Retina Roundup

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1. Ophthalmology 2022 Apr;129(4):414-420. doi: 10.1016/j.ophtha.2021.11.014.

CATARACT SURGERY AND THE RISK OF DEVELOPING LATE AGE-RELATED MACULAR DEGENERATION: THE AGE-RELATED EYE DISEASE STUDY 2 REPORT NUMBER 27

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Purpose: To evaluate the risk of developing late age-related macular degeneration (AMD) after incident cataract surgery.

Design:A prospective cohort study within a randomized controlled clinical trial of oral supplementation for the treatment of AMD, the Age-Related Eye Disease Study 2(AREDS2).

Participants: AREDS2 participants aged 50 to 85 years with bilateral large drusen or unilateral late AMD.

Methods: In eyes free of cataract surgery and late AMD at baseline, 2 groups were compared for incident late AMD: (1) eyes that received cataract surgery after the baseline visit and before any evidence of late AMD and (2) eyes that remained phakic until study completion. Eyes with at least 2 years of follow-up after cataract surgery were included in the analysis.

Main outcome measures: Late AMD was defined as the presence of geographic atrophy or neovascular AMD detected on annual stereoscopic fundus photographs or as documented by medical records, including intravitreous injections of anti-VEGF.

Results: A total of 1767 eligible eyes (1195 participants) received cataract surgery; 1981 eyes (1524 participants) developed late AMD during a mean (range) follow-up of 9 (1-12) years. The Cox regression model showed no increased risk of developing late AMD after cataract surgery. Of the matched pairs, late AMD was identified in 408 eyes that received cataract surgery and in 429 phakic controls. The risk of late AMD after cataract surgery from the logistic regression model was not statistically significant.

Conclusions: Cataract surgery did not increase the risk of developing late AMD among AREDS2 participants with up to 10 years of follow-up. This study provides data for counseling AMD patients who might benefit from cataract surgery.

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2. Indian J Ophthalmol. 2022 Apr;70(4):1270-1277. doi: 10.4103/ijo.IJO_1484_21.

THE RETINAL VASCULAR GROWTH RATE IN BABIES WITH RETINOPATHY OF PREMATURITY COULD INDICATE TREATMENT NEED

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Purpose: To analyze the weekly rate of retinal vascular growth in treatment-naïve babies with various stages of retinopathy of prematurity (ROP) and validate if this could be a predictor of treatment need.

Methods: Retrospective review of medical charts and retinal images of babies with various stages of ROP. The images were enhanced using red-green image enhancement software. Using the length of the horizontal disc diameter (DD) of each eye, the vessel growth was measured from the disc margin up to the vessel tip in fixed quadrants. The rate of vessel growth was the ratio of vessel length to the number of weeks it took to reach this length. The babies were divided into treatment warranting ROP (group 1), low-risk pre-threshold (type II) ROP (group 2,), and no-ROP (group 3) for analysis. The "no-ROP" group acted as normal control. Group 1 was further subdivided into 1A (threshold ROP), IB (aggressive posterior ROP), 1C (hybrid ROP), and ID (high-risk pre-threshold ROP).

Results: Out of 436 eyes, groups 1, 2, and 3 had 238, 108, and 90 eyes, respectively. The mean rate of vascular outgrowth along with 95% confidence interval (CI) was 0.490 [0.487,0.520], 0.612 [0.599, 0.638], and 0.719 [0.703, 0.740] DD/week, respectively, for babies with "treatment warranting," "low risk pre-threshold" and "no ROP" groups, respectively. In our estimate, more than 80% of eyes with a vessel growth rate of 0.54 DD/week or less required treatment.

Conclusion: A rate of retinal vascular growth less than 0.54 DD/week can be used to determine treatment requirements in babies with ROP.

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3. Graefes Arch Clin Exp Ophthalmol. 2022 Mar 21. doi: 10.1007/s00417-022-05625-6

LASER AND ANTI-VASCULAR ENDOTHELIAL GROWTH FACTOR TREATMENT FOR DRUSENOID PIGMENT EPITHELIAL DETACHMENT IN AGE-RELATED MACULAR DEGENERATION: 24-MONTH OUTCOMES

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Purpose: After the 12-month interim safety analysis, we investigated the 24-month primary endpoint outcomes of drusenoid pigment epithelial detachment (dPED) after laser and intravitreal anti-VEGF treatment.

Methods: Twenty-one patients with treatment-naïve bilateral intermediate AMD with dPED and visual acuity ≤ 83 letters (Snellen 20/23) were enrolled. The subject eye received low-energy PASCAL® laser (532 nm) treatment, and the fellow eye was used as the control. Intravitreal injections were administered at 3-month intervals from baseline to 12 months. Treatment outcomes, safety and development of advanced AMD lesions were analyzed.

Results: The mean drusen area and dPED height were significantly reduced (17.3 ± 2.7% vs. 112.8 ± 3.1%, P < 0.001 and 11.8 ± 4.7% vs. 119.1 ± 4.6%, P < 0.001, respectively) and the mean BCVA improved (5.11 ± 1.35 vs. 0.83 ± 1.03 letters, P = 0.014) in the study eyes compared to those in the control eyes. Development of parafoveal iRORA (nGA) (67%, 12 of 18 eyes) and cRORA (GA) (22%, 4 of 18 eyes) was observed in the study eyes, whereas three cases of iRORA and cRORA in the control eyes (17%, 3 of 18 eyes; P = 0.010 and P = 0.791, respectively).

Conclusions: Laser and anti-VEGF treatment may be a potential treatment option for intermediate AMD with dPED. However, considering the relatively high rate of secondary iRORA and cRORA development, long-term follow-up is mandatory to clarify the safety and efficacy of this treatment.

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4. Acta Ophthalmol. 2022 Mar 23. doi: 10.1111/aos.15137

INCIDENCE, RISK FACTORS AND OUTCOMES OF SUBMACULAR HAEMORRHAGE WITH LOSS OF VISION IN NEOVASCULAR AGE-RELATED MACULAR DEGENERATION IN DAILY CLINICAL PRACTICE: DATA FROM THE FRB! REGISTRY

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Purpose: The main purpose of the study was to report the estimated incidence, cumulative rate, risk factors and outcomes of submacular haemorrhage (SMH) with loss of vision in neovascular age-related macular degeneration (nAMD) receiving intravitreal injections (IVT) of vascular endothelial growth factor (VEGF) inhibitor in routine clinical practice.

Methods: Retrospective analysis of treatment-naïve eyes receiving IVTs of VEGF inhibitors (ranibizumab, aflibercept or bevacizumab) for nAMD from 1 January 2010 to 31 December 2020 that were tracked the Fight Retinal Blindness! registry. Estimated incidence, cumulative rate and hazard ratios (HR) of SMH with loss of vision during treatment were measured using the Poisson regression, Kaplan-Meier survival curves and Cox proportional hazard models.

Results: We identified 7642 eyes (6425 patients) with a total of 135 095 IVT over a 10-year period. One hundred five eyes developed SMH with loss of vision with a rate of 1 per 1283 injections (0.08% 95% confidence interval [95% CI] [0.06; 0.09]). The estimated incidence [95% CI] was 4.6 [3.8; 5.7] SMH with loss of vision per year per 1000 treated patients during the study. The cumulative [95% CI] rate of SMH per patient did not increase significantly with each successive injection (p = 0.947). SMH cases had a mean VA drop of around 6 lines at diagnosis, which then improved moderately to a 4-line loss at 1 year.

Conclusions: Submacular haemorrhage (SMH) with loss of vision is an uncommon complication that can occur at any time in eyes treated for nAMD in routine clinical practice, with only limited recovery of vision 1 year later.

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5. Acta Ophthalmol. 2022 Apr 1. doi: 10.1111/aos.15149.

COMPARISON OF VISUAL OUTCOMES OF POLYPOIDAL CHOROIDAL VASCULOPATHY AND TYPICAL NEOVASCULAR AGE-RELATED MACULAR DEGENERATION-UP TO 10 YEARS OF FOLLOW-UP

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Purpose: To investigate long-term visual outcomes of patients with polypoidal choroidal vasculopathy (PCV) and typical neovascular age-related macular degeneration (nAMD) in the real-world setting.

Methods: Retrospective, multicenter, non-interventional consecutive cohort study. Two hundred eighty-five eyes of 261 patients with PCV and 902 eyes of 877 patients with typical nAMD, who could be followed up 1 year or longer from 2005 to 2018, were included. Mean changes in best-corrected visual acuity (BCVA) from baseline in the PCV and the typical nAMD groups were compared.

Results: Mean follow-up period of total patients was 4.3 ± 2.8 (1-10) years. Baseline BCVA was better in the PCV group than that in the typical nAMD group (0.59 ± 0.52 versus 0.79 ± 0.63 logMAR, $p < 0.001$). The mean changes in BCVA from baseline in the PCV and nAMD group were +2.1 and -0.1 letters at 1 year, -0.2 and -3.7 letters at 3 years, -3.9 and -10.5 letters at 5 years and - 8.7 and - 12.1 letters at 7 years, respectively. Before 2006, the initial BCVA was sustained for approximately 1 year in eyes with PCV and for less than half year in eyes with typical nAMD. However, after 2007, when anti-VEGF agents were available, the initial BCVA was sustained for 4 years in eyes with PCV, while it was sustained for 1 year in eyes with typical nAMD.

Conclusion: In the real-world, long-term BCVA deteriorated in both PCV and typical nAMD groups, but the PCV group showed better visual outcomes than the typical nAMD group.

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