Retina Roundup

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Timing of Peak Vision Gains in Patients with Neovascular Age-Related Macular Degeneration Treated with Ranibizumab

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ABSTRACT

Purpose: To investigate whether time to peak best-corrected visual acuity (BCVA) was predictive of magnitude of BCVA changes at study end in patients with neovascular age-related macular degeneration (nAMD) who received ranibizumab and assess whether patient baseline characteristics and on-study events were predictive of time to peak BCVA.

Design: Exploratory analysis of data from HARBOR (ClinicalTrials.gov identifier, NCT00891735).

Participants: Treatment-naïve patients 50 years of age or older with subfoveal nAMD.

Methods: Data by ranibizumab dose were pooled; data by dosing schedule (pro re nata [PRN] and monthly) were evaluated separately. Time to peak BCVA was the monthly evaluation at which the patient's greatest gain in Early Treatment Diabetic Retinopathy Study (ETDRS) letters from baseline was achieved. Early peakers achieved peak BCVA between day 7 and month 6; late peakers achieved peak BCVA between months 7 and 12, months 13 and 18, and months 19 and 24. Variables evaluated for effect of time to peak BCVA included baseline demographic and clinical characteristics, presence of persistent subretinal fluid

(SRF) or intraretinal fluid (IRF), and on-study events (atrophy status, fibrosis, retinal pigment epithelium tears).

Main outcome measures: Time to peak BCVA and its predictive value for magnitude of BCVA changes and BCVA at month 24 (study end).

Results: Most patients reached peak BCVA after more than 6 months of treatment: 64% in the PRN group (301/474) and 70% in the monthly groups (327/469). Thirty-six percent and 30% of patients, respectively, peaked early, and 64% and 70%, respectively, peaked late. At month 24, early peakers on average lost vision (PRN, -1.6 ETDRS letters; monthly, -1.9 ETDRS letters). By contrast, late peakers achieved significantly better vision gains from baseline (PRN, 8.5-17.7 ETDRS letters; monthly, 10.1-18.7 ETDRS letters). No differences were found in patient characteristics, persistent SRF or IRF, or on-study events to account for the observed different outcomes between early and late peaker

Conclusions: In most treatment-naïve patients with nAMD, vision gains were achieved at a slower rate (>6 months), and a slower response was associated with better vision outcomes after 24 months of ranibizumab. These findings suggest that continued treatment may result in greater vision improvements when consistent anti-vascular endothelial growth factor therapy is maintained over a longer period.

Two-Year Outcomes of Treat-and-Extend Intravitreal Aflibercept for Exudative Age-Related Macular Degeneration: A Prospective Study

Maruko I, Ogasawara M, Yamamoto A, Itagaki K, Hasegawa T, Arakawa H et al.

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ABSTRACT

Purpose: To report the 2-year outcomes of intravitreal aflibercept injections (IAIs) in Japanese patients with neovascular age-related macular degeneration (AMD) using a 1-month adjusted treat-and-extend (TAE) regimen.

Design: Multicenter, prospective, nonrandomized, interventional study.

Participants: Ninety-seven eyes of 97 patients with treatment-naive AMD were studied at 3 tertiary ophthalmological institutions.

Methods: The patients were treated with 3 consecutive monthly IAIs followed by the TAE regimen with a 1-month adjustment for a maximum of 3 months. Our TAE regimen allowed us to shorten and extend the treatment intervals even after a 3-month or 1-month treatment interval, or both, were reached. Best-corrected visual acuity (BCVA), central retinal thickness (CRT), and subfoveal choroidal thickness (SCT) were analyzed.

Main outcome measures: The mean changes in the BCVA, CRT, and SCT from the baseline to 2 years after initiating the treatment were determined. In addition, the number of injections also was determined.

Results: The mean BCVA significantly improved from 0.27 logarithm of the minimum angle of resolution (logMAR) units to 0.14 logMAR at 2 years (P <

0.01). The mean CRT decreased significantly from 307±132 µm to 202±76 µm at 2 years (P < 0.01). The mean SCT decreased significantly from 247±106 µm to 203±96 µm at 2 years (P < 0.01). Seventy eyes (72.2%) showed a dry macula at 2 years. The treatment interval at 2 years was 1 month in 20 eyes (20.6%), 2 months in 18 eyes (18.6%), and 3 months in 59 eyes (60.8%). In 49 (50.5%) eyes with a 3-month treatment interval immediately after the loading phase, no fluid was seen in 25 eyes (51.0%) for the duration of this study. The rest had switched to a more frequent scheme. The mean number of injections during the 2-year period was 13.0±3.9.

Conclusions: Intravitreal aflibercept injections with a 1-month adjusted TAE regimen significantly improved the BCVA and CRT with a reduced number of injections at 2 years. The treatment interval was adjusted to extend to 3 months in 60% and to shorten to 1 month in 20% of the eyes at 2 years.

Reliability of foveal avascular zone measurements in eyes with retinal vein occlusion using optical coherence tomography angiography

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ABSTRACT

Background:

To evaluate the reliability of foveal avascular zone (FAZ) area measurements using optical coherence tomography angiography (OCTA) in eyes with retinal vein occlusion (RVO).

Methods:

Twenty-five OCTA exams of patients with RVO were evaluated retrospectively. Three examiners performed manual measurements of the FAZ, and interrater and intrarater reliability were obtained.

Results:

The intraclass correlation coefficient (ICC) for interrater reliability for individual measurements was 0.62 (moderate) with a 95% confidence interval (CI) of 0.40 to 0.79 ($p < 0.001$). The ICC (95% CI) for intrarater reliability was 0.92 (0.82 to 0.96) for rater A, 0.96 (0.91 to 0.98) for B, and 0.88 (0.76 to 0.94) for C ($p < 0.001$). In all subanalyses including presence of edema and type of occlusion, interrater reliability was poor/moderate, and intrarater reliability was good/excellent.

Conclusion:

The FAZ varies significantly among eyes with RVO, so measurements obtained using OCTA should be analyzed with caution due to the moderate level of reliability among different examiners.

Keywords:

Foveal avascular zone; OCT; Retina; Retinal vein occlusion.

POTENTIAL UTILITY OF FOVEAL MORPHOLOGY IN PRETERM INFANTS MEASURED USING HAND-HELD OPTICAL COHERENCE TOMOGRAPHY IN RETINOPATHY OF PREMATURITY SCREENING

Anwar S, Nath M, Patel A, Lee H, Brown S, Gottlob I et al.

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ABSTRACT

Purpose:

To investigate dynamic foveal morphology with postmenstrual age, in preterm infants with and without retinopathy of prematurity using hand-held optical coherence tomography, adjusting for gestational age (GA) and birthweight (BW).

Methods:

Prospective mixed cross-sectional/longitudinal observational study of 87 participants (23-36 weeks GA; n = 30 with, n = 57 without retinopathy of prematurity) using hand-held optical coherence tomography images (n = 278) acquired between 31 weeks and 44 weeks postmenstrual age excluding treated retinopathy of prematurity. Measurements included foveal width, area, depth, central foveal thickness, maximum slope, and parafoveal retinal thickness at 1,000 µm nasal and temporal to the central fovea.

Results:

Retinopathy of prematurity was significantly correlated with only foveal width in either GA or BW adjusted statistical models. In contrast, severity of prematurity (GA, BW) correlated with foveal area ($P < 0.005$), depth ($P \leq 0.001$),

and slope ($P < 0.01$), although central foveal thickness ($P = 0.007$) and parafoveal retinal thickness ($P < 0.001$) correlated with GA, but not with BW.

Conclusion:

Foveal width is independent of GA and BW with potential in retinopathy of prematurity screening assessment using hand-held optical coherence tomography. Foveal morphology could be graded in prematurity during development, with possible implications for future management of preterm infants.

REGIONAL DENSITIES OF RETINAL CAPILLARIES AND RETINAL SENSITIVITIES AFTER MACULAR HOLE SURGERY WITH INTERNAL LIMITING MEMBRANE PEELING

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ABSTRACT

Purpose: To measure the vascular density (VD) of the retinal capillary plexuses by optical coherence tomography angiography (OCTA) after surgery for an idiopathic macular hole.

Methods: Retrospective, observational case series.Sixteen eyes of 16 patients with an idiopathic macular hole underwent vitrectomy with internal limiting membrane peeling. The VDs of the superficial capillary plexus (SCP) and deep capillary plexus (DCP) were determined by OCTA, and the retinal sensitivity (RS) and the inner retinal thickness (IRT) were measured before, and at 3, 6, and 12 months after the surgery. The VD, RS, and IRT were measured at the four parafoveal quadrants.

Results: The mean age was 68.9 years. The VDs of the SCP and DCP were significantly correlated with the RS and IRT at 12 months postoperatively (all $P < 0.001$ for both SCP and DCP). The VDs of the SCP and DCP were higher, the RS more sensitive, and the IRT thicker in the nasal than the temporal quadrant at 12 months ($P < 0.001$, <0.001, =0.009, <0.001, respectively).

Conclusion: The significant correlation between the VDs of the SCP and DCP and the RS and IRT may be due to the nasal shift of the posterior retina.

SURGICAL OUTCOMES OF MYOPIC TRACTION MACULOPATHY ACCORDING TO THE INTERNATIONAL PHOTOGRAPHIC CLASSIFICATION FOR MYOPIC MACULOPATHY

Lee KS, Lee JS, Koh HJ.

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ABSTRACT

Purpose: To compare treatment results of myopic traction maculopathy according to the international photographic classification for myopic maculopathy.

Methods: This was a retrospective, single-surgeon-based, observational case series of 35 consecutive eyes that underwent vitrectomy for myopic traction maculopathy. Eyes were classified into nonpathologic myopia (PM) (n = 15) and PM (n = 20) groups. Main outcome measures constituted best-corrected visual acuity (BCVA) and anatomical change.

Results: The mean follow-up was 32.03 ± 6.85 months. Axial length correlated with myopic maculopathy category (rho = 0.6836, P < 0.001). In the total group, BCVA improved from 20/61 to 20/36 (P = 0.001). In the subgroup, BCVA improved from 20/41 to 20/22 in the non-PM group (P = 0.002), whereas from 20/82 to 20/52 in the PM group (P = 0.048). Postoperative BCVA of the PM group was inferior to that of the non-PM group (P = 0.002) and the PM group was more likely to have postoperative BCVA <20/30 (odds ratio, 17.3; 95% CI, 2.6-325.0; P = 0.012). Two cases of macular hole retinal detachment occurred after surgery in the PM group.

Conclusion: Because there are limited benefits of vitrectomy in myopic traction maculopathy accompanied by PM, careful consideration would be necessary when determining surgery. Optical coherence tomography should not be used

alone in determining vitrectomy because myopic traction maculopathy can also have PM defined mainly by fundus photographs.

SEROUS MACULAR DETACHMENT IN BEST DISEASE: A Masquerade Syndrome

Zatreanu L, Freund KB, Leong BCS, Yu HG, Teke MY, Yzer S et al.

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ABSTRACT

Purpose: To describe the clinical and multimodal imaging findings of a series of cases of serous macular detachment (SMD) caused by Best disease (BD) masquerading as neovascular age-related macular degeneration or central serous chorioretinopathy that were inappropriately treated with intravitreal anti-vascular endothelial growth factor or laser therapy. This study will also present data to support age-related progressive choroidal thickening in BD patients, which may play a role in the development of SMD in this population.

Methods: Clinical examination and multimodal imaging findings, including color fundus photography, spectral-domain optical coherence tomography, fundus autofluorescence, fluorescein angiography, and optical coherence tomography-angiography, were reviewed and analyzed. Subfoveal choroidal thickness was also formally measured, and an age-related choroidal thickness analysis was performed and compared with a normal population.

Results: Twenty-six eyes of 13 patients (5 women) were included. Median age was 44 years. Nine patients presented with a history of SMD and subretinal fluid recalcitrant to various therapies, including intravitreal anti-vascular endothelial growth factor injections and photodynamic therapy. Best disease was subsequently diagnosed genetically in six patients and by detailed family history in seven. Mean logarithm of the minimum angle of resolution best-corrected visual acuity for all 26 eyes at last follow-up was +0.36 (Snellen equivalent of 20/46). Subfoveal choroidal thickness positively correlated with age for our cohort, increasing linearly at a rate of 25.6 µm per decade ($R = 0.64$; $P < 0.001$). Choroidal neovascularization was identified in four eyes on optical coherence

tomography angiography, but these eyes did not respond to anti-vascular endothelial growth factor treatment.

Conclusion: The diagnosis of BD should be considered in patients presenting with SMD and recalcitrant subretinal fluid masquerading as neovascular age-related macular degeneration or chronic central serous chorioretinopathy to avoid unnecessary treatment procedures. The positive correlation of subfoveal choroidal thickness with age in BD patients may be a factor in the pathogenesis and development of SMD in this population. Recognizing the multimodal imaging features of SMD associated with BD, described in detail in this study, will guide practitioners to the accurate diagnosis of BD and reduce the risk of unnecessary intraocular procedures with potential complications.

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