Intravitreal ranibizumab therapy for diabetic macular edema in routine practice: two-year real-life data from a non-interventional, multicenter study in Germany.


Introduction: The prospective, non-interventional OCEAN study examined the use of intravitreal ranibizumab injections for the treatment of diabetic macular oedema (DME) in a real-world setting in Germany.

Methods: Adults with DME receiving ≥ 1 ranibizumab (0.5 mg) injections were recruited by 250 ophthalmologists. Best-corrected visual acuity (VA) testing, imaging and treatments were performed according to the investigators’ routine practice and documented over 24 months.

Results: The full analysis set included 1226 participants. Mean baseline VA was 60.6 [95% CI: 59.7; 61.5] Early Treatment Diabetic Retinopathy Study letters. VA improved by ≥ 15 letters in 21.5% and 23.5% of the participants at 12 months and 24 months, respectively. They received a mean number of 4.42 [95% CI: 4.30; 4.54] injections in the first year and 5.52 [95% CI: 5.32; 5.73] injections over 24 months, which was markedly lower than in clinical trials. Only 33.4% of the participants received an upload with four initial monthly injections as recommended by the German ophthalmologic societies. Time-to-event analyses that account for missing data inherent to a non-interventional study design demonstrated that participants receiving ≥ 7 injections in the first year had a faster response, but the duration of the response was shorter compared to the subgroups receiving 1-3 and 4-6 injections. Serious adverse events were reported for 143/1250 (11.4%) participants in the safety population.

Conclusion: Under-treatment is a major problem of DME anti-vascular endothelial growth factor therapy under real life conditions. Despite fewer injections given compared to randomised controlled trials with a consequently reduced overall mean visual gain, a profound functional improvement (≥ 15 letters) was achieved over 2 years in 23.5% of eyes with DME.

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Real-World results of switching treatment from ranibizumab to aflibercept in macular oedema secondary to branch retinal vein occlusion.

Konidaris VE, Tsoukis KT, Anzidei R, et al.

**Introduction**: To investigate treatment outcomes after switching from ranibizumab to aflibercept intravitreal injections in patients with macular oedema (MO) secondary to branch retinal vein occlusion (BRVO).

**Methods**: Eligible patients with refractory MO secondary to BRVO, post treatment with a minimum of three intravitreal injections of ranibizumab at 4-weekly intervals were recruited. Suboptimal or non-responders were defined as patients who had persistent intraretinal fluid (< 75% decrease from baseline) despite a minimum of three consecutive injections. These patients were switched to aflibercept injections on an as-needed basis. The primary study outcomes assessed trends in best-corrected distance visual acuity (BCVA) and central retinal thickness (CRT). To compare means of BCVA and CRT, a paired t test two-tailed with a level of significance set at 0.05 was used. Pearson correlation coefficient was also applied to demonstrate correlation. Participants were followed up for a period of 24 weeks after switching.

**Results**: Thirty-eight eyes of 38 patients were included in the study. Patients had an average of 8.37 ranibizumab intravitreal injections over a mean period of 12 months presenting suboptimal or no response. A significant decrease of mean CRT from 388.63 ± 93.4 μm to 290.29 ± 93.5 μm (p < 0.001) and an improvement in mean BCVA from logMAR 0.66 ± 0.38 to logMAR 0.57 ± 0.27 (p = 0.025) was achieved after an average of 2.27 aflibercept injections.

**Conclusions**: Given the spectrum of therapies available to date for the management of MO secondary to BRVO, aflibercept appears to be an effective treatment option in cases refractory to ranibizumab. This study based on a small cohort of patients indicates that satisfactory results on retinal anatomy and visual outcomes can be accomplished with a smaller number of injections. Larger-scale studies are needed to extrapolate these promising results.

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Association of disorganization of retinal inner layers with visual acuity response to anti-vascular endothelial growth factor therapy for macular edema secondary to retinal vein occlusion.

Babiuch AS, Han M, Conti FF, et al.

**Importance**: Disorganization of retinal inner layers (DRIL) has demonstrated significant correlations with visual acuity (VA) in center-involved diabetic macular edema. In patients with retinal vein occlusion (RVO) and secondary macular edema, DRIL may be a useful biomarker in determining VA outcomes.

**Objective**: To examine whether DRIL at baseline and after treatment is associated with VA in RVO.

**Design, Setting, and Participants**: A retrospective review of records of 147 patients 18 years or older with treatment-naive branch RVO (BRVO), central RVO (CRVO), or hemispheric RVO (HRVO), with a minimum of 12 months of follow-up, who presented to a tertiary ophthalmic center from December 1, 2010, to January 1, 2016, was conducted. Data collection continued through January 2017. Exclusion criteria included active confounding retinal or ocular disease, history of pars plana vitrectomy, or prior intravitreal injections. Two masked graders calculated a DRIL score based on DRIL presence in 3 predefined regions on spectral-domain optical coherence tomography at baseline, 6 months, and 12 months. A third masked grader was used for discrepancies.

**Exposures**: Anti-vascular endothelial growth factor (AVF) therapy (ranibizumab, aflibercept, or bevacizumab) determined by the treating physician.

**Main Outcomes and Measures**: The DRIL score at baseline for determining VA outcomes and correlation of VA with changes in DRIL burden in response to AVF therapy.

**Results**: In the 147 patients (mean [SD] age, 68.9 [13.1] years; 75 [51.0%] female), baseline DRIL was seen in 91 eyes (61.9%). In the BRVO group but not the CRVO group, baseline DRIL was associated with lower baseline Early Treatment Diabetic Retinopathy Study (ETDRS) score (score of 66.7 for no DRIL vs 54.6 for DRIL, P = .002). Absence of DRIL at
baseline in the CRVO/HRVO group correlated with greater VA gains at 6 months, adjusting for baseline VA (score change of 19.50 for no DRIL vs 12.72 for DRIL; P = .04). During 12 months, continued DRIL presence in BRVO was associated with less VA gain up to 6 months (score change of 6.2 for the DRIL increase group vs 18.6 for the DRIL decrease group vs 2.9 for the DRIL stable group; P = .02). Increasing DRIL scores in CRVO/HRVO were associated with reduced VA improvement at 6 months (score change of -0.12 for the DRIL increase group vs 16.90 for the DRIL decrease group vs 8.45 for the DRIL stable group; P = .002) and 12 months (score change of -1.91 for the DRIL increase group vs 17.83 for the DRIL decrease group vs 6.97 for the DRIL stable group; P < .001).

**Conclusions:** Baseline DRIL presence and DRIL burden changes with AVF therapy for macular edema secondary to RVO may be useful biomarkers of ETDRS score improvements.

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**Clin Ophthalmol. 2018 Sep 13;12:1789-1799. eCollection 2018.**

**Efficacy and safety of ranibizumab monotherapy versus ranibizumab in combination with verteporfin photodynamic therapy in patients with polypoidal choroidal vasculopathy: 12-month outcomes in the Japanese cohort of EVEREST II study.**


**Purpose:** To compare the efficacy and safety of ranibizumab 0.5 mg with or without verteporfin photodynamic therapy in Japanese patients with polypoidal choroidal vasculopathy over 12 months.

**Study design:** EVEREST II was a 24-month, Phase IV, multicenter, randomized, double-masked study in Asian patients with symptomatic macular polypoidal choroidal vasculopathy.

**Methods:** Of the 322 enrolled patients, 84 patients, including 46 patients who received ranibizumab + verteporfin photodynamic therapy (combination therapy arm) and 38 patients who received ranibizumab/sham PDT (monotherapy arm), were Japanese who were evaluated in this subanalysis. Mean change in best-corrected visual acuity (BCVA) and complete polyp regression at Month 12, ranibizumab treatment exposure, and safety over 12 months were assessed.

**Results:** Baseline demographics were well balanced between the arms. At Month 12, mean change in BCVA letter score was +8.5 with combination therapy versus +6.4 with monotherapy. Complete polyp regression was higher with combination therapy than with monotherapy at Month 12 (70.5% vs 27.3%). Over 12 months, patients in the combination arm received a median of 4.0 ranibizumab injections vs 7.0 in the monotherapy arm. Serious adverse events were generally low in both arms, and retinal hemorrhage, an adverse event, was reported in one patient (2.2%).

**Conclusion:** The results from the Japanese cohort were in agreement with the EVEREST II study. Combination therapy was effective in improving BCVA and achieving a higher rate of complete polyp regression with a lower number of ranibizumab injections than monotherapy. No new safety signals were reported, and safety events were comparable between both arms over 12 months.

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**OTHER TREATMENT & DIAGNOSIS**

**Eur J Ophthamol. 2018 Oct 3;1120672118803831. [Epub ahead of print]**

**The efficacy of "IOL-Vip Revolution" telescopic intraocular lens in age-related macular degeneration cases with senile cataract.**

Dag MY, Afrashi F, Nalcaci S, Mentes J, Akkin C.

**Purpose:** To evaluate the efficacy of the IOL-Vip Revolution telescopic intraocular lens in age-related macular degeneration cases with senile cataract.
Methods: A total of 13 eyes of 12 age-related macular degeneration patients with senile cataract were enrolled. Selection of the patients was done by means of a low vision diagnostic and rehabilitative program (IOL-Vip software) that evaluates residual visual function. After standard phacoemulsification surgery, the incision site was enlarged and the IOL-Vip Revolution system was implanted in the capsular bag. The outcome measures were best corrected visual acuity, contrast sensitivity, anterior chamber depth, endothelial cell density, central corneal thickness, and quality-of-life questionnaire.

Results: The mean age of the subjects was 72.3 ± 8.5 years. The mean positive power of the intraocular lens was 59 ± 2 D and the negative intraocular lens power was standard (-46 D). Pre- and postoperative best corrected visual acuity were 1.08 ± 0.14 and 0.81 ± 0.16 logMAR in the operated eye and 1.13 ± 0.36 and 1.01 ± 0.40 logMAR in the unoperated eye, respectively. The best corrected visual acuity was increased significantly in both operated and unoperated eyes (p = 0.005 and 0.021, respectively). Quality of life and anterior chamber depth increased significantly (p = 0.018 and 0.008, respectively), while endothelial cell density decreased (p = 0.002). No significant differences were detected in central corneal thickness or contrast sensitivity (p = 0.133 and 0.684, respectively).

Conclusion: The results showed that IOL-Vip Revolution telescopic intraocular lens is a promising treatment option in age-related macular degeneration patients. The rehabilitation program may have an important role in the restored clinical results, which also provided visual improvement in the unoperated eyes.

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Morphological changes in the diseased retina on a healthy choroid-retinal pigment epithelial complex after full macular translocation for exudative age-related macular degeneration.


Purpose: To describe the change in the retinal morphology after full macular translocation (FMT) for exudative age-related macular degeneration (AMD) and identify predictive factors for the visual outcome.

Methods: All patients who underwent FMT from December 2008 through July 2013 were selected. Exclusion criteria were FMT for other disease than AMD, age <60 years, <12 months of follow-up or no available images. Spectral domain optical coherence tomography, fundus autofluorescence, fluorangiography and indocyanine green angiography were evaluated.

Results: In total, 51 patients were included with a mean follow-up of 30 months. The presence of the external limiting membrane (ELM) was a significant predictor for a favourable visual outcome 1 year after FMT (OR = -0.30). Other significant predictive factors were the absence of intraretinal fluid (OR = 0.28) and the mixed choroidal neovascularization type (OR = -0.47), whereas nonresponders (OR = 0.41) and fibrotic lesions (OR = 0.35) were less likely to have a good visual function after surgery.

Conclusion: Full macular translocation (FMT), that permits to relocate the diseased macula onto an area of unaffected retinal pigment epithelial and choroid, can restore the anatomy and visual function in some patients with AMD when the outer retina layers are not irreversibly damaged. The presence of the ELM seems to be the most reliable factor in predicting the functional outcome.

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EPIDEMIOLOGY

The association between complement factor H rs1061170 polymorphism and age-related macular degeneration: a comprehensive meta-analysis stratified by stage of disease and ethnicity.

Maugeri A, Barchitta M, Agodi A.

**Purpose:** The strength of association between complement factor H (CFH) rs1061170 polymorphism and age-related macular degeneration (AMD) differs between AMD subtypes and ethnicities. The main aim was to provide a systematic review and an updated meta-analysis stratified by stage of disease and ethnicity.

**Methods:** A literature search in the PubMed-Medline, EMBASE and Web of Science databases was conducted to identify epidemiological studies, published before September 2017, that included at least two comparison groups (a control group with no signs of AMD and a case group of AMD patients). Genotype distribution, phenotype of the cases, ethnicity, mean age and gender ratio were collected. Odds ratios (ORs) and 95% CIs were estimated under the allelic, homozygous and heterozygous models. Sensitivity and subgroup analyses, by AMD subtype and ethnicity, were performed.

**Results:** The meta-analysis included data of 27,418 AMD patients and 32,843 controls from 76 studies. In Caucasians, the rs1061170 showed a significant association with early AMD (OR: 1.44; 95% CI 1.27-1.63), dry AMD (OR: 2.90; 95% CI 1.89-4.47) and wet AMD (OR: 2.46; 95% CI 2.15-2.83), under an allelic model. In Asians, the rs1061170 showed a significant association with advanced AMD (OR: 2.09; 95% CI 1.67-2.60), especially wet AMD (OR: 2.24; 95% CI 1.81-2.77).

**Conclusions:** Our work provides a more comprehensive meta-analysis of studies investigating the effect of the CFH rs1061170 polymorphism on AMD risk. These findings not only improve the assessment of disease risk associated with the polymorphism, but also constitute a scientific background to be translated into clinical practice for AMD prevention.

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Prevalence of subclinical CNV and choriocapillaris nonperfusion in fellow eyes of unilateral exudative AMD on OCT angiography.

Treister AD, Nesper PL, Fayad AE, et al.

**Purpose:** To determine the prevalence of subclinical choroidal neovascularization (CNV) in fellow eyes of patients with unilateral exudative age-related macular degeneration (AMD) using optical coherence tomography angiography (OCTA) and to quantify choriocapillaris nonperfusion adjacent to CNV.

**Methods:** We retrospectively reviewed all patients with AMD who underwent OCTA and identified eyes with unilateral exudative AMD. We determined the presence of subclinical CNV on custom en face macular slabs of the outer retina and choriocapillaris and confirmed on cross-sectional scans. Two graders quantified the percent choriocapillaris area of nonperfusion (PCAN) in the entire choriocapillaris slab as well as in the "halo" zone (200 μm) surrounding subclinical and exudative CNV lesions.

**Results:** Of 140 AMD patients who underwent OCTA, 34 had unilateral exudative AMD, with five of the 34 fellow eyes (14.7%) having subclinical CNV. Compared with PCAN in the entire slab (10.333 ± 4.288%), we found that "halo" PCAN, surrounding CNV, was significantly higher (13.045 ± 5.809%; P < 0.001). Further, there was a trend for higher PCAN in exudative CNV eyes (15.267 ± 7.230%) compared with their fellow subclinical CNV eyes (10.823 ± 3.365%, P = 0.115).

**Conclusions:** There is a notable prevalence of subclinical CNV in fellow eyes with unilateral exudative CNV, and significantly greater choriocapillaris nonperfusion adjacent to all CNV lesions. We identified a trend for increased choriocapillaris nonperfusion in exudative AMD eyes as compared with their fellow subclinical CNV eyes, which deserves further study.

**Translational Relevance:** OCTA can be useful in clinical practice to detect subclinical CNV and study
choriocapillaris dysfunction.


**Association analysis of genetic polymorphisms and expression levels of selected genes involved in extracellular matrix turnover and angiogenesis with the risk of age-related macular degeneration.**

Oszajca K, Szemraj M, Szemraj J, Jurowski P.

**Background:** Age-related macular degeneration is a progressive eye disease affecting the macula and causing acute visual loss particularly in elder people. The aim of the study was an attempt to discern an influence of expression levels and functional genetic polymorphisms of selected genes related to the extracellular matrix turnover or neovascularization on age-related macular degeneration occurrence and progression.

**Methods:** We conducted a case-control study of 200 polish patients with recognized age-related macular degeneration (dry and wet) and compared the results with those obtained from matched 100 healthy control subjects. TaqMan Genotyping Assays were employed to examine the following single nucleotide polymorphisms: matrix metalloproteinase (MMP)-2 -735C/T, MMP-7 -181A/G, MMP-9 -1702T/A, and -1562C/T; tissue inhibitors of metalloproteinase (TIMP)-2 -418G/C; vascular endothelial growth factor (VEGF) +405 G/C and +936 C/T, VEGFR-2 +1719 T/A and -271 G/A. Real-time polymerase chain reaction was assessed to determine the mRNA quantity. Serum levels of proteins were measured using enzyme-linked immunosorbent assay.

**Results:** The single nucleotide polymorphism genotyping showed that TT genotype for MMP-9 -1702T/A and CC genotype for VEGF +936C/T increase markedly the risk of age-related macular degeneration but do not influence on its progression. Additionally, the possible protective effect of CC genetic variant in MMP-9 -1562C/T polymorphism against progression of age-related macular degeneration was observed. We also found significant differences in systemic expression levels of MMP-2, -7, -9, TIMP-2, vascular endothelial growth factor, VEGFR-2, and pigment epithelium-derived factor between studied group. The research demonstrated evident differences in serum levels of MMP-2, -7, -9, TIMP-2, vascular endothelial growth factor, and pigment epithelium-derived factor between wet and dry age-related macular degeneration patients.

**Conclusion:** We can conclude that disturbances in angiogenic homeostasis and processes of extracellular matrix turnover occurring in age-related macular degeneration-affected ocular tissues may be reflected in changes in systemic expression levels of the investigated genes.

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**PATHOGENESIS**


**Plasma markers of chronic low-grade inflammation in polypoidal choroidal vasculopathy and neovascular age-related macular degeneration.**


**Purpose:** Ageing is the strongest predictor of neovascular age-related macular degeneration (AMD), where neuroinflammation is known to play a major role. Less is known about polypoidal choroidal vasculopathy (PCV), which is an important differential diagnosis to neovascular AMD. Here, we report plasma markers of inflammation with age (inflammaging) in patients with PCV, patients with neovascular AMD and a healthy age-matched control group.

**Methods:** We isolated plasma from fresh venous blood obtained from participants (n = 90) with either PCV, neovascular AMD, or healthy maculae. Interleukin(IL)-1β, IL-6, IL-8, IL-10 and tumour necrosis factor receptor 2
(TNF-R2) were measured using U-PLEX Human Assays. Routine plasma C-reactive protein (CRP) was measured using Dimension Vista 1500.

**Results:** Patients with PCV had plasma levels of IL-1β, IL-6, IL-8, IL-10 and TNF-R2 similar to that in healthy controls. Patients with neovascular AMD had significantly higher plasma IL-1β, IL-6 and IL-10 than healthy controls, whereas no significant differences were observed for plasma IL-8 and TNF-R2. Differences between plasma IL-1β, IL-6 and IL-10 possessed a positive but weak ability in discriminating neovascular AMD from PCV. Both patients with PCV and patients with neovascular AMD had significantly higher levels of routine plasma CRP.

**Conclusion:** Patients with PCV differ from patients with neovascular AMD in terms of plasma inflamming profile. Apart from increased CRP, no signs of inflamming were observed in patients with PCV. In patients with neovascular AMD, we find a specific angiogenesis-twisted inflamming profile.

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**Imbalances in tissue inhibitors of metalloproteinases differentiate choroidal neovascularization from geographic atrophy.**

Krogh Nielsen M, Subhi Y, Rue Molbech C, et al.

**Purpose:** Tissue inhibitor of metalloproteinase (TIMP) is known to play a role in age-related macular degeneration (AMD). We wished to investigate alterations in different late stages of AMD: neovascular AMD and geographic atrophy (GA).

**Methods:** This was a prospective case-control study. A total of 125 participants were included consecutively during a period of 18 months. We included 46 patients with neovascular AMD, 46 patients with GA without any sign of choroidal neovascularization in either eye, and 33 healthy aged controls. Patients with immune-affecting disorders were not included. Commercial immunoassay kits were used to quantify levels of TIMP-1, TIMP-3, MMP-2 and MMP-9 in blood plasma.

**Results:** We found that patients with neovascular AMD had lower plasma concentration of TIMP-3 (p = 0.028) than healthy controls. Patients with GA had higher plasma levels of TIMP-1 (p < 0.001) and MMP-9 (p = 0.022) compared to healthy controls. Also, we found that TIMP-1 levels in patients with GA increased with age (Spearman's rho = 0.04, p = 0.006).

**Conclusion:** Matrix metalloproteinases (MMPs) and TIMPs, which are known to be involved in age-related changes in Bruch's membrane, are significantly altered systemically, suggesting the presence of an imbalance in the homeostasis of the extracellular matrix. These imbalances may explain differences in the clinical manifestation of late AMD.

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**Bioactive lipids and pathological retinal angiogenesis.**

Elmasry K, Ibrahim AS, Abdulmoneim S, Al-Shabrawey M.

**Abstract:** Angiogenesis, disruption of the retinal barrier, leukocyte-adhesion, and oedema are cardinal signs of proliferative retinopathies that are associated with vision loss. Therefore, identifying factors that regulate these vascular dysfunctions is critical to target pathological angiogenesis. Given the conflicting role of bioactive lipids reported in the current literature, the goal of this review is to provide the reader a clear road map of what has been accomplished so far in the field with specific focus on the role of polyunsaturated fatty acids (PUFAs)-derived metabolites in proliferative retinopathies. This necessarily entails a description of different retina cells, blood retina barriers, and the role of (PUFAs)-derived metabolites in diabetic retinopathy, retinopathy of prematurity, and age related macular degeneration as the most common types of proliferative retinopathies.
CASE REPORTS


New features in MEK retinopathy.
Tyagi P, Santiago C.

Background: The use of molecularly targeted therapy is becoming widespread in oncology. These agents cause tumour-specific genetic alterations in signal transduction pathways, hence less generalised toxicity. Dabrafenib, a BRAF inhibitor and Trametinib, a MEK inhibitor are two molecularly targeted agents recently approved for treatment of advanced, unreseetable melanomas. MEK retinopathy is a recently introduced term describing retinal toxicity secondary to MEK inhibitors.

Case Presentation: A 71-year-old man presented with 'circular, green patches' in his central vision for 2 weeks. He had multiple relapsed stage IV BRAF gene mutant malignant melanoma. He was on treatment with Dabrafenib (Tafinlar) for 7 months and Trametinib (Mekinist) for 4 months respectively. The fundus looked normal. The OCT scan showed bilateral symmetrical cystoid macular edema, intraretinal and subretinal fluid, thickening of ellipsoid zone and subretinal granular deposits. The symptoms resolved with temporary cessation of chemotherapy but OCT signs persisted.

Conclusion: This case report identifies two new remarkable features of MEK retinopathy as thickening of ellipsoid zone and 'starry sky' pattern of distribution of subretinal granular deposits. These changes signify photoreceptors/ RPE toxicity and dysfunction. The subretinal granular deposits showed increased autofluorescence suggested abnormal lipofuscin clearance due to RPE dysfunction. The molecularly targeted therapy has revolutionized the cancer treatment and increased the survival rate. These agents are relatively new and recently approved for clinical use and most of them are associated with ocular toxicities. Awareness of ocular symptoms, side-effect profile of drugs, monitoring regime and liaison between oncologist and eye care professional with ocular imaging is key to early diagnosis and management of ocular adverse events.

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Documentation of a new choroidal nevus.
Parikh R, Gal-Or O, Sakurada Y, Leong B, Freund KB.

Purpose: To describe the occurrence of an acquired choroidal nevus in a 73-year-old white man.

Methods: Case report.

Results: A 73-year-old white man was referred for an evaluation and treatment of macular changes in his left eye consistent with pachychoroid neovasculopathy. Baseline funduscopic examination and color fundus photographs showed two small peripheral choroidal nevi in the right eye and a single small choroidal nevus in the far temporal macula of the left eye. Treatment with intravitreal aflibercept was initiated in the left eye on a treat-and-extend dosing regimen. Approximately 1 year later, a new pigmented choroidal lesion was detected in the left macula in an area where previous high-resolution color fundus photographs had shown no abnormal pigmentation. Swept-source optical coherence tomography of the new pigmented lesion showed flat hyperreflectivity within the inner choroid consistent with a small choroidal nevus. The patient was referred to his internist who found no evidence of an occult malignancy. Over the course of more than 4 additional years of continuous follow-up, the new choroidal nevus remained stable, no new fundus abnormalities were detected in either eye, and the patient remained medically stable.

Conclusion: To the best of our knowledge, this is the first documented case of a new choroidal nevus. Multimodal
imaging performed before lesion detection and over the ensuing 4 years showed its stability, thus allowing for the conclusion that it was a benign choroidal nevus rather than a neoplastic or paraneoplastic process.

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*Int Med Case Rep J. 2018 Sep 18;11:229-231. eCollection 2018.*

**Intravitreal aflibercept for choroidal neovascularization secondary to angioid streaks in a non-responder to intravitreal ranibizumab.**

Makri OE, Tsapardoni FN, Plotas P, Pallikari A, Georgakopoulos CD.

**Purpose:** To report the 12-month outcomes of a patient switching from intravitreal ranibizumab to aflibercept for choroidal neovascularization (CNV) associated with angioid streaks (AS).

**Results:** A 42-year-old Caucasian female with CNV associated with AS underwent intensive treatment with ranibizumab without significant functional or anatomic change. Treatment was then switched to aflibercept and the patient received the proposed age-related macular degeneration treatment regimen. After 3 loading doses of aflibercept, best-corrected visual acuity (BCVA) improved from 3/10 to 6/10, while optical coherence tomography (OCT) demonstrated resolution of the subretinal fluid with a reduction of the intraretinal fluid. After 12 months and 7 intravitreal injections of aflibercept, BCVA returned to 3/10, while OCT had demonstrated further morphologic improvement.

**Conclusion:** Our case shows that aflibercept may be an alternative treatment for advanced cases of CNV associated with AS that respond insufficiently to ranibizumab injections. Prospective studies are required to further evaluate the effect of aflibercept and to propose a standardized treatment protocol for this entity.

PMID: 30271222 PMCID: PMC6149836 DOI: 10.2147/IMCRJ.S166473