The effect of endophthalmitis on recurrence of macular edema in eyes receiving intravitreal anti-vascular endothelial growth factor.

Retina. 2021 Jul 1;41(7):1470-1477. doi: 10.1097/IAE.0000000000003050.
Uhr JH, Storey PP, Kuley B, Patel SN, Wibbelsman TD, Pancholy M, Spirn MJ.

Abstract

Purpose: Visual outcomes after postinjection endophthalmitis have been well-studied, but the effect of endophthalmitis on the underlying exudative disease process remains unclear. We investigate the need for continued anti-vascular endothelial growth factor injections after endophthalmitis.

Methods: Eyes that developed endophthalmitis after intravitreal injection of anti-vascular endothelial growth factor between January 1, 2016, and May 31, 2018, at a single academic retina practice were identified. Retrospective chart review was performed to determine 1) the proportion of eyes without recurrence of macular edema or subretinal fluid after endophthalmitis and 2) the proportion achieving a 12-week or greater interval between anti-vascular endothelial growth factor injections or exudation after endophthalmitis compared with internal controls before endophthalmitis.

Results: Of 50 eyes with endophthalmitis, seven (14.0%) had no fluid recurrence at a mean of 98.1 week. Of 43 eyes with recurrence, 48.0% achieved a >12-week recurrence-free interval after endophthalmitis (vs. 8.3% before endophthalmitis; $P < 0.0001$). Eyes with compared to those without choroidal neovascularization were more likely to achieve this interval (60.5% vs. 8.3%, respectively; $P = 0.002$).

Conclusion: Endophthalmitis after anti-vascular endothelial growth factor injection is associated with relative stability of the underlying exudation. Further research is necessary to elucidate the mechanism, which may be useful in developing strategies and targets for the treatment of exudative macular diseases.

Quantitative optical coherence tomography angiography parameter variations after treatment of macular neovascularization secondary to age-related macular degeneration.

Retina. 2021 Jul 1;41(7):1463-1469. doi: 10.1097/IAE.0000000000003065
Arrigo A, Aragona E, Bordato A, Amato A, Borghesan F, Bandello F, Parodi MB.

Abstract

Purpose: Macular neovascularization (MNV) secondary to age-related macular degeneration can be characterized by quantitative optical coherence tomography angiography. The aim of the study was to assess the evolution of quantitative optical coherence tomography angiography parameters after 1 year of antivascular endothelial growth factor injections.

Methods: Naive age-related macular degeneration-related MNV eyes were prospectively recruited to analyze optical coherence tomography and optical coherence tomography angiography parameters, including MNV vessel tortuosity (VT) and reflectivity, at baseline and at the end of the follow-up. Macular neovascularization eyes were categorized by a MNV VT cutoff, and quantitative parameter variations were documented after 1 year of treatment. We divided MNV eyes into Group 1 (MNV VT < 8.40) and Group 2 (MNV VT > 8.40).

Results: Thrity naive age-related macular degeneration-related MNV eyes (30 patients) were included. Our cohort included 18 Type 1 MNV and 12 Type 2 MNV lesions. Baseline central macular thickness (411 ± 85 μm) improved to 323 ± 54 μm at 1 year (P < 0.01). Only Group 1 MNV displayed significant visual improvement. Macular neovascularization VT values remained stable over the follow-up in both subgroups. Group 2 MNV eyes showed increased MNV

reflectivity and increased MNV area at the end of the follow-up. Quantitative retinal capillary plexa parameters were found to be worse in Group 2 MNV. Outer retinal atrophy occurred in 2 of the 18 eyes in MNV Group 1 (11%) and in 6 of the 12 eyes in MNV Group 2 (50%) after 1 year. Vessel density proved to be always worse in Group 2 than in Group 1.

Conclusion: Macular neovascularization VT provides information on the blood flow and identifies two subgroups with different final anatomical and visual outcomes, regardless of the treatment effect.

Two-Year Results of the Phase 3 Randomized Controlled Study of Abicipar in Neovascular Age-Related Macular Degeneration.

Ophthalmology. 2021 Jul;128(7):1027-1038. doi: 10.1016/j.ophtha.2020.11.017.
Khurana RN, Kunimoto D, Yoon YH, Wykoff CC, Chang A, Maturi RK, Agostini H, Souied E, Chow DR, Lotery AJ, Ohji M, Bandello F, Belfort R Jr, Li XY, Jiao J, Le G, Kim K, Schmidt W, Hashad Y; CEDAR and SEQUOIA Study Groups.

Abstract

Purpose: To report the 2-year efficacy and safety of abicipar every 8 weeks and quarterly (after initial doses) compared with monthly ranibizumab in patients with treatment-naïve neovascular age-related macular degeneration (nAMD).

Design: Two multicenter, randomized, phase 3 clinical trials with identical protocols (CEDAR and SEQUOIA). Analyses used pooled trial data.

Participants: The trials enrolled 1888 patients (1 eye/patient) with active choroidal neovascularization secondary to age-related macular degeneration and best-corrected visual acuity (BCVA) of 24 to 73 Early Treatment Diabetic Retinopathy Study letters.

Methods: At enrollment, patients were assigned to study eye treatment with abicipar 2 mg every 8 weeks after initial doses at baseline and weeks 4 and 8 (abicipar Q8, n = 630), abicipar 2 mg every 12 weeks after initial doses at baseline and weeks 4 and 12 (abicipar Q12, n = 628), or ranibizumab 0.5 mg every 4 weeks (ranibizumab Q4, n = 630).

Main outcome measures: Efficacy measures included stable vision (<15-letter loss in BCVA from baseline) and change from baseline in BCVA and central retinal thickness (CRT). Safety measures included adverse events (AEs).

Results: For patients who completed the study, efficacy of abicipar after initial doses was maintained through week 104. At week 104, the proportion of patients with stable vision was 93.0% (396/426), 89.8% (379/422), and 94.4% (470/498); mean change in BCVA from baseline was +7.8 letters, +6.1 letters, and +8.5 letters, and mean change in CRT from baseline was -147 µm, -146 µm, and -142 µm in the abicipar Q8 (14 injections), abicipar Q12 (10 injections), and ranibizumab Q4 (25 injections) groups, respectively. The overall incidence of intraocular inflammation (IOI) AEs was 15.4%, 15.3%, and 0.3% from baseline through week 52 and 16.2%, 17.6%, and 1.3% from baseline through week 104 in the abicipar Q8, abicipar Q12, and ranibizumab Q4 groups, respectively.

Conclusions: Two-year results show efficacy of abicipar Q8 and Q12 in nAMD. First onset of IOI events with abicipar was much reduced in the second year and comparable with ranibizumab (0.8% and 2.3% vs. 1.0%). The extended duration of effect of abicipar allows for quarterly dosing and reduced treatment burden.

Pentosan Polysulfate Maculopathy: Prevalence, Spectrum of Disease, and Choroidal Imaging Analysis Based on Prospective Screening.

Am J Ophthalmol. 2021 Jul;227:125-138. doi: 10.1016/j.ajo.2021.02.025.
Wang D, Velaga SB, Grondin C, Au A, Nittala M, Chhablani J, Vupparaboina KK, Gunnemann F, Jung J, Kim JH, Ip M, Sadda S, Sarraf D.

Abstract

Purpose: To describe the prevalence and spectrum of disease of pentosan polysulfate (PPS) maculopathy in a large multimodal retinal imaging study and to report the results of choroidal vascularity index (CVI) analysis.

Design: Prospective cohort study Methods: Of 741 patients prescribed PPS within a large university database, 100 (13.4%) with any consumption agreed to participate in a prospective screening investigation. Multimodal retinal imaging including near-infrared reflectance (NIR), fundus autofluorescence (FAF), and spectral domain optical coherence tomography (SD-OCT) was performed in all patients. Characteristic findings of affected patients were identified, and affected and unaffected cohorts were compared. CVI, defined as stromal choroidal area (SCA) divided by the total choroidal area, was analyzed.

Results: The prevalence of PPS maculopathy was 16%. NIR illustrated punctate hyperreflective lesions with early presentation. FAF illustrated a speckled macular network of hypo- and hyperautofluorescence colocalized with multifocal hyperreflective retinal pigment epithelial lesions on SD-OCT. Advanced cases demonstrated varying degrees of atrophy. The affected cohort exhibited significantly greater mean PPS therapy duration, mean daily dosage, and mean cumulative dosage (19.5±5.5 years, 433.9±137.6 mg, 3,103.1±1,402.2 g) compared with the unaffected cohort (7.1±6.6 years, 291.6±177.6 mg,

768.4±754.8 g). SCA was significantly lower and CVI was significantly greater in the affected vs the unaffected group.

Conclusions: This prospective cohort study identified a prevalence of PPS maculopathy of 15%-20% among PPS users who agreed to participate. A spectrum of findings may be observed with multimodal retinal imaging. Significant choroidal abnormalities associated with this characteristic maculopathy may provide surrogate markers of macular toxicity.

Optical Coherence Tomography Angiography Features in Post-COVID-19 Pneumonia Patients: A Pilot Study.

Am J Ophthalmol. 2021 Jul;227:182-190. doi: 10.1016/j.ajo.2021.03.015.
Cennamo G, Reibaldi M, Montorio D, D'Andrea L, Fallico M, Triassi M.

Abstract

Purpose: This study investigated changes in retinal vessel density in macular and papillary regions in post-SARS-CoV-2 pneumonia patients by means of optical coherence tomography angiography (OCTA).

Design: Prospective, observational, cohort study.

Methods: Forty eyes of 40 patients (mean age: 49.7 ± 12.6 years old) post-SARS-CoV-2 infection and 40 healthy subjects were enrolled in this study. COVID-19 patients had to be fully recovered from COVID-19 pneumonia and were evaluated 6 months after COVID-19 infection. The primary outcome resulted from OCTA studies of the following vascular structures: vessel density (VD) in the retinal superficial capillary plexus (SCP), deep capillary plexus (DCP), and radial peripapillary capillaries (RPC) compared to those of controls. Structural spectral domain (SD)-OCT parameters were also evaluated: ganglion cell complex (GCC) and retinal nerve fiber layer (RNFL).

Results: The patients showed a significant reduction in VD of the SCP in whole images and in the DCP in all sectors compared to those in healthy subjects (P <.05). COVID-19 patients featured a reduced VD of the RPC compared to that in controls (P <.001). No differences were found in the GCC, whereas the RNFL was reduced in the COVID-19 group compared to that in controls (P = .012). Significant correlations were found between the RNFL and VD of the SCP, DCP, RPC, and FAZ area in the COVID-19 group (P <.05).

Conclusions: OCTA showed retinal vascular changes in subjects fully recovered from COVID-19 pneumonia. These findings could be a consequence of a thrombotic microangiopathy that affected retinal structures as well as other systemic organs. OCTA could represent a valid, noninvasive biomarker of early vascular dysfunction after SARS-CoV-2 infection.

Ultra-wide-field scanning laser ophthalmoscopy and optical coherence tomography in FEVR: findings and its diagnostic ability.

Br J Ophthalmol. 2021 Jul;105(7):995-1001. doi: 10.1136/bjophthalmol-2020-316226.Zhang T, Wang Z, Sun L, Li S, Huang L, Liu C, Chen C, Luo X, Yu B, Ding X.

Abstract

Background/aims: To describe some novel vitreoretinal microstructural findings in patients with mild familial exudative vitreoretinopathy (FEVR) on ultra-wide-field scanning laser ophthalmoscopy (UWF-SLO) and UWF optical coherence tomography (UWF-OCT) and to evaluate their clinical significance.

Methods: A total of 32 patients and 32 healthy controls were studied. An additional independent 40 FEVR patients, 44 patients with non-FEVR retinopathies and 40 healthy controls participated in a diagnostic test to validate the abilities of novel findings in FEVR screening.

Results: A novel anatomic change, named Temporal Mid-Peripheral Vitreoretinal Interface Abnormality (TEMPVIA), was found on UWF-SLO in 88.3% of FEVR patients and in none of the healthy controls. The clinical significance of TEMPVIA was further validated by a diagnostic test in new independent cases, with satisfying sensitivity (91.5%) and specificity (98.8%) and Youden Index 0.90. In addition to foveal hypoplasia, some previously unrecognised, novel clinical changes in FEVR, for instance, retinoschisis, focal retinal thickening, sudden thinning of the retina and retinal ridge, were identified using UWF-OCT.

Conclusion: The results of this study have led to an update of the clinical spectrum of FEVR and have improved our understanding of its pathogenesis. TEMPVIA is therefore suggested to be a useful biomarker in the screening strategy for mild FEVR.

Parafoveal atrophy after human amniotic membrane graft for macular hole in patients with high myopia.

Br J Ophthalmol. 2021 Jul;105(7):1002-1010. doi: 10.1136/bjophthalmol-2019-315603.
Tsai DC, Huang YH, Chen SJ.

Abstract

Purpose: To report the surgical outcome and postoperative hypopigmented change around fovea among patients with high myopia who received human amniotic membrane (hAM) graft transplantation for macular hole (MH).

Method: This retrospective, interventional case series included 10 eyes of 10 consecutive patients (5 (50%) male) with high myopia (axial length over 26.5 mm) who received hAM graft to treat persisted or chronic MH with or without retinal detachment in two hospitals. Postoperative parafoveal atrophy was identified with colour fundus picture and structure optical coherent tomography. Baseline characteristics and short-term visual outcome were analysed.

Results: The preoperative mean (±SD) axial length and MH diameter were 29.9 (±1.8) mm and 881.8 (±438.5) µm, respectively. After hAM transplantation, seven (70%) eyes had complete MH closure and the mean best-corrected visual acuity (BCVA) improved from 1.26 (±0.48) logarithm of minimal angle of resolution (logMAR) before operation to 1.11 (±0.44) logMAR on the last visit (p=0.074). Patchy atrophy-like depigmentation developed around the MH lesion in four (40.0%) eyes as early as in the first month after surgery. None of them had visual worsening. In terms of demographics, axial length, MH size, ocular history, preoperative BCVA and postoperative BCVA, there was no significant difference between those with and without the parafoveal atrophy. No graft rejection and inflammation happened during the follow-up.

Conclusion: Parafovea atrophy, a rare complication in the conventional MH surgery, was observed in 40% of eyes with highly myopic MH after hAM graft transplantation. The pathogenesis and long-term consequence need further investigations.

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