549 Central Serous Chorioretinopathy

Thursday, May 08, 2014 12:00 PM–1:45 PM
Exhibit/Poster Hall SA Poster Session

Program #/Board # Range: 6371–6389/C0148–C0166
Organizing Section: Retina

Program Number: 6371 Poster Board Number: C0148
Presentation Time: 12:00 PM–1:45 PM

Spectrum of Retinal Pigment Epithelium Abnormalities in Central Serous Chorioretinopathy as Revealed by Ultra-Widefield Autofluorescence

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Purpose: To document the wide array of ultra-widefield autofluorescence (UWF-AF) presentations in central serous chorioretinopathy (CSCR) and to compare these to clinical exam, standard color and UWF color images, spectral domain OCT and, in select cases, to visual fields (VF) and UWF fluorescein angiography.

Methods: A retrospective review from 3 facilities of 20 eyes from 13 patients diagnosed with CSCR by standard criteria and who had UWF-AF images available to analyze and correlate with other procedures such as SD OCT.

Results: Nine of the 13 patients were male and age ranged from the third to the sixth decade. Eleven were symptomatic and two were detected during routine exams. Although a wide spectrum of UWF-AF patterns was discovered, in 11 of the 20 affected eyes, descending “gravitational” tracts were documented. Most often, these gravitational tracts extended to the equator inferiorly and even beyond. In nearly all cases, the tract was hypo AF with a surrounding hyper AF zone. Outer retina involvement (loss of the ellipsoid aka PIL on OCT) corresponded to both hypo and hyper AF lesions. A 41 year old male physician presented with 20/10 VA OD but with a large noticeable superior nasal blind spot (following a motorcycle accident) and was found to have a large, corresponding descending tract without foveal involvement (figure 1). The most profound case in the series was a 45 year old female being treated for 19 years with steroids for SLE with VA of 20/80 OD and FC at 6 ft OS. Both SD OCT and FA confirmed CSCR OD; OS with long standing VA reduction demonstrated total hypo AF in 3 full quadrants extending beyond the equator with only minimal hyper AF in the superior quadrant (figure 2) and only an inferior quadrant of the VF remaining.

Conclusions: UWF-AF imaging is quite useful in patients with CSCR to document the extent of RPE damage, often not recognized on clinical exam. SD OCT of lesions revealed by UWF-AF documents loss of photoreceptor integrity and predicts VF defects. UWF-AF is perhaps the preferred non-invasive technology to monitor change in CSCR patients with widespread involvement.

Program Number: 6372 Poster Board Number: C0149
Presentation Time: 12:00 PM–1:45 PM

Long-Term Impacts of Antioxidant Supplementation and Smoking Cessation on Chronic Central Serous Chorioretinopathy

Midori Araki, Tsutomu Yasukawa, Masayuki Ashikari, Aki Kato, Nana Tachi, Yoshiro Hirano, Yuichiro Ogura. Nagoya City University, Nagoya, Japan.

Purpose: Chronic central serous chorioretinopathy (CSC) has persistent serous retinal detachment (sRD), resulting in gradual vision loss. We have previously reported the potential of antioxidant supplementation and smoking cessation to enhance spontaneous remission of chronic CSC (Tachi et al, ARVO, 2011). The purpose of this study is to evaluate the long-term prognosis of chronic CSC with spontaneous remission under smoking cessation and antioxidant supplementation.
Methods: Nineteen eyes of 17 patients, who were diagnosed as chronic CSC and guided to stop smoking, if they were a current smoker, and take antioxidant supplements produced on the basis of AREDS formulation (Ocuvite® Lutein or Sante Lutax® 15), were enrolled. Nine patients were a current smoker, 7 an experienced smoker, and 3 a nonsmoker. Averaged age was 59.4 ± 11.5 years. Mean follow-up period was 54 ± 3.9 months. Rate of remission and relapsing of sRD and best-corrected visual acuity (BCVA) were assessed.

Results: Spontaneous remission of sRD was observed in 16 of 19 eyes (84%) with mean duration of 4.6 ± 0.53 months. Of these eyes, 7 eyes (37%) had no recurrence during the observation period, while 9 eyes (47%) had remitting and relapsing of chronic CSC. In 2 eyes, relapsing was observed immediately after resuming smoking. At the last visit, 4 eyes of 9 remitting-relapsing cases had no sRD and 5 eyes had recurred sRD. In the other 3 eyes (16%), sRD persisted without remission. Five eyes underwent any interventional treatment 30 ± 10 months after life style guidance in average. Mean BCVA in the LogMAR unit in 14 eyes without any treatments was significantly improved from 0.22 ± 0.10 at baseline to 0.11 ± 0.07 at the last visit (p<0.05). Improvement of BCVA with 0.3 or more LogMAR units was obtained in 3 eyes (21%), while no eyes deteriorated BCVA. Mean BCVA of 5 eyes with interventional treatments was significantly improved from 0.24 ± 0.16 at baseline to 0.07 ± 0.13 at the last visit (P<0.05).

Conclusions: The current study suggested that antioxidant supplementation and smoking cessation might enhance spontaneous remission and reduce relapsing rate in eyes with chronic CSC over 5 years. Delay of interventional treatments was unlikely to worsen the prognosis of chronic CSC. Lifestyle guidance might be worthwhile for patients with chronic CSC before therapeutic intervention was considered.

Commercial Relationships: Midori Araki, None; Tsutomu Yasukawa, None; Masayuki Ashikari, None; Aki Kato, None; Nana Tachi, None; Yoshihiro Hirano, None; Yuichiro Ogura, None

Program Number: 6373 Poster Board Number: C0150
Presentation Time: 12:00 PM–1:45 PM
Recurrence of central serous chorioretinopathy in patients who undergo intraocular surgery with subsequent topical steroid therapy
Oscar C. Kuruvilla, Neeti Alapati, Hilliary Inger, Zuhair Peracha, Daniel Kim, Paul A. Edwards. Ophthalmology, Henry Ford Hospital, Royal Oak, MI.

Purpose: To evaluate characteristics of patients who were diagnosed and treated for central serous chorioretinopathy (CSR) and subsequently undergo intraocular surgery.

Methods: This is a retrospective chart review of 103 patients who were diagnosed and treated for central serous chorioretinopathy at Henry Ford Hospital. All patients selected for review were treated between January 2005 and January 2013, although, they may have been initially diagnosed with CSR prior to this time period. Data collected included age, gender, refraction, history of open angle glaucoma, treatment administered, recurrences, intraocular surgeries, steroid drop usage, systemic steroid usage and fluorescein angiography findings.

Results: We evaluated 106 eyes from 98 patients whose mean age was 52.7 years. The majority were male (67%) vs. female (33%). Fifty percent of patients were hyperopic, while 38% were myopic and 12% were emmetropic. Only 12% of affected eyes were pseudophakic. The majority of patients had acute disease (77%) while 19% had chronic disease and 4% had atypical disease. On fluorescein angiography, almost all patients (94%) had expansile dot patterns, 2% had smokestack and 2% had inverted smokestack patterns. Overall, 18% of patients experienced a recurrence of CSR. Patients who underwent intraocular surgery had no recurrences post operatively. Almost a third of patients developed recurrences during treatment with nasal steroids. Patients treated with laser, photodynamic therapy or acetazolamide had an overall recurrence rate of 7%.

Conclusions: CSR is a relatively common cause of visual loss. Our affected patients were more likely to be male, phakic hyperopes with acute disease and expansile dot seen on fluorescein angiography.

In our review, recurrence rate was approximately 18%. None of the patients who had intraocular surgery experienced a recurrence of CSR despite routine use of topical steroids following surgery. In addition, among 14 patients who had initial treatment, only one had recurrence. The results from this retrospective review suggest that it is safe for patients with history of CSR to undergo intraocular surgery without worry for recurrence of disease.

Commercial Relationships: Oscar C. Kuruvilla, None; Neeti Alapati, None; Hilliary Inger, None; Zuhair Peracha, None; Daniel Kim, None; Paul A. Edwards, None

Program Number: 6374 Poster Board Number: C0151
Presentation Time: 12:00 PM–1:45 PM
POTENTIAL THERAPEUTIC BENEFIT OF MELATONIN IN REFRACTORY CENTRAL SEROUS CHORIORETINOPATHY
Jose D. Luna Pinto, Ana L. Gramajo, Gabriel Marquez, Victor Torres, Claudio P. Juarre, Ruth E. Rosenstein. Ophthalmology, Ctr Privado de Ojos Romagosa-Fndn VER, Cordoba, Argentina.

Purpose: To evaluate the efficacy and safety of melatonin for the treatment of chronic central serous chorioretinopathy (CSCR).

Methods: Prospective comparative case series. A total of 13 patients with chronic CSCR were treated for 1 month: 8 patients were treated orally with 3 mg melatonin t.i.d, and 5 with placebo. All patients had 20/40 or worse Early Treatment Diabetic Retinopathy Study (ETDRS) best-corrected visual acuity (BCVA) in the affected eye or presented an incapacitating scotoma. Most of the patients had previous failed treatments for their condition. Observational procedures included ETDRS BCVA, and complete ophthalmic examination. Optical Coherence Tomography (OCT) was performed at day 1 and week 4. Fluorescein angiography was performed at baseline only for diagnostic purposes.

Results: At one month follow-up, BCVA significantly improved in 87.5% of patients treated with melatonin (7 of 8 patients, p<0.05). All patients showed a mean significant reduction (p<0.01) of central macular thickness (CMT) when compared to the baseline, with 3 patients (37.5%) exhibiting complete resolution of subretinal fluid at one month follow-up. No significant side effects were observed. No changes on BCVA or CMT were noted in the control group.

Conclusions: These results suggest that melatonin is safe, well tolerated, and effective in the treatment of chronic CSCR, since it significantly improved BCVA and CMT in patients with this pathology. Further evaluations with longer follow-up and a larger patient population are desirable.

Commercial Relationships: Jose D. Luna Pinto, None; Ana L. Gramajo, None; Gabriel Marquez, None; Victor Torres, None; Claudio P. Juarez, None; Ruth E. Rosenstein, None

Program Number: 6375 Poster Board Number: C0152
Presentation Time: 12:00 PM–1:45 PM
Retinal Sensitivity Changes After Half-time Reduced-Fluence Photodynamic Therapy for Central Serous Chorioretinopathy
Hirotake Yokouchi, Masayasu Kitahashi, Mariko Kubota, Takayuki Baba, Shuichi Yamamoto. Ophthalmology, Chiba Univ Graduate School of Med, Chiba, Japan.
Purpose: To compare the efficacy and safety of half-time reduced-fluence photodynamic therapy (RF-PDT) on macular function in eyes with chronic central serous chorioretinopathy (CSCR).

Methods: The records of 41 eyes of 39 CSCR patients treated with PDT between January 2010 and August 2013 were retrospectively reviewed. Thirty eyes (28 patients) received PDT with half-dose (3mg/m2) verteporfin. Eleven eyes (11 patients) received PDT with half-fluence (25J/cm2). All patients were followed up at least 3 months. Outcome measures included the best correct visual acuity (BCVA), the central retinal thickness (CRT) and the proportion of eyes with complete resolution of serous retinal detachment (SRD) in the macula.

Results: At baseline, the mean BCVA and CRT of both groups did not differ significantly. At 3 months after treatment, BCVA (logMAR) of both groups improved significantly; from 0.27 to 0.13 (p < 0.05) and 0.20 to 0.09 (p < 0.05) in the half-dose PDT group and the half-fluence PDT group, respectively. There was no difference in BCVA at 3 months between the 2 groups (p = 0.711). At 3 months, the CRT of both groups decreased significantly, and the CRT in the half-fluence PDT group was significantly thinner than that of the half-dose PDT group (158.7 ± 36.4μm vs. 128.5 ± 28.3μm; p = 0.01). The complete resolution of SRD was achieved in 27 eyes (90%) in the half-dose PDT group and 10 eyes (91%) in the half-fluence PDT group. We did not observe any recurrences, secondary choroidal neovascularization and systemic side effects throughout the follow up period.

Conclusions: Both half-dose and half-fluence PDTs showed significant efficacy for chronic CSC. Half-dose PDT may less likely to cause the retinal atrophy than half-fluence PDT.
Commercial Relationships: Agustina Palacio, None; Niloofar Piri, None; Ahmet Ozbek, None; Shlomit Schaal, None; Tongalp H. Tezel, None

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Program Number: 6378 Poster Board Number: C0155
Presentation Time: 12:00 PM–1:45 PM
Eplerenone fails to treat central serous chorioretinopathy
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Purpose: To evaluate the efficacy of the mineralocorticoid receptor antagonist eplerenone in patients with active central serous chorioretinopathy (CSR).

Methods: Retrospective case series of three patients treated with eplerenone for central serous chorioretinopathy. All patients were assessed with a full eye exam and spectral domain optical coherence tomography (SD-OCT) at each visit.

Results: Three eyes in three patients were treated with eplerenone 25 mg or 50 mg daily by mouth. All patients had decreased vision secondary to active CSR. Follow up ranged from three to 12 months. Visual acuity (VA) at the beginning of treatment ranged from 20/32 to 20/60 (mean VA 0.42). Visual acuity at one month was not significantly different (mean VA 0.49, p = 0.43), nor at the end of follow up (mean VA 0.43, p = 0.42). Central macular thickness did not change significantly from pre-treatment (mean 474 microns) to month one (mean 429 microns, p = 0.23), nor did it change significantly at the end of the follow-up period (mean 431 microns, p = 0.32).

Conclusions: Eplerenone neither reduced central macular thickness nor improved vision in this cohort of patients with central serous chorioretinopathy. More research is needed to evaluate fully the efficacy of eplerenone for this indication.

Commercial Relationships: Harpal Sandhu, None; Demetrios G. Vavvas, None

Program Number: 6379 Poster Board Number: C0156
Presentation Time: 12:00 PM–1:45 PM
Eplerenone for Treatment of Chronic Central Serous Chorioretinopathy: A Retrospective Case Series
Margaret Greven1, David Sale1, John D. Pitcher1, Kevin Elliot1, Carl D. Regillo2, Mitchell Fineman2, Jason Hsu2, James F. Vander2, David H. Fischer2, Marc Spirn2. 1Wills Eye Hospital, Philadelphia, PA; 2Retina Service, Wills Eye Hospital, Philadelphia, PA; 3Thomas Jefferson University School of Medicine, Philadelphia, PA.

Purpose: To evaluate the effect of oral eplerenone on visual acuity, subretinal fluid, and choroidal thickness in patients with chronic central serous chorioretinopathy (CSCR).

Methods: Retrospective review of all patients from a single multi-physician practice with chronic CSCR who were treated with oral eplerenone from January 2013-June 2013. All patients were followed for a minimum of three months and underwent dilated fundoscopic examination and spectral-domain ocular coherence tomography (OCT) with enhanced depth imaging (EDI) at each visit. Measurement of subfoveal fluid (SFF) height and choroidal thickness were performed. Two-tailed paired t-test was used to calculate statistical significance of pre- and post-treatment variables.

Results: Fourteen eyes of 14 patients with chronic CSCR were treated with eplerenone over a 6 month period. At 1 month follow-up, 10 out of 14 patients (71%) had decreased SFF height on OCT and 3 (21%) had complete resolution of SFF. Mean SFF height decreased from 123 μm to 61 μm (p=0.05). Mean choroidal thickness decreased from 301 μm to 263 μm (p=0.07). Mean visual acuity improved minimally from logMAR 0.41 (Snellen visual acuity 20/51) to 0.40 (Snellen visual acuity 20/50, p=0.20). At 3 months follow-up, 13 out of 14 (93%) had decreased SFF height on OCT and 9 (64%) had complete resolution of SFF. Mean SFF height decreased to 21 μm (p=0.04). Mean choroidal thickness decreased to 253 μm (p=0.1). Mean visual acuity improved to logMAR 0.28 (Snellen visual acuity 20/38, p=0.02).

Conclusions: Oral eplerenone may be an effective treatment for patients with chronic CSCR. A prospective randomized placebo-controlled trial is needed to definitively determine safety and efficacy of the drug in this setting.

Commercial Relationships: Margaret Greven, None; David Salz, None; John D. Pitcher, None; Kevin Elliot, None; Carl D. Regillo, None; Mitchell Fineman, None; Jason Hsu, None; James F. Vander, None; David H. Fischer, None; Marc Spirn, None

Program Number: 6380 Poster Board Number: C0157
Presentation Time: 12:00 PM–1:45 PM
The Sympatholytic Non-selective β-blocker PROPRANOLOL as A Non-invasive Therapeutic Approach for the Treatment of Chronic Central Serous Chorioretinopathy (CSC)
Jose A. Cardillo, Murilo W. Rodrigues, Leticia F. Barroso, Rubens C. Siqueira, Rodrigo Jorge. Retina, Ribeirão Preto Medical School-University of São Paulo, Ribeirão Preto, Brazil.

Purpose: To evaluate the effect of systemically administered β-blocker propranolol on the course of central serous chorioretinopathy. Our goal is to research potential alternative tool for chronic CSC as monotherapy or as adjunct to more invasive laser techniques.

Methods: Fourteen CSC-patients with a documented-persistent leakage of at least 4 months were treated by oral propranolol 20 mg twice a day and followed up at monthly intervals for 6 months. Best-corrected visual acuity (BCVA), fluorescein angiography (FA), indocyanine green angiography (ICGA), central macular thickness (CMT) quantified by ocular coherence tomography (OCT), were recorded at baseline and follow-up visits.

Results: At 3 months, BCVA was significantly enhanced in the treatment group (P =.006) compared with baseline. An improvement in central macular thickness and leakage on fluorescein angiography was noted in all treated patients starting as early as 30 days following treatment.

Conclusions: β-blocker has a plausible mechanism of action in CSC and may characterize a potential alternative to the present standard of care merits further evaluation.

Commercial Relationships: Jose A. Cardillo, None; Murilo W. Rodrigues, None; Leticia F. Barroso, None; Rubens C. Siqueira, None; Rodrigo Jorge, None

Program Number: 6381 Poster Board Number: C0158
Presentation Time: 12:00 PM–1:45 PM
Central Serous Chorioretinopathy Treated with Mineralocorticoid Antagonists: a Retrospective Study Analyzing the Clinical and Multimodal Imaging Response to Therapy
Quraish Ghadiali1, Jesse J. Jung1, 2, Suqin Yu2, 3, Lawrence A. Yannuzzi1, 3. 1Department of Ophthalmology, New York University, New York, NY; 2Vitreous Retina Macula Consultants of New York, New York, NY; 3Department of Ophthalmology, Shanghai First People’s Hospital, Shanghai Jiaotong University, Shanghai, China.

Purpose: To evaluate the effect of systemic spironolactone and eplerenone on the eyes of patients with central serous chorioretinopathy (CSCR) and to better understand the role of mineralocorticoid antagonists in the treatment of this disease.

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Methods: Twenty-six eyes of 16 patients (10 males, 6 females), with a mean age of 57.4 (range 41-74), diagnosed with CSCR were treated with either spironolactone, eplerenone, or a combination of both drugs and were evaluated retrospectively by chart review and multimodal imaging analysis. Spectral domain optical coherence tomography (SD-OCT) was used to measure subretinal fluid (SRF) and central macular thickness (CMT). Furthermore, enhanced depth imaging optical coherence tomography (EDI-OCT) was used to measure subfoveal choroidal thickness (CT). Visual acuity (VA), CMT, CT, and SRF measurements were taken at the initiation of treatment and at 1, 3, and 6 month follow up intervals.

Results: The mean change and 95% confidence intervals for VA, CMT, and CT were calculated as compared to pre-treatment values in all eyes. The mean change in logMAR vision at 1, 3, and 6 month follow up intervals was 0.021 ± 0.029, -0.028 ± 0.062, and -0.066 ± 0.090, respectively. The mean change in CMT at these intervals was -4.04 ± 14.12 μm, 4.11 ± 19.73 μm, and 9.23 ± 31.17 μm, respectively. The mean change in CT at these intervals was -48.94 ± 29.53 μm, -44.00 ± 41.58 μm, and -36.80 ± 82.21 μm, respectively. Twelve eyes were found to have SRF prior to treatment. In this subset, the mean change in SRF at 1, 3, and 6 months was -28.70 ± 33.48 μm, -19.89 ± 36.58 μm, and 9.57 ± 56.74 μm, respectively. CT was significantly decreased at 1 month (P<0.01) and at 3 months (P<0.05). All other measurements showed no significant changes.

Conclusions: In eyes with CSCR treated with mineralocorticoid antagonists, no significant changes were found in VA or CMT; in eyes with SRF prior to treatment, there were no significant changes in SRF found at any follow up interval. There were, however, significant decreases in CT at 1 and 3 months after therapy initiation, but no significant changes at 6 months. Given these retrospective findings, mineralocorticoid antagonists do not appear to affect the natural course of CSCR based on clinical and multimodal imaging response.

Commercial Relationships: Quraish Ghadiali, None; Jesse J. Jung, None; Suqiu Yu, None; Lawrence A. Yannuzzi, None

Program Number: 6382 Poster Board Number: C0159
Presentation Time: 12:00 PM–1:45 PM

Finasteride for Chronic Central Serous Chorioretinopathy
Kelly Fujikawa, Amar P. Patel, Lawrence S. Morse. Department of Ophthalmology, University of California Davis Eye Center, Sacramento, CA.

Purpose: To investigate the efficacy of finasteride in the treatment of chronic central serous chorioretinopathy (CSCR).

Methods: A retrospective chart review was performed of seven eyes from six patients with chronic CSCR treated with finasteride 5mg daily. Patients treated with other therapies or taking exogenous steroids were excluded. Main outcome measures were best-corrected visual acuity (BCVA), central macular thickness (CMT), and subfoveal fluid height.

Results: Mean age was 55.4 years (4 males, 2 females). Average BCVA was 0.221 (20/33) at baseline and 0.125 (20/27) at discontinuation of therapy (p=0.482). Average CMT was 337.1 um at baseline and 216.6 um at discontinuation of therapy (p=0.060). Average subfoveal fluid height was 114.6 um at baseline and 0 um at discontinuation of therapy (p=0.065). Average duration of therapy was 5.3 months with six of the seven eyes having complete resolution of subretinal fluid. Upon discontinuation of finasteride, three eyes had recurrence of subretinal fluid after an average duration of 4.7 months. No patient had any side effects from finasteride.

Conclusions: Finasteride may be a useful treatment for CSCR. A larger study is needed to further evaluate the efficacy of finasteride for CSCR.

Commercial Relationships: Kelly Fujikawa, None; Amar P. Patel, None; Lawrence S. Morse, None

Program Number: 6383 Poster Board Number: C0160
Presentation Time: 12:00 PM–1:45 PM

Anti-VEGF treatment of CNVM Secondary to Chronic Central Serous Retinopathy
Netan Choudhry. Herzig Eye Institute, Toronto, ON, Canada.

Purpose: The purpose of this study was to examine the efficacy of intravitreal Anti-VEGF therapy on the treatment of choroidal neovascular membranes secondary to chronic central serous retinopathy.

Methods: A retrospective review of 5 eyes presenting with chronic central serous retinopathy treated with monthly anti-VEGF 0.5mg (bevacizumab or ranibizumab). Patients underwent baseline fluorescein angiography, OCT with clinical examination. At each monthly visit patient BCVA was measured in conjunction with OCT to measure response. Follow-up time ranged from 3-12 months.

Results: All patient presented with subretinal hemorrhage and leakage on fluorescein angiography upon presentation. Mean visual acuity improvement after 3 months of treatment was + 10 letters and 12 letters at 6 months. All eyes demonstrated improvement of OCT features with complete resolution of subretinal fluid in all eyes by 6 months. Intraretinal cystic fluid and shallow PED’s were present in 4 eyes at 6 months.

Conclusions: Intravitreal Anti-VEGF therapy demonstrated improvement in best-corrected ETDRS visual acuity in all patients and OCT abnormalities, particularly subretinal fluid. Intravitreal Anti-VEGF therapy is an effective treatment for choroidal neovascular membranes secondary to Chronic Central Serous Retinopathy.

Commercial Relationships: Netan Choudhry, None
and after 4 month for the 2nd. Re-treatment was effective for all recurrences (gain of visual acuity up to 4 Snellen lines). Side effects were graded as “none” by 1 patient, “mild” by 3 patients (flu-like, fatigue), which could be overcome by adding Paracetamol, “tolerable” by 2 patients (obstipation, dizziness, nausea). Only 1 patient we had to grade the side effects as “not tolerable” (leucopenia).

**Conclusions:** We present the first case series of systemic Interferon alpha 2a for treating CRCSC. It provides excellent short term results in reducing subretinal and sub-pigment-epithelial fluid in CRCSC. Treatment is repeatable if necessary. Patients have to be examined for side effects, which might require the therapy to be stopped.

**Commercial Relationships:** Egbert Matthe, None; Dirk Sandner, None; Lutz E. Pillunat, None

**Program Number:** 6385 Poster Board Number: C0162
**Presentation Time:** 12:00 PM–1:45 PM

**Micropulsed Laser Therapy Outcomes in the Treatment of Chronic Central Serous Chorioretinopathy Based on Leakage Pattern**

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**Purpose:** Report the functional and anatomic outcomes of a therapeutic possibility using a fovea selective 810-nm micropulsed laser therapy (MLT) technique for chronic idiopathic central serous chorioretinopathy (CSC) with diffuse or focal leakage.

**Methods:** Thirty-eight eyes from thirty-six patients with ICSC with symptom duration longer than 6 months with focal or juxtafoveal focal leakage (FL), or diffuse retinal pigment epithelial decompensation with multiple (ML) or indeterminate leakage (IL) involving or not the foveal area were treated. High-density focal and macular grids were delivered targeting the angiographic leakage points as well as the adjacent normal retina. Main outcomes were change in ETDRS best correct visual acuity and central macular thickness measured using optical coherence tomography. All patients were followed for at least 6-months. Pre and post-treatment fluorescein angiogram (FA) were accessed.

**Results:** Twenty eyes (53%) were classified as FL, 9 (23.5%) as ML and 9 (23.5%) as IL. All eyes but one (95%) with FL showed complete fluid resolution after the MLT applied just at the leakage point strengthened by more laser in a grid pattern. Eight eyes (28.5%) needed two treatment sessions. Ten eyes gained more than three lines in visual acuity. In ML group 78% of the eyes had complete fluid resolution. The eyes with IL were the most difficult to respond to treatment, 78% needing re-treatments (7 of 9 eyes). Two eyes received one re-treatment, three received two re-treatments and two eyes received four re-treatment. The visual acuity did not change in 5 eyes, increased one line in two eyes and increased two lines in two eyes with IL. No signs of retinal injury were detected even in that eyes receiving 5 treatment sessions.

**Conclusions:** MLT showed to be an effective therapeutic technique in Chronic CSC. IL have the worst outcome in response to MLT, similar to others therapeutic approaches, however re-treatments could be performed as necessary due to the absence of retinal damage, scarring, inflammation, and associated complications, enhancing the final outcomes in this challenging CSC subtype.

**Commercial Relationships:** Alessandro J. Dare, None; Renato Peroni, None; Fernando Paganelli, None; Leonardo C. Castro, None

**Program Number:** 6386 Poster Board Number: C0163
**Presentation Time:** 12:00 PM–1:45 PM

**Large choroidal blood vessel sign on optical coherence tomography images in acute central serous chorioretinopathy: locational relationship with angiographic findings.**

Sung Yong Park, Sang Jin Kim, Don-II Ham. Ophthalmology, Sung Kyun Kwan University, Seoul, Republic of Korea

**Purpose:** To evaluate possible association of large choroidal blood vessel changes observed on optical coherence tomography (OCT) images with pathogenesis of central serous chorioretinopathy (CSC), locational relationship between OCT findings and angiographic findings was investigated.

**Methods:** Clinical records of 27 patients with acute CSC who simultaneously underwent enhanced depth imaging (EDI) OCT and fluorescein angiography (FA) using Spectralis HRA+OCT (Heidelberg engineering, Germany) were retrospectively evaluated. 19 patients also underwent indocyanine green angiography (ICGA). The large choroidal blood vessel sign was defined as a round to oval choroidal structure abutting Bruch’s membrane with a diameter larger than 200 μm. Images of EDI OCT raster scan were analyzed for the location of large choroidal blood vessel sign and retinal pigment epithelial (RPE) abnormalities. Infrared (IR) images with position markers corresponding to the boundary of OCT lesions were manually overlaid on FA and ICGA images, and locational relationship was analyzed.

**Results:** Twenty-nine eyes of 27 patients with acute CSC were evaluated. The defined sign on OCT images was identified as a large choroidal blood vessel on ICGA images. Mean frequency of the sign and RPE abnormalities on EDI OCT images was 1.83 ± 1.17 and 1.76 ± 1.02 per eye, respectively. Twenty-seven eyes (93.1 %) had the sign, showing overlapped area with hyperfluorescent area on FA. Of 25 eyes with active leakage point on FA, 23 eyes (92.0 %) showed the defined sign at or closely adjacent to the leakage point and RPE abnormalities on OCT images. In addition, 79.3% (23/29) of the sign showed overlapped area with the area having choroidal vascular hyperpermeability on ICGA images.

**Conclusions:** Changes of large choroidal blood vessels observed on OCT images might be associated with pathogenesis of RPE and retinal abnormalities in acute CSC.

**Commercial Relationships:** Sung Yong Park, None; Sang Jin Kim, None; Don-II Ham, None

**Program Number:** 6387 Poster Board Number: C0164
**Presentation Time:** 12:00 PM–1:45 PM

**Prevalence of the large choroidal blood vessel sign on optical coherence tomography images in central serous chorioretinopathy.**

Don-II Ham1, Sung Min Kim1, Sang Jin Kim1, Yun-Mi Song2, Jooohon Sung1, Sung Yong Park1. 1Samsung Medical Center, Ophthalmal, Sungkyunkwan Univ Sch of Med, Seoul, Republic of Korea; 2Family medicine, Samsung Medical Center, Sungkyunkwan Univ Sch of Med, Seoul, Republic of Korea; 3Epidemiology and Institute of Environment and Health, School of Public Health, Seoul National University, Seoul, Republic of Korea; 4Genomic Medicine Institute (GMI), Medical Research Center, Seoul National University, Seoul, Republic of Korea

**Purpose:** To investigate the prevalence and clinical significance of the optical coherence tomography (OCT) sign of large choroidal blood vessels in eyes with central serous chorioretinopathy (CSC).

**Methods:** Clinical records of 84 patients with CSC and 84 healthy subjects who underwent EDI OCT were analyzed retrospectively. The large choroidal blood vessel sign was defined as a round to oval choroidal structure abutting Bruch’s membrane with a diameter larger than 200 m. Images of EDI OCT raster scan were analyzed for the location of large choroidal blood vessel sign and retinal pigment epithelial (RPE) abnormalities. Infrared (IR) images with position markers corresponding to the boundary of OCT lesions were manually overlaid on FA and ICGA images, and locational relationship was analyzed.

**Results:** Twenty-nine eyes of 27 patients with acute CSC were evaluated. The defined sign on OCT images was identified as a large choroidal blood vessel on ICGA images. Mean frequency of the sign and RPE abnormalities on EDI OCT images was 1.83 ± 1.17 and 1.76 ± 1.02 per eye, respectively. Twenty-seven eyes (93.1 %) had the sign, showing overlapped area with hyperfluorescent area on FA. Of 25 eyes with active leakage point on FA, 23 eyes (92.0 %) showed the defined sign at or closely adjacent to the leakage point and RPE abnormalities on OCT images. In addition, 79.3% (23/29) of the sign showed overlapped area with the area having choroidal vascular hyperpermeability on ICGA images.

**Conclusions:** Changes of large choroidal blood vessels observed on OCT images might be associated with pathogenesis of RPE and retinal abnormalities in acute CSC.

**Commercial Relationships:** Sung Yong Park, None; Sang Jin Kim, None; Don-II Ham, None

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than 200 μm on OCT images. Images of EDI OCT raster scan were analyzed for the presence of defined sign and accompanying retinal pigment epithelial (RPE) abnormalities.

**Results:** Ninety-two eyes with CSC and 76 unaffected fellow eyes of 84 patients with CSC and 168 eyes of 84 healthy subjects were evaluated. The defined sign were found in 96.9% of acute CSC eyes, and 89.1% of all CSC eyes. The defined sign were also observed with or without the vascular wall hyperreflectivity along the Bruch’s membrane. The hyperreflective sign was observed only in eyes with CSC (57.6%), and more frequently associated with acute than chronic and resolved CSC eyes (81.3%, 50%, and 15%, respectively; P<0.05). Although, the isoreflective sign was also observed more frequently in CSC eyes than in unaffected fellow eyes and healthy eyes (79.3%, 32.9%, and 12.5%, respectively), its prevalence did not differ significantly among CSC eyes with various clinical conditions (P>0.05). RPE abnormalities were observed in all OCT images in which the hyperreflective sign was observed.

**Conclusions:** The morphological sign of large choroidal blood vessel distinguished by means of EDI OCT raster scan could be helpful for the diagnosis and evaluation of CSC.

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**Obscuration of the inner choroidal layer in central serous chorioretinopathy**

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**Purpose:** To investigate appearance of the choroidal layer in the patients with central serous chorioretinopathy (CSC) using swept-source optical coherence tomography (OCT) and to analyze its relationship with other tomographic or angiographic findings.

**Methods:** Twenty-eight eyes of 27 cases underwent a set of radial scans centered on the fovea with swept-source OCT (DRI OCT-1, Topcon Inc., Tokyo). We assessed appearance in the choroidal layer, and focused on the finding that hyporeflective reflex extending from the outer choroidal layer obscured some parts of the inner layer which corresponds to Sattler layer and choriocapillaris. Moreover, we analyzed the relationship between the obscuration and serous retinal detachment (SRD), foveal choroidal thickness, and the ratio of hyper- to hyporeflective area (L/D ratio) in OCT. We also assessed the findings in fluorescein angiography (FA) and indocyanine-green angiography (ICGA).

**Results:** Fifteen and three of 28 eyes had been treated with photodynamic therapy (PDT) and laser photocoagulation, respectively. Inner choroidal obscuration was observed in 15 (54%) of 28 eyes. Comparing the cases with this finding and those without, 33% and 67% of the cases, respectively, had a history of PDT (P=0.008). A higher proportion of the cases with the obscuration showed SRD (69% vs 17%, P=0.008). Additionally, the cases with the finding revealed greater choroidal thickness (364 micrometer vs 295 micrometer beneath the fovea, P=0.03) and lower L/D ratio (P=0.03). Window defects (93%) in FA and hyperpermeability in ICGA (93%) were observed corresponding to the area with obscuration.

**Conclusions:** We found inner choroidal obscuration in CSC patients using swept-source OCT. The correlation with other findings suggests that inner choroidal obscuration may be associated with exudative changes in the choroid caused by CSC.