauma. Visual acuities were counting fingers from 2 and 1 meters in OD/OS, respectively. Initial examination showed +1 vitreous cells, macular edema, maculopapillary folds, engorged retinal veins and narrowed retinal arteries, retinal haemorrhages in all four quadrants in both eyes. Combined central retinal vessel obstructions were diagnosed. Visual acuity increased to 0.4 in OD and 1.0 in OS after 2 months. The patient applied to the hospital with epidual haemorrhage 15 days later. After 2 weeks from the epidual haemorrhage, the patient had bilateral intravitreal haemorrhage. Anticardiolipin antibodies were positive and antiphospholipid syndrome was diagnosed by rheumatologists.

45 The Short Term Effect of Intravitreal Ranibizumab on Retinal Vein Occlusion
Kader Kasar, Fatma Ulku Celiker
University, Elazig, Turkey

Introduction: The purpose of this study is to evaluate the effect of intravitreal ranibizumab on visual acuity and central macular thickness (CMT) in retinal vein occlusion.

Methods or Study Design: This retrospective study includes 18 eyes with macular edema due to CRVO and BRVO who were treated with at least one intravitreal injection of ranibizumab. The mean and last BCVAs and the CMT were obtained.

Results: Among the 18 eyes with macular edema due to CRVO and BRVO who were treated with at least one intravitreal injection of ranibizumab, the mean and last BCVAs and the CMT were obtained. The mean number of treatment was 2.83 ± 0.78. The mean BCVA during baseline and during the last visit were 1.24 ± 0.66 (LogMAR) and 0.81 ± 0.41 respectively. Similarly the mean CMT during baseline and during the last visit were 590 ± 120 μm and 330 ± 140 μm. The mean follow up time was 4 ± 1.23 months and the mean number of treatment was 2.83 ± 0.78. The mean BCVA during baseline and during the last visit were 1.24 ± 0.66 (LogMAR) and 0.81 ± 0.41 respectively. Similarly the mean CMT during baseline and during the last visit were 590 ± 120 μm and 330 ± 140 μm. The differences in BCVA and CMT were both statistically significant.

Conclusions: Intravitreal ranibizumab treatment is effective, both anatomically and functionally in short term and this results should be confirmed in larger studies with larger sample size and longer follow up.

Keywords: Retinal Vein Occlusion, Ranibizumab.

51 Spanish Tertiary Hospital Management Approach with Ranibizumab in Retinal Vein Occlusion Associating Macular Edema
Verónica Castro, Clara Torralba, Enrique Cervera
Hospital General Universitario de Valencia, Valencia, Valencia, Spain

Introduction: The aim of this study is to assess a management approach with ranibizumab in non-ischemic retinal vein occlusion associating macular edema (RVO-EM) in normal clinical practice in a tertiary Hospital in Spain.

Methods or Study Design: A retrospective-observational-case-series perfomed in Hospital General de Valencia (HGUV) Inclusion criteria were a diagnosis of non-ischemic RVO-ME, confirmed by fluorescein angiogram (FA) and spectral-domain-OCT (SD-OCT). All eyes were treated with intravitreal Ranibizumab (IVR) according to a pro-re-nata regimen. In patients with persistent ME >500 (μ) after loading dose or after five consecutive IVR, intravitreal triamcinolone acetonide (IVTA) was administered. Macular focal laser photocoagulation (MF-LP) was applied when specific leakage was identified by FA, or when repeated injections were necessary. Panretinal (P-LP) was applied when signs of ischemia/neovascularization were presented. Refractory ME was considered when no anatomical/functional improvement was observed after five IVR. A Wilcoxon-test for paired-nonparametric variables was used. Statistical significance was defined as P values < 0.05.

Results: During a follow-up of 15 ± 8 months, the 42 study eyes received an average of 5.8 IVR (range 2–12). The BCVA increased from 0.32 (dec) to 0.43 (dec) (p = 0.017). A central macular thickness (CMT) decrease (p = 0.000) of 186.82 μ was found after treatment. IVTA was needed in nine patients. Twenty-two patients received LP: 10 MF-LP, 10 P-LP and 2 patients both. The median of time prior to MF-LP was 171.5 days. Nowadays, 22 patients are followed at HGUV; 14 with no ME; 7 with recurrence in ME, and 1 with vitreous hemorrhage. The remaining 20 patients are being assisted in an ambulatory-care-clinic; 8 patients with refractory ME; 4 with persistence ME who refused treatment and 12 with persistent ME >500 (μ) after loading dose or after five consecutive IVR, intravitreal triamcinolone acetonide (IVTA) was administered. Macular focal laser photocoagulation (MF-LP) was applied when specific leakage was identified by FA, or when repeated injections were necessary. Panretinal (P-LP) was applied when signs of ischemia/neovascularization were presented. Refractory ME was considered when no anatomical/functional improvement was observed after five IVR. A Wilcoxon-test for paired-nonparametric variables was used. Statistical significance was defined as P values < 0.05.

Conclusions: Ranibizumab seems to be effective in RVO-EM. We obtained a statistical improvement in BCVA (dec), increasing to 0.43 (p = 0.01); and a decrease (p = 0.00) in CMT (μ). ITVA or Laser photocoagulation should be considered when no improvement with anti-VEGF treatment is observed.

Keywords: Ranibizumab, Retinal Vein Occlusion, Macular Edema.
Integrity of Photoreceptor Outer Segments After Intravitreal Ranibizumab Therapy in Macular Edema Associated with Branch Retinal Vein Occlusion
Laura Hernandez Bel, Veronica Castro Navarro, Enrique Cervera Taulet
Hospital General Universitario Valencia, Valencia, Spain

Introduction: To study the correlation between final visual acuity and integrity of the foveal photoreceptor layer after intravitreal ranibizumab on a pro-re-nata regimen for macular edema (ME) associated with retinal vein occlusion (RVO).

Methods or Study Design: Retrospective, observational, cross-sectional study. Forty-three naïve patients treated in one eye with intravitreal ranibizumab on a pro-re-nata (PRN = as needed) regimen for ME due to RVO. They were followed for at least twelve months. On Spectral domain OCT (SD-OCT), integrity of the foveal photoreceptor layer was studied using the junctions between inner and outer segments of the photoreceptor (IS/OS) line as a hallmark. Baseline best-corrected visual acuity (BCVA), and central retinal thickness (CRT) was also studied.

Results: In the current study, forty-two eyes of forty-two patients (20 men and 22 women) were studied with a mean age of 69.6 years old. Of these forty-three eyes, thirty-six had branch RVO and seven had central RVO. The participants underwent 5.88 ± 0.98 intravitreal injections of ranibizumab during the follow-up period of 15 ± 8 months. BCVA improved from 0.494 logMAR at baseline to 0.366 logMAR at twelve months after treatment (p = 0.017). And CRT decreased from 522.95 to 366.121 (p = 0.000). The IS/OS measurements showed improvement after treatment: IS/OS length increased to 528.27 ± 86 with an initial length of 739.44 ± 98 (p = 0.000). Visual acuity showed a correlation (P > 0.005) with thickness of the foveal outer retina (R = 0.37) and with the detection of a line of the inner and outer segments of the photoreceptors (R = 0.65) beneath the fovea.

Conclusions: Our results suggest that baseline SD-OCT characteristics, like the status of photoreceptor IS/OS can be helpful in predicting the final visual outcome after intravitreal ranibizumab injection in these patients.

Keywords: Central Retinal Vein Occlusion, Macular Edema, Optical Coherence Tomography, Photoreceptor Layer, Ranibizumab.

Efficacy of Dexamethasone Intravitreal Implant Compared with Intravitreal Ranibizumab in Patients with Central Retinal Vein Occlusion and Branch Retinal Vein Occlusion
Erdinc Aydin1, Seda Gurakar2, Emine Deniz Egrilmez2
1Izmir Katip Celebi University, Faculty of Medicine, Department of Ophthalmology, Izmir, Turkey; 2Izmir Katip Celebi University, Ataturk Training and Research Hospital, Izmir, Turkey

Introduction: To compare the efficacy for 6 months of an implant of dexamethasone (DEX) vs. Ranibizumab (RAN) administered on an as-needed basis (PRN) after 3 monthly injections in patients with central retinal vein occlusion (CRVO) and branch retinal vein occlusion (BRVO).

Methods or Study Design: Patients with CRVO (n = 21) and BRVO (n = 29) were randomized to receive 0.5 mg RAN intravitreal injections on an PRN following 3 loading doses or to receive an intravitreal implant containing 0.7 mg DEX every 6 months. Mean average best-corrected visual acuity (BCVA) change and retinal thickness parameters were evaluated.

Results: Best-corrected visual acuity were (Mean ± Standard Deviation, decimal unit) 0.12 ± 0.14 and 0.13 ± 0.11 letters at baseline, 0.17 ± 0.18 and 0.14 ± 0.11 letters at first week, 0.27 ± 0.26 and 0.17 ± 0.11 letters at first month, 0.28 ± 0.29 and 0.25 ± 0.16 letters at 3rd month, 0.22 ± 0.24 and 0.26 ± 0.17 letters at 6th month for the DEX and RAN group respectively. The mean average change of BCVA for 6 months were 0.10 ± 0.17 [0.16–0.04, 95% CI] (DEX) (P = 0.001) and 0.12 ± 0.15 [0.20–0.03, 95% CI] letters (RAN) (p = 0.052). The mean changes of retinal thickness (RT) were (M ± SD) 485.54 ± 138.05 and 585.26 ± 187.41 mm at baseline, 380.11 ± 128.46 and 450.60 ± 161.20 mm at first week, 284.28 ± 86.0 and 342.33 ± 142.98 mm at first month, 303.37 ± 118.76 and 296.13 ± 72.11 at 3rd month, 376.08 ± 133.44 and 418.06 ± 167.58 mm at 6th month for the DEX and RAN group respectively. The mean average change of RT for 6 months were 109.45 ± 155.74 [55.95–162.95 95% CI] (DEX) (P = 0.0001) and 167.20 ± 281.20 [11.47–322.92, 95% CI] letters (RAN) (p = 0.037).

Conclusions: Intravitreal dexamethasone implant resulted in significantly higher BCVA gains at first week. No signifcant differences were not detected between BCVA and RT of dexamethasone implant group and intravitreal Ranibizumab PRN group.

Keywords: Branch Retinal Vein Occlusion, Central Retinal Vein Occlusion, Dexamethasone Implant, Ranibizumab.
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Long Term Results of Ranibizumab Treatment in Patients with Macular Oedema Due to Retinal Venous Occlusive Disease
Doukas Daradibouns, Panagiotis Nanos, Maria Patsiavanidi
General University Hospital of Evros, Alexandroupolis, Greece

Introduction: The evaluation of visual acuity (VA) and central macular thickness (CMT) in patients with macula oedema caused by retinal venous occlusive disease before and after intravitreal injections with ranibizumab (Lucentis).

Methods or Study Design: This is a retrospective study including 18 eyes of 18 patients, treated with ranibizumab as monotherapy and completed a follow-up period of at least 2 years. VA and CMT were recorded using SLO-OCT before treatment initiation and after at least 2 years of follow-up period as was the number of injections needed for each patient. The treatment protocol was PRN with monthly patients’ examination.

Results: Follow-up period was at least 2 years. Visual acuity was improved in 11 eyes, remained stable in 5 eyes and worsened in 2 eyes. The mean change in CMT was approximately 145 ± 32 μm. The number of injections needed was approximately 7.8.

Conclusions: Intravitreal ranibizumab injections seems to be an effective therapy for the treatment of retinal venous occlusive disease, with long standing results contributing in the preservation and/or improvement of patient’s VA.

Keywords: Ranibizumab, Macular Oedema, Retinal Venous Occlusion.

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Intravitreal Dexamethasone v/s Intravitreal Triamcinolone in Central Retinal Vein Occlusion
Sanjay Mishra, Abhishek Gupta, Rakesh Maggon
Army Hospital (Research and Referral) Delhi Cantt, New Delhi, India

Introduction: To compare between intravitreal Dexamethasone (0.7 mg) (Ozurdex) and intravitreal Triamcinolone acetonide (4 mg) in patients suffering from Central Retinal Vein Occlusion (CRVO) in terms of their efficacy and safety.

Methods or Study Design: Patients diagnosed as CRVO of recent onset (less than 3 months) were randomized to receive intravitreal dexamethasone (0.7 mg) and kenacort (4 mg). A complete baseline evaluation was done before treatment. They were followed up at 4, 8, 12 and 24 months after treatment. The response to treatment was monitored anatomically by measuring CMT using OCT, and, functionally, by best-corrected visual acuity (BCVA). Potential corticosteroid-induced and injection-related complications were also recorded. The patient’s baseline and follow-up variables were compared between the groups and appropriate tests were used to determine the statistical differences between the groups.

Results: After a single administration, the time to achieve a 15 letter improvement in BCVA and the percentage of eyes with 15 letter improvement in BCVA were similar in both Dexamethasone and Triamcinolone groups. The Dexamethasone implant treated eyes showed a rise in intraocular pressure (IOP) of 3 mm Hg in 10% of patients which peaked at day 50. It was well controlled with a single antigalucoma eye drop. The triamcinolone treated group showed a greater rise in IOP of 8 mm Hg in 65% of patients which peaked at day 30 and required a combination of 2 drugs. 8% patients of triamcinolone treated group developed cataract and required cataract surgery compared to none in the dexamethasone treated group.

Conclusions: Dexamethasone intravitreal implant and triamcinolone have similar efficacy in reducing the risk of vision loss and improving the speed and incidence of visual improvement in eyes with macular oedema secondary to CRVO. Visual morbidity in the terms of IOP rise and incidence of cataract is greater in triamcinolone group. Dexamethasone has a higher safety profile and thus is a preferred option between the two.

Keyword: Retinal Vein Occlusion.

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Combination Therapy with Bevacizumab and Dexamethasone Intravitreal Implant vs Dexamethasone Implant Alone in Patients with Retinal Vein Occlusion (RVO)
Sanjay Mishra, Abhishek Gupta, Jitender Singh Parihar
Army Hospital (Research and Referral) Delhi Cantt, New Delhi, India

Introduction: To determine if dexamethasone intravitreal implant 0.7 mg with bevacizumab therapy can provide further improvements in visual acuity, sustainability, and macular thickness when compared with dexamethasone intravitreal implant 0.7 mg alone.

Methods or Study Design: A prospective, interventional case series. Patients diagnosed with RVO of recent onset (less than 3 months) were randomized in one group to receive intravitreal injection of bevacizumab followed by dexamethasone intravitreal implant 2 weeks later and in second group to dexamethasone implant alone. All patients were evaluated with Snellen visual acuity and measured for central macular thickness and intraocular pressure. These patients were re-examined on a monthly basis for 6 months and the response to treatment was monitored anatomically by measuring CMT using OCT and functionally by best-corrected visual acuity. Potential corticosteroid-induced and injection-related complications were also recorded. They were retreated when edema occurred.

Results: The patients were evaluated for increase in visual acuity, reduction of CMT and the time to reinjection during study period. 96% of patients gained vision in the study group. 60% of patients in the combination group gained 3 lines of Snellen visual acuity as compared to 48% of patients who gained 3 lines in the dexamethasone implant group. 70% had central macular thickness of less than 300 microns in the combination group and 53% in the dexamethasone group. These effects continued for an average of 112 days from the initial bevacizumab therapy. And retreatment was unnecessary in 30%. Both the groups had similar IOP profile as 20% had IOP rise at any point during 6 months.
Conclusions: This study demonstrates that combination of bevacizumab and dexamethasone is synergistic in increasing visual acuity and prolongs the time between injections when compared to dexamethasone implant alone. Therefore the combination of bevacizumab and a dexamethasone implant may be a preferred option for RVO treatment.

Keyword: Retinal Vein Occlusion.

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Ozurdex in Retinal Vein Occlusion: Outcome in the Real World Clinical Setting

Eulee Seow, Amy-Lee Shirodkar, Raghu Ram, Amit Gaur
Royal Glamorgan Hospital, Llantrisant, United Kingdom

Introduction: Ozurdex (Dexamethasone implant) has been approved for use in treatment of macular oedema due to retinal vein occlusion. Outcomes in trial settings may not reflect real world situations. Here we present data from our population on patient characteristic and outcomes for Ozurdex in macular oedema due to retinal vein occlusion.

Methods or Study Design: Retrospective case note review of patients who received Ozurdex implant for retinal vein occlusion between October 2012 and September 2013. Data on baseline characteristic, 3 month follow up data and complications were collected and compared to trial data (GENEVA).

Results: 29 patients were included. 10 patients had central retinal vein occlusion and 19 patients had branch retinal vein occlusion. 38.7% of patients had previous laser and 19.3% had previous Bevacizumab. The duration between vein occlusion and treatment is less than 90 days in 19.3% of patients and more than 270 days in 64.5%. At 90 days 22% of patients had 15 letter gain while 12.9% had 15 letter loss. The most common complication is raised intraocular pressure, with 1 patient requiring oral Acetozolamine. 14 patients required further treatment, with 9 patients listed for repeat Ozurdex, 4 patients listed for further macular laser and 1 patient listed for intravitreal Ranibizumab.

Conclusions: In our population patients had a longer duration between vein occlusion and treatment, as well as more prior treatment compared to trial patients. This is reflected in our visual acuity outcomes where a higher percentage had 15 letter loss (12.9% vs 4%) and a lower percentage had 15 letter gain (22% vs 27.3%).

Keyword: Retinal Vein Occlusion.

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Efficacy and Safety of Ranibizumab 0.5 mg with/without Laser Versus Laser Alone in Patients with Branch Retinal Vein Occlusion: 6-Month Outcomes from the Brighter Study

Jordi Mones
Institut de la Macula I de la Retina, Centro Medico Teknon, Vilanova 12, Barcelona, Barcelona, Spain

Introduction: BRIGHTER was designed to evaluate the long-term efficacy and safety of an individualized, stabilization-criteria-driven pro-re-nata (PRN) regimen of ranibizumab-0.5 mg (RBZ) with/without laser versus laser in patients with visual impairment due to macular edema (ME) secondary to branch retinal vein occlusion (BRVO). The 6-month (M) outcomes are presented here.

Methods or Study Design: An ongoing 24M, open-label, phase-IIIb, active-controlled, three-arm multicenter study. Patients (N = 455) were randomized (2:2:1) to receive RBZ (n = 183) or RBZ+laser (n = 180) or laser (n = 92). Patients in RBZ and RBZ+laser received monthly RBZ until stable visual acuity (VA), followed by stabilization-criteria-driven PRN treatment. Laser was administered to patients with perfused ME in RBZ+laser and laser at investigator’s discretion. Primary objectives: superiority of RBZ and RBZ+laser versus laser based on mean best-corrected VA (BCVA) change from baseline to M6 (primary endpoint). Exploratory objectives: evaluate influence of baseline VA, mean duration of BRVO, and presence/absence of ischemia (assessed by reading center) on BCVA outcomes.

Results: 424 (93.2%) patients completed 6M of study and baseline characteristics were generally well balanced across groups. At baseline, for RBZ/RBZ+laser/laser, mean (median) duration of BRVO (months) was 10.3(3.1)/9.3(3.3)/10.5(2.0), mean VA (letters) was 59.5/56.6/56.5 and percentage of patients with ischemia was 48.6/40.3/46.1. Mean change in BCVA from baseline to M6 improved with ranibizumab by +14.8 (RBZ) and +14.4 (RBZ+laser) versus +6.0 letters (laser; both p < 0.0001), with an average of 4.8 (RBZ) and 4.5 (RBZ+laser) RBZ injections. BCVA (mean) improvement from baseline was relatively higher with lower baseline VA (=39:20.9/19.5/18.7; =40–59:19.5/16.8/11.4; =60:11.6/11.1/-1.4) and shorter (mean) duration of BRVO (=12M:16.4/15.5/9.9; >12M:8.4/11.5/7.1) and was equally effective in ischemic/non-ischemic (ischemic: 14.3/14.4/9.2; non-ischemic: 11.9/11.8/2.7) patients, respectively for 3-groups. No new safety findings were reported during the 6M study period.

Conclusions: The ongoing BRIGHTER study demonstrates that BRVO patients can be effectively managed by individualized RBZ dosing with/without laser. Patients with lower baseline VA had relatively higher BCVA gains. Likewise, patients with shorter duration of disease (<12M) had higher BCVA gain. Ranibizumab demonstrated similar efficacy in both ischemic and non-ischemic patients.

Keywords: Ranibizumab, Retinal Vein Occlusion, BRVO, Macular Edema.
163 (Rapid Fire Presentation)
Efficacy and Safety of 0.5 mg Ranibizumab Administered as Intravitreal Injections PRN Compared with Intravitreal Implant Containing 0.7 mg Dexamethasone in Patients with Branch Retinal Vein Occlusion Over 6 Months:
The COMRADE-B Study
Lars-Olof Hattenbach1, Hans Hoerauf, Nicolas Feltgen, Gabrielle Lang, Simon Taylor, Steffen Schmitz-Valckenberg, Armin Wolf, Thomas Knorr
1Klinikum Ludwigshafen, Ludwigshafen, Germany; 2Georg-August-Universität, Göttingen, Germany; 3Universitäts-Augenklinik, Ulm, Germany; 4Royal Surrey County Hospital, Guildford, United Kingdom; 5Universitäts-Augenklinik, Bonn, Germany; 6Klinikum der LMU München, München, Germany; 7Novartis Pharma GmbH, Nuremberg, Germany

Introduction: COMRADE-B study was a phase IIIb, prospective, double-masked, randomized trial designed to evaluate the efficacy and safety of 0.5 mg ranibizumab compared with 0.7 mg dexamethasone in BRVO. An exploratory objective was to compare the development of retinal ischemia and neovascularization during therapy.

Methods or Study Design: Patients with BRVO (n = 244) were randomized 1:1 to receive 0.5 mg ranibizumab intravitreal injections (RBZ) on PRN basis or to receive intravitreal implant containing dexamethasone 0.7 mg (DEX) every 6 month.

Results: Mean BCVA at baseline was 57.2 ± 11.9 (SD) and 58.1 ± 12.0 ETDRS letters for RBZ and DEX group respectively. The mean average change over 6 months was +14.92 ± 9.86 letters (RBZ) and +10.12 ± 9.51 letters (DEX) (p < 0.0001). The mean BCVA change at month 6 from baseline was 17.3 ± 11.8 (RBZ) vs. 9.2 ± 12.5 (DEX) letters. Mean CRT was reduced from baseline to month 6 maintained with RBZ but stabilized at intermediate level with DEX. RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX). RT maintenance approximately constant under PRN regimen with RBZ, but rose with DEX to ca. 21 mm Hg in month 2, to return month 2 maintained with RBZ but stabilized at intermediate level with DEX. RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX). RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX). RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX). RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX). RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX). RT changes followed a similar course (similar improvements to RBZ, but decreased and returned to baseline level with DEX).

Conclusions: Ranibizumab 0.5 mg intravitreal PRN treatment resulted in significantly higher mean BCVA gains compared to dexamethasone implant. Steroid treatment was associated with higher frequency of IOP increase. Numerical differences of retinal ischemia progression were detected. More new cases of retinal ischemia occurred in DEX, while more cases with retinal ischemia improvement at 6 months from baseline were detected in RBZ.

Keyword: Retinal Vein Occlusion.

166 Efficacy and Safety of 0.5 mg Ranibizumab Compared with Intravitreal Implant Containing 0.7 mg Dexamethasone in Patients with Central Retinal Vein Occlusion Over 6 Months: The COMRADE-C Study
Hans Hoerauf, Nicolas Feltgen, Nicole Eter, Lars-Olof Hattenbach, Matus Rehak, Puri Pankaj, Hüsnü Berk, Thomas Knorr
1Georg-August-Universität, Göttingen, Germany; 2Universitätsklinikum, Münster, Germany; 3Klinikum Ludwigshafen, Ludwigshafen, Germany; 4Klinik für Augenheilkunde der Charité Berlin, Berlin, Germany; 5Royal Derby Hospital, Derby, United Kingdom; 6Klinik für Augenheilkunde, Köln, Germany; 7Novartis Pharma GmbH, Nuremberg, Germany

Introduction: COMRADE-C was a phase IIIb, prospective, double-masked, randomized trial designed to evaluate the efficacy and safety of 0.5 mg ranibizumab compared with 0.7 mg dexamethasone in CRVO.

Methods or Study Design: Patients with CRVO (n = 243) were randomized 1:1 to receive 0.5 mg ranibizumab intravitreal injections (RBZ) on PRN basis or to receive intravitreal implant containing dexamethasone 0.7 mg (DEX) every 6 month. BCVA change over 6 month, changes of BCVA, subfoveal retinal thickness, QoL and AEs were evaluated.

Results: BCVA at baseline was 51.7 ± 16.5 (SD) and 51.5 ± 15.6 letters for the RBZ and DEX group respectively. The mean average change over 6 month was +14.63 ± 11.80 letters (RBZ) and +4.75 ± 16.22 letters (DEX) (p < 0.0001). The mean change at month 6 was 16.9 ± 13.6 (RBZ) vs. –0.7 ± 22.5 (DEX) letters. SRT was reduced from baseline values (723.8 ± 245.9 for RBZ; 705.2 ± 231.1 for DEX) by ~26 ± 298 (RBZ) and ~236 ± 349 (DEX) at 6 month (p < 0.001). QoL improvement from baseline to month 6 was higher with RBZ than with DEX (6.0 ± 12.1 vs. 2.0 ± 10.9; p = 0.007). No significant safety differences were noted. There was a tendency of a more frequent IOP increase seen with DEX (odds ratio CI for IOP = 10% increase: 0.209–0.835 p = 0.0128). The time course of the changes under treatment was of particular interest: BCVA improved steadily from baseline to month 2 in both groups, then was maintained approximately constant under PRN regimen with RBZ, but decreased and returned to baseline level with DEX. RT changes followed a similar course (similar improvements to month 2 maintained with RBZ but stabilized at intermediate level with DEX). Interestingly, IOP values remained at ca. 15 mm Hg with RBZ, but rose with DEX to ca. 21 mm Hg in month 2, to return and stabilize at a slightly higher level from m4 on.

Conclusions: Ranibizumab 0.5 mg PRN resulted in significantly higher BCVA gains compared to intravitreal dexamethasone implant. Although initial gains were comparable, these were not maintained with dexamethasone past m2.

Keyword: Retinal Vein Occlusion.
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Serous Retinal Detachment in Patients with Macular Edema Secondary to Branch Retinal Vein Occlusion
Erkan Celik¹, Emine Dogan¹, Burcin Cakir¹, Elif Betul Turkoglu², Gursoy Alagoz²
¹Sakarya University Medical Education and Research Hospital, Sakarya, Turkey; ²Antalya Akdeniz University Medical Education and Research Hospital, Antalya, Turkey

Introduction: The aim of this study was to investigate the visual acuity (VA) and central macular thickness (CMT) to assess the influence of serous retinal detachment (SRD) in eyes with macular edema (ME) secondary to branch retinal vein occlusion (BRVO).

Methods or Study Design: Forty-four BRVO eyes with ME were analyzed and divided into two groups according to spectral domain optical coherence tomography (OCT) findings of SRD and cystoid macular edema (CME). All patients underwent full ophthalmic examination and OCT measurements (Cirrus, Carl Zeiss Meditec Inc, Dublin, CA). Patients with marked retinal hemorrhage, diabetic retinopathy, previous laser photocoagulation and/or intravitreal injection were excluded.

Results: The mean age of the patients (27 males, 17 females) was 65.4 ± 11.4 years. There were 14 patients with SRD and 30 patients with CME. All of the 14 patients with SRD also had CME. VA was significantly worse in the SRD group than in the CME group (0.82 ± 0.34 vs 0.64 ± 0.38) and CMT was significantly greater in the SRD group than in the CME group (465 ± 115 μ vs 387 ± 85 μ).

Conclusions: We observed that SRD itself may be related to a decrease of VA. The prognosis of the patients with BRVO and SRD needs to be adequately investigated.

Keywords: Serous Retinal Detachment, Retinal Vein Occlusion, Optical Coherence Tomography.

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Central Retinal Artery Occlusion in a 39-Year-Old Male Smoker
Serdar Aktas¹, Celal Kilit², Fatih Ozcura³, Hatice Aktas³, Haci Murat Sagdik³, Mehmet Tetikoglu¹
¹Dumlupinar University School of Medicine, Department of Ophthalmology, Kutahya, Turkey; ²Dumlupinar University School of Medicine, Department of Cardiology, Kutahya, Turkey; ³DPU Evliya Celebi Training and Research Hospital, Clinic of Ophthalmology, Kutahya, Turkey

Introduction: Central retinal artery occlusion (CRAO) in young patients is a very rare event, which has been reported in association with proatherogenic states. We report a case of non-arteritic CRAO in association with cigarette smoking without any other known risk factors; treated successfully with hyperbaric oxygen (HBO) therapy.

Methods or Study Design: Observational case report.

Results: A 39-year-old man with a history of cigarette smoking (60 cigarettes/day for 12 years); presented with a sudden, painless visual loss in the right eye. Best-corrected visual acuity (BCVA) was 20/200 in the right eye and 20/20 in the left (Snellen chart). Posterior segment examination of the right eye revealed a CRAO with cherry red spot. Funduscopy examination of the left eye was normal. Fluorescein angiography demonstrated an occluded central retinal artery with cilioretinal artery sparing. Computerized visual field testing also demonstrated a central visual field defect with intact paracentral island field corresponding to the area of the retina supplied by the patent cilioretinal artery. We examined cardiovascular and thrombophilic risk factors for CRAO. Patient was in sinus rhythm. Transthoracic echocardiography was completely normal and any cardiac shunt was not seen in transesophageal echocardiography. Carotid and vertebral arteries duplex ultrasoundography was also normal. Routine laboratory tests such as complete blood count, plasma glucose and lipid levels and specific laboratory tests for thrombophilia, such as homocysteine, lipoprotein (a), plasminogen activator inhibitor-1, factor VIII, factor V Leiden, lupus anticoagulant and anticardiolipin antibodies were in normal range. Acetylsalicylic acid 100 mg/day was started as treatment. BCVA of the right eye improved to 20/25 after 2 weeks of HBO therapy (15 sessions). The visual field defect of right eye improved as well.

Conclusions: As it is shown in this case, cigarette smoking can be a reason for CRAO. HBO therapy with acetylsalicylic acid is safe and effective in the treatment of CRAO.

Keywords: Central Retinal Artery Occlusion, Cigarette Smoking, Hyperbaric Oxygen Therapy, Fluorescein Fundus Angiography.
208 Effect of Intravitreal Injection of Dexamethasone Implant on Corneal Endothelium in Macular Edema Due to Retinal Vein Occlusion

Nilufer Ilhan, Mesut Coskun, Ozgur Ilhan, Esra Ayhan Tuzcu, Mutlu Cihan Daglioglu, Ugurcan Keskin
Mustafa Kemal University, Faculty of Medicine, Department of Ophthalmology, Hatay, Turkey

Introduction: The aim of the study is to evaluate the effect of dexamethasone (DEX) implant (Ozurdex®) on corneal endothelium in patients with retinal vein occlusion complicated with macular edema.

Methods or Study Design: Thirty-one eyes of 31 patients received one to three intravitreal DEX implants were enrolled in the study. Intraocular pressure (IOP) measurements were performed before injection, at one month, at three months and six months after the first intravitreal injection. The corneal specular microscopy and the central corneal thickness (CCT) measurements were performed before injection, at one month and 6 months after the first intravitreal injection. Endothelial cell density (ECD), coefficient of variation of cell size (CV), and percentage of hexagonality were analyzed.

Results: The mean follow-up period was 9.7 ± 3.3 months and all patients completed the six month follow up. The mean number of injections was 1.5 ± 0.8 (1–3). The mean IOP values of the patients were 15.6 ± 2.6 mm Hg before injection, 17.7 ± 3.6 at one month, 16.4 ± 4.1 mm Hg at three months, and 16.0 ± 2.7 mm Hg at six months. There was a significant difference between the mean values of IOP at one month and six months after the first injection (P = 0.008). There were no significant differences between the mean values of ECD, CV, percentage of hexagonality and CCT before injection and at one month and six months after the first injection (P = 0.375, P = 0.661, P = 0.287 and P = 0.331, respectively).

Conclusions: Although intravitreal injections of 0.7 mg DEX cause moderate elevation of IOP, it does not seem to have detrimental effects on corneal endothelium at six months.

Keywords: Corneal Endothelium, Dexamethasone, Drug Delivery Systems, Intravitreal Injections, Retinal Vein Occlusion.

225 Efficacy of Intravitreal Bevacizumab Injection for the Treatment of Macular Edema Secondary to Branch Retinal Vein Occlusion

Erkan Celik¹, Elif Betul Turkoglu², Nilgun Aksoy¹, Burcin Cakir³, Emine Dogan¹, Gursoy Alagoz¹
¹Sakarya University Medical Education and Research Hospital, Sakarya, Turkey; ²Antalya Akdeniz University Medical Education and Research Hospital, Antalya, Turkey

Introduction: Branch retinal vein occlusion is the second most common sight-threatening retinal vascular disorder after diabetic retinopathy. Bevacizumab is being explored for the treatment of many retinal diseases. The aim of this study was to evaluate the functional and anatomical results of intravitreal bevacizumab injection in eyes with macular edema secondary to branch retinal vein occlusion.

Methods or Study Design: Patients with macular edema secondary to branch retinal vein occlusion were treated with intravitreal bevacizumab injections (1.25 mg/0.05 ml) and enrolled in the study. These patients were evaluated with logMAR visual acuity, biomicroscopy, intraocular pressure, and optical coherence tomography results before the injections, and follow-up examinations (1, 3 and 6 months).

Results: Twenty-five eyes of 25 patients with a mean age of 64.4 years (56–79 years) were studied. Mean follow-up was 7.44 (6–15) months and mean injection number during this period was 3.64 for these patients. The mean logMAR visual acuity was 1.16 ± 0.45 before the injection, while it was 0.89 ± 0.46, 0.76 ± 0.34, and 0.72 ± 0.4 at the 1 month, 3 months, and last control, respectively. There was a statistically significant visual acuity improvement during follow-up (p < 0.05, Wilcoxon signed-rank test). Central macular thickness obtained by optical coherence tomography scans was 534 ± 139 μm before injection, was 388 ± 98 μm at 1st month, was 365 ± 94 μm at 3rd month and was 311 ± 102 μm at 6th months, respectively.

Conclusions: Intravitreal bevacizumab injection seems to be an effective treatment modality in eyes with macular edema secondary to branch retinal vein occlusion. Eyes treated with bevacizumab showed a significant reduction in central macular thickness and improvement in visual acuity. However, long-term studies, with a larger number of patients, are needed to examine the permanency of this anatomical and functional recovery.

Keywords: Vein Occlusion, Bevacizumab, Intravitreal Injection.
line and follow-up intraocular pressures (IOP) measured by appplanation tonometry and dilated funduscopy were performed. Patients were evaluated at baseline and days 1, 7, 30, 60, and 90 post-treatment.

Results: Eighteen eyes of 18 patients were enrolled in the study. 8 patients (44.4%) had CRVO and 10 patients (55.6%) had BRVO. The female to male ratio was 1:2.6 and the mean age of patients was 57.39 (±13.1) years. 88% of the patients were phakic. Conjunctival hemorrhage (16.6%) was the most common ocular adverse event. One patient had minimal vitreous hemorrhage. Percentage of the patients, who receive anti glaucomatous medication increased from 5.55% to 22.2% by 90th day. All eyes with IOP increase were successfully managed with single topical anti glaucomatous medication. Changes in IOP peaked at 60th day and average intraocular pressure was 18.5 mm Hg. Total cataract frequency during the study (including cortical, nuclear, and subcapsular) was 11.1% (3/18). No systemic adverse event were observed.

Conclusions: It is a safe option to treat the patients with intravitreal dexamethasone implant who has macular edema due to retinal vein occlusion.

Keyword: Retinal Vein Occlusion.

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Ranibizumab for Macular Edema Secondary to Retinal Vein Occlusions in Patients with Previous Uneffective Treatments
Fernando Esposito, Manju Chandran, Geeta Menon
Frimley Park Hospital NHS Foundation Trust, Frimley, United Kingdom

Introduction: To assess effectiveness and safety of intraocular injections of 0.5 mg ranibizumab in patients with macula edema (ME) secondary to retinal vein occlusions (RVOs).

Methods or Study Design: This is a retrospective analysis in which patients with ME secondary to RVOs and previous uneffective treatments (Bevacizumab injections and/or Dexamethasone intravitreal implants) were injected with 0.5 mg of ranibizumab injections. Change from baseline best corrected visual acuity (BCVA) LogMAR score and reduction in Central foveal thickness (CFT) at months 3 and 6 where the primary efficacy outcomes measurements.

Results: 52 patients received injections. At month 3 the mean (95% confidence interval) change from baseline BCVA LogMAR score was 7.6 (14.65–0.59) (P = 0.0340) and at month 6 was 11.2 (20.53–1.91) (P = 0.0189). CFT had decreased by a mean of 160 microns (P < 0.0001) at month 3, and 170 microns (P = 0.0003) at month 6. 24% of patients had BCVA of > or = 20/40 at month 3 and 43% at month 6. Adverse events were no registered.

Conclusions: 0.5 mg Ranibizumab injections appear to be effective and safe in treating ME secondary to RVOs in refractory patients.

Keyword: Retinal Vein Occlusion.
Mass Spectrometry Based Analysis of the Retinal Protein Profile in an Experimental Model of Branch Retinal Vein Occlusion

Lasse Jørgensen Cehofske, Anders Kruse, Benedict Kjærgaard, Allan Stensballe, Bent Honore, Henrik Vorum

1 Department of Ophthalmology, Aalborg University Hospital, Aalborg, Denmark; 2 Department of Heart and Lung Surgery, Aalborg University Hospital, Aalborg, Denmark; 3 Department of Medicine and Health Technology, Aalborg University, Aalborg, Denmark; 4 Department of Biomedicine, Aarhus University, Aarhus, Denmark

Introduction: In retinal tissue branch retinal vein occlusion (BRVO) induces complex biological processes that are driven by a multitude of interacting proteins. Mass spectrometry based proteomic technologies can provide a qualitative and quantitative analysis of these proteins and their posttranslational modifications to bring new insights into pathological mechanisms and identify novel biomarkers and therapeutic targets that can be used in clinical practice.

Methods or Study Design: In 7 Göttingen mini-pigs BRVO was induced in the right eye using an experimental model of branch retinal vein occlusion. With an argon laser (532 nm) and indirect ophthalmoscopy, laser burns were applied directly on an inferior branch vein until stagnation of the venous blood flow was observed. In the left eyes that served as a controls an identical area of laser burns was created in the inferior retina. After fifteen days the eyes were enucleated. The retinas were excised and prepared for analysis by mass spectrometry (Thermo Q Exactive Plus), by a filter-aided sample preparation (FASP) method. Mass spectrometry data were searched against a pig isoform database optimized from Uniprot using the MaxQuant search engine followed by label free quantification.

Results: The initial results provided the identification of 5262 different proteins obtained by combining 3 technical replicates of the excised retinas. Differentially expressed proteins were filtered by requiring 2 peptides pr. protein, ANOVA (P-value) cutoff 0.05, false-discovery adjusted q-value (i.e. multiple hypothesis testing) cutoff 0.05% enabling quantitative information from 4288 proteins. In eyes with BRVO upregulated biological functions identified by gene ontology annotation included structural protein activity, cation binding and cellular response to stress. Cellular response to external stimuli and transmembrane transporter activity were among biological functions downregulated in eyes with BRVO.

Conclusions: Label-free mass spectrometry based proteomic techniques are able to provide large scale identification and quantification of retinal proteins. In eyes with BRVO this study detected an augmentation of cellular response to stress whilst biological functions such as cellular response to external stimuli and transmembrane transporter activity were reduced in retinal tissue with BRVO. Further data analysis will be conducted to elucidate protein expression patterns and generate theories of novel potential biomarkers of BRVO.

Keywords: Retina; Branch Retinal Vein Occlusion; Biomarkers; Proteomics; Mass Spectrometry.
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