129

Medical Retina

Bilateral asymptomatic type III retinal astrocytic hamartomas in a 11-year-old male with Tuberous Sclerosis Complex

R.R. Portilla Blanco[1], A. Hernaiz Cereceda[2], N.M. Gajate Paniagua[2], A. Sánchez Ramón[2], E. Pérez-Salvador García[2], E. Merino García[3]
[1]*Ophthalmology, Hospital Universitario de León, Spain*
[2]*Ophthalmology, Hospital Universitario de Burgos, Spain*
[3]*Nursing, Hospital Universitario de Burgos, Spain*

Purpose

To report a pediatric clinical case of bilateral type 3 retinal astrocytic hamartomas (RAHs) associated with tuberous sclerosis complex (TSC).

Method

Medical record review.

Results

An asymptomatic 11-year-old male was referred to our hospital by an optometrist after detecting “retinal spots”, visual acuity was 6/6 in both eyes. At Fundoscopy/retinography, there was a flat, grayish tumor of 1.5 disc diameter with a central “mulberry-shaped” calcification adjacent to superior temporal vascular arcade (TVA) in right eye and a smaller one at the inferior TVA of left eye with similar characteristics. Autofluorescence showed hyperfluorescence due to calcification in the lesions.

At OCT, tumors are located in the retinal nerve fiber layer, with a hyperreflective dome-shaped thickening at the inner retina, with optically empty spaces representing intralesional cavitation. Angio-OCT showed a dense vascular network within the tumors, with flow voids corresponding to areas of cavitation. Findings consistent with bilateral RAHs type III by OCT.

Other findings were facial angiofibromas, one angiomyolipoma at right kidney and a cortical tuber and subependymal nodules on brain magnetic resonance imaging. A definite diagnosis of tuberous sclerosis complex (TSC) was established by having 2 major criteria with a negative genetic study.

Conclusions

HAR is a benign tumor of the retina composed of glial cells, present in 1/3 to 1/2 of patients with TSC and 1/3 will have bilateral or multiple tumors. Multimodal imaging in HAR is essential for diagnosis, classification and detecting complications. TSC is characterized by benign tumors affecting different organs, therefore, these patients require multidisciplinary follow-up and management.

133

Medical Retina

Optimizing Prompt Engineering Strategies for Diabetic Retinopathy Screening with ChatGPT-4 Omni

Sai Samayamanthula[1], Nitin Chetla[1], Joseph Chang[2], Arnold Leigh[3], Sinan Akosman[3], Mihir Tandon[4], Michael Cusick[5]
[1]*University of Virginia School of Medicine, United States*
[2]*Universitat Passau, Germany*
[3]*George Washington University School of Medicine and Health Sciences, United States*
[4]*Albany Medical College, United States*
[5]*Ophthalmology, University of Virginia School of Medicine, United States*

Purpose: ChatGPT-4 Omni (GPT-4o), the latest version of OpenAI's ChatGPT model, performs complex tasks with advanced visual capabilities, offering promising applications in ophthalmology diagnostics. Prompt engineering, a method of structuring queries to improve AI model outputs, has emerged as a tool for guiding general-purpose AI models in specialized tasks. This study investigates how different prompt engineering strategies affect GPT-4o's performance in classifying diabetic retinopathy (DR) from color fundus photographs (CFPs).

Methods: Using the Kaggle EyePACS dataset of 2,500 fundus images graded from no DR (0) to proliferative DR (4), we tested four prompt strategies: a Step 1 exam simulation, a clinical setting prompt, an ophthalmologist role-playing scenario, and binary prompts comparing DR severity stages. Results were evaluated using confusion matrices and metrics such as accuracy, precision, sensitivity, specificity, and F1 scores.

Results: GPT-4o exhibited a strong bias toward predicting no DR, resulting in high false-negative rates for early DR stages (Level 1 and Level 2) across all prompts. Prompt 1 achieved the highest accuracy for proliferative DR (84%) with specificity (96.4%) but low sensitivity (34.6%) for earlier stages. Prompt 3, the role-playing scenario, reached the highest specificity (98.5%) for Level 4 but lower accuracy (82.7%). Binary prompts (Prompt 4 series) improved sensitivity and F1 scores for severe DR by simplifying classifications but failed to improve multi-stage differentiation.

Conclusions: While GPT-4o shows promise in detecting advanced DR stages, its limited sensitivity for early DR underscores the need for refined prompt strategies. Future work should enhance early differentiation to improve diagnostic accuracy.

146

Medical Retina

Progressive Retinal Degeneration and Juvenile Nephronophthisis in a Patient with Autosomal Recessive Ciliopathy: A Case Report

Jakob Pericak[1,2], Eric Chin[3,4], David Almeida[1,2]
[1]*Erie Retina Research, Erie, PA, USA*
[2]*The Centers for Advanced Surgical Exploration (CASEx, Erie, PA, USA*
[3]*Retina Consultants of Southern California, Redlands, CA, USA*
[4]*Loma Linda Eye Institute, Loma Linda, CA, USA*

Purpose

Inherited retinal diseases (IRDs), particularly ciliopathies, can cause irreversible vision loss and often involve systemic complications such as nephronophthisis. This report aims to detail the role of targeted nutritional strategies in the treatment of a 30-year-old male with autosomal recessive retinitis pigmentosa (ARRP) and juvenile nephronophthisis, as confirmed by genetic analyses.

Methods

Comprehensive ocular examinations included fundus evaluation and optical coherence tomography to document retinal changes. Genetic testing identified pathogenic variants in CEP83, PCARE, and VPS13B, confirming ARRP. Nutritional interventions focused on supplements such as omega-3 fatty acids and antioxidants, along with renal-specific dietary measures for end-stage renal disease (ESRD). Clinical follow-up assessed retinal stability and overall patient well-being.

Results

The patient demonstrated stable retinal anatomy without rapid progression, indicating potential benefits from the nutritional measures. Improved management of ESRD was linked to tailored dietary modifications and blood pressure regulation. Although evidence for slowing retinal degeneration through supplements remains limited, these strategies helped address oxidative stress and systemic concerns. No family history of ocular or genetic disorders was noted.

Conclusions

This case highlights the feasibility of combining nutritional strategies with standard treatments in patients with ciliopathies. By addressing both ocular health and systemic complications, a more holistic patient care model may emerge. While additional research is necessary to confirm long-term benefits, the observed stabilization of retinal findings supports further exploration of such interventions. Greater adoption of nutritional guidelines within clinical practice could ultimately improve outcomes for individuals with inherited retinal diseases and coexisting systemic involvement.

FINANCIAL DISCLOSURE: YES

151

Medical Retina

Optimal therapeutic treatment choices for Idiopathic Retinal Vasculitis, Aneurysms, and Neuroretinitis (IRVAN syndrome)

M. Mavija[1,2], B. Markic[1,2], B. Topic[1,2], M. Tepic Popovic[1,2], S. Burgic[1,2]
[1]*Ophthalmology Department, University of Banja Luka, Medical faculty, Bosnia and Herzegovina*
[2]*University Eye Clinic, University Clinical Center of the Republic of Srpska, Bosnia and Herzegovina*

Aims / Purpose:

Idiopathic Retinal Vasculitis, Aneurisms, and Neuroretinitis (IRVAN syndrome) is a rare retinal disorder that requires multimodal approach in treatment of this challenging clinical entity.

Methods:

We report two cases (four eyes) of IRVAN syndrome.

Results:

Here we present two clinical cases (four eyes) of young patients with IRVAN syndrome who were treated in our clinic during current year. The first patient was 39 years old man with IRVAN syndrome stage 2 for right eye (RE) and stage 3 for left eye (LE). The second patient was 26 years old woman with stage 3 for RE and stage 4 for LE. Treatment approach was based on IRVAN syndrome staging.

All eyes were treated with extensive pan retinal laser photocoagulation. Three eyes received intravitreal bevacizumab injection for peripheral retinal and optic disc neovascularisation. Two eyes received intravitreal dexamethason implant for macular oedema. One eye required vitrectomy due to perisistant intravitreal hemorrhage. The visual outcomes varied. The male patient maintained good visual outcomes (Snellen: right eye 6/6; left eye 6/9,5). The female patient had poorer visual outcomes due to ischemic maculopathy (Snellen: right eye 6/12; left eye 6/24) while pertaining stabile peripheral retinal findings.

Conclusions:

Treatment of IRVAN syndrome is challenging. It requires individualized approach and multimodal treatment based on retinal findings and disease staging in order to maintain good visual outcomes.

156

Medical Retina

Retinal Arterial Macroaneurysm Rupture in a 17-Year-Old: Could Cannabis Consumption Be a Risk Factor?

I. Daoudi[1], A. Mabchour[1], F. Rasquin[1], L. Van Bol[1], P. Demols[1]
Université Libre de Bruxelles (ULB, Hôpital Erasme, Belgium

Purpose: We report a rare case of retinal arterial macroaneurysm (RAM) rupture in an adolescent. RAMs are acquired dilatations of retinal arteries, typically affecting women over 60 with systemic hypertension. Though rare (1 in 4500 cases), RAMs can lead to significant visual loss if complicated by hemorrhage.

Methods: This is a retrospective case report complying with the Declaration of Helsinki and approved by the Ethics Committee. Clinical data and multimodal imaging, including fundus autofluorescence, fluorescein angiography, indocyanine green angiography, and spectral-domain optical coherence tomography were reviewed.

Case Description: A 17-year-old male presented with sudden decreased visual acuity in the right eye (BCVA 1/20). Aside from cannabis use the day before his presentation, his medical history was unremarkable. Fundus examination completed with fluorescein angiography and indocyanine green angiography revealed a peripapillary inferonasal RAM complicated by intravitreal and subhyaloid hemorrhage, confirmed by imaging. A cardiology evaluation was conducted to investigate systemic hypertension or aneurysmal pathology, but the results were negative. Given the persistent hemorrhage, an intravitreal anti-VEGF injection was administered, successfully halting bleeding. Subsequently, a posterior subcapsular cataract developed in the right eye and necessitated phaco-vitrectomy. Postoperatively, BCVA improved to 9/10 in both eyes, with no residual RAM activity.

Conclusion: This case highlights a rare instance of RAM rupture in an adolescent without systemic or genetic predispositions, raising questions about potential risk factors, including cannabis use. Further studies are necessary to elucidate the pathophysiology and risk factors for RAMs in younger patients and to explore the potential association with cannabis consumption.

157

Medical Retina

Frosted branch angiitis following flu vaccination

I. Daoudi[1], M. Abdulkader[2], S. Sanfilippo[3], H. Hmama[4], A. Beun[4], P. Schroyen[5], F. Willermain[3], D. Makhoul[3]

[1]*Université Libre de Bruxelles (ULB, Hôpital Erasme, Belgium*

[2]*Université Catholique de Louvain, Cliniques Universitaires Saint-Luc, Belgium*

[3]*Université Libre de Bruxelles (ULB), CHU St-Pierre, Belgium*

[4]*Department of Internal Medicine, CHU St-Pierre, Belgium*

[5]*Université Libre de Bruxelles (ULB), CHU Brugmann, Belgium*

Purpose : We describe a rare case of unilateral frosted branch angiitis (FBA) following flu vaccination. FBA is a severe retinal vasculitis characterized by a striking "frosted tree branch" appearance on fundus examination, associated with both noninfectious systemic diseases and various intraocular or systemic infections.

Methods : This retrospective case report complies with the Declaration of Helsinki and was approved by the Ethics Committee. Clinical data and multimodal imaging, including fundus autofluorescence, fluorescein angiography and spectral-domain OCT were reviewed.

Case Description : A 59-year-old woman presented with a 2-day history of right eye visual loss, bilateral hearing loss, and dizziness. Her medical history included autoimmune hepatitis treated with azathioprine. Three weeks prior, she received a flu vaccine; one week before presentation, she developed lower limb skin lesions. Visual acuity was hand motion in the right eye and 20/20 in the left eye, with mild anterior segment inflammation, vitritis, optic disc swelling, diffuse retinal edema and prominent venous frosted vascular sheathing. Fluorescein angiography showed vascular leakage and OCT revealed serous retinal detachment with diffuse edema. Extensive workup identified leucocytoclastic vasculitis on skin biopsy, elevated antinuclear and antineutrophil cytoplasmic antibody titers and vestibulocochlear nerve inflammation. Treatment with intravitreal ganciclovir, systemic steroids and antivirals led to resolution of vasculitis and macular edema but left residual foveal atrophy and final visual acuity of counting fingers.

Conclusion : FBA is a severe vasculitis with a broad differential diagnosis. Its association with leucocytoclastic vasculitis and eighth cranial nerve inflammation is extremely rare, raising concern about a potential link with flu vaccination.

162

Medical Retina

Evaluation of Choriocapillaris Perfusion Changes in Chronic Central Serous Chorioretinopathy Following Half-Dose Photodynamic Therapy: A Pilot Study Using Swept-Source Optical Coherence Tomography Angiography

Giacomo Boscia[1]
Department of Ophthalmology, University of Bari, Italy

Purpose: This study aimed to evaluate changes in choriocapillaris (CC) perfusion in patients with chronic central serous chorioretinopathy (cCSC) following treatment with half-dose photodynamic therapy (PDT), using swept-source optical coherence tomography angiography (SS-OCTA).

Methods: This pilot study included patients diagnosed with cCSC who underwent half-dose PDT using the Visulas 690s PDT Laser System (Carl Zeiss Meditec, Inc., Jena, Germany; 689-nm wavelength, 50 J/cm², 83 seconds). Fovea-centered OCTA scans (6 x 6 mm) were obtained using the Zeiss Plex Elite 9000 SS-OCT system. OCTA assessments were conducted at baseline prior to treatment and 6 months post-treatment. The primary outcome was the percentage of choriocapillaris flow deficits (FD%) on OCTA. Secondary outcomes included best-corrected visual acuity (BCVA), central macular thickness (CMT), and subfoveal choroidal thickness (SFCT).

Results: The study included 23 eyes from 23 patients with cCSC, with a mean age of 46.3 ± 2.1 years, of which 16 out of 23 were men. Significant improvements were observed in all parameters at 6 months. The CCFD% decreased from 48.35 ± 6.05% at baseline to 43.99 ± 6.57% at 6 months ($p = 0.020$). BCVA improved from 0.28 ± 0.13 LogMAR to 0.22 ± 0.11 LogMAR ($p = 0.025$). Both CMT and SFCT showed significant reductions (p 0.05). After 6-months, SRF was resolved in 21 out 23 eyes (91.3%) included in the analysis, while the remaining two eyes showed a reduction of SRF.

Conclusion: Half-dose PDT was effective in improving CC perfusion and other morpho-functional parameters in eyes with cCSC. These findings provide valuable insights into the potential mechanisms through which PDT may influence the progression of cCSC.

163

Medical Retina

Assessment of inter-device agreement and algorithmic comparison in quantifying choriocapillaris flow deficits in healthy eyes

Giacomo Boscia
Department of Ophthalmology, University of Bari, Italy

Purpose: To compare the computation of the choriocapillaris (CC) flow deficit (FD) obtained from three different optical coherence tomography angiography (OCTA) devices in healthy subjects.

Methods: Twenty-six healthy subjects were included in in this posthoc analysis of data from a prospective healthy subject OCTA study. Fovea-centered 6x6 OCTA volume scans were obtained by all three devices: Heidelberg Spectralis spectral domain (SD) OCTA using a full spectrum probabilistic algorithm (FSBA; 512 x 512 pixels); Zeiss Cirrus 5000 AngioPlex (SD-OCTA) using the optical microangiography (OMAG) algorithm (350 x 350 pixels); Zeiss PLEX Elite 9000 swept source (SS) OCTA using the OMAG algorithm (500 x 500 pixels). CC slabs were binarized using Image J and the CCFD% was measured applying a Phansalkar radius of ~ 20 µm, adjusted for each device based on the size and resolution of the images.

Results: Twenty-six healthy eyes of 26 subjects with no ocular or systemic disease were included in this analysis. The mean age of the subjects was 47.60 ±13.00 (range, 26-69) years and 46.15% were females. The CCFD% measured by the devices varied significantly from each other (p 0.01). The mean CCFD% measured by the Spectralis was the highest at 57.00% (± 13.21%), followed by the Angioplex at 25.70% (± 9.00%), and the Plex Elite at 7.62 (± 3.06%). There was a significant positive correlation between CCFD% measured by SS-OCTA and SD-OCTA devices (Angioplex and PLEX Elite) using the OMAG algorithm (r = 0.78, p 0.01). Of note, this correlation was better than the correlation between two SD-OCTA devices using different algorithms (Spectralis, FSBA and Angioplex OMAG) (r = 0.389, p = 0.04).

Conclusions: The correlation between swept source and spectral domain OCTA devices using the same OCTA algorithm is better than between SD-OCTA devices using different algorithms.

169

Medical Retina

Optical coherence tomography angiography findings in retinal arterial macroaneurysm treated by combined strategy

R. Salazar Méndez[1], J.J. Barbón García[1], T. Dorado Fernández[2], M.I. Gosende Chico[3], M. Álvarez Sánchez[4]

[1]*Ophthalmology Service, Hospital Universitario San Agustin, Spain*
[2]*Ophthalmology Service, Hospital Jarrio, Spain*
[3]*Optometry Service, Hospital Jarrio, Spain*
[4]*Ophthalmology Service, Hospital Universitario Cabueñes, Spain*

PURPOSE

To describe optical coherence tomography angiography (OCTA) findings in a case of retinal arterial macroaneurysm (RAM) treated by combined strategy (anti-VEGF followed by focal laser photocoagulation)

METHODS

Case report

RESULTS

A 63-year-old man complained of visual loss in right eye. He had systemic hypertension, dyslipidemia, peripheral arterial disease and recent diagnosis of diabetes. Dilated fundus examination revealed preretinal bleed located in supero-temporal macular arteriole and lipid exudates. OCTA scan demonstrated RAM lesion at superficial capillary plexus and flow within. The patient received three intra-vitreal aflibercept injections at four weekly intervals that managed to resolve the hemorrhage but were surprisingly associated with visual worsening due to increased intraretinal fluid and appearance of subretinal fluid. At this stage the patient was advised direct laser photocoagulation. One month after, the foveal profile was recovered and OCTA showed a reduced flow at the site of RAM but also in both capillary plexus.

CONCLUSIONS

RAM is an acquired rare vascular disease in which decreased vision due to macular edema, premacular hemorrhage and non-clearing vitreous hemorrhage are indications of treatment with little evidence of consensus on the most effective option. AntiVEGF drugs are a reasonable choice for exudative lesions though laser photocoagulation is the most common therapeutic approach, nevertheless collateral retinal damage is almost unavoidable as demonstrated by OCTA in our case. Thus, combined strategy should be considered when monotherapy could not achieve adequate resolution of RAM, in which OCTA is outlined as a noninvasive tool capable of detecting and monitoring it.

176

Medical Retina

Central serous chorioretinopathy complicated with subretinal neovascular membrane: Yellow 577nm laser treatment

Carlos Orduna Magn[1]
Medical Retina, Universidad a distancia de Madrid (UDIMA), Orduna Clinic, Madrid

This research explored using a 577nm yellow laser to treat choroidal neovascularization (CNV), a complication of chronic central serous chorioretinopathy (CSC). The yellow laser precise targeting of the choriocapillaris minimizes damage to surrounding retina tissue.

Ten patients with choronic CSC and were treated with laser. Avanced imaging techniques, including A-OCT, FA, FAF and microperimetry retinal sentivity were performed.

Results were positive. The laser effectively eliminated fluid buildup and induce CVM atrophy in CNV located outside the fovea. For subfoveal CNV, combinig low power laser theraphy with anti-VEGF injections was necessary. The laser,s accuracy allowed treatment of leak points very close to the foveal center, a difficult feat with other lasers. Notably, the managment was very safe.

This study highlights the 577nm yellow laser as a safe and effective treatment for CNV in choronic CSC patients.

178

Medical Retina

Ocular complications after intravenous administration of immunoglobulin in a patient with chronic inflammatory demyelinating polyneuropathy (CIDP) associated with type I diabetes - case report

Ophthalmologist Biljana Topic[1,2], Milka Mavija[1,2], Miljana Tepic Popovic[1,2], Bojana Markic[1,2], Sanela Burgic[1,2], Biljana Trivuncevic Simetic[1]

[1]*Ophthalmology Clinic, University Clinical Center of the Republic of Srpska, Bosnia and Herzegovina*

[2]*Ophthalmology, University of Banja Luka, Faculty of Medicine, Bosnia and Herzegovina*

Purpose: to present a case of bilateral centralis retinal vein occlusion, as an unwanted thromboembolic event after intravenous administration of human immunoglobulins.

Method: patient M.K., 36 years old, suffering from diabetes mellitus type I since the age of 7, who was urgently hospitalized in the neurological clinic in March of the current year, due to instability when walking and progressive weakness in the lower extremities. After a neurological examination and diagnostics , the existence of chronic inflammatory demyelinating polyneuropathy was established, and intravenous therapy with human immunoglobulins (IVIG) was started. After administering the 9th dose of IVIG, he complains of vision loss, dizziness and headache. On clinical ophthalmological examination, best corrected visual acuity (BCVA) 0.1, biomicroscopic examination of both eyes is unremarkable, while fundus examination reveals papilloedema, bilateral retinal vein occlusion followed by macular edema and diabetic retinopathy. Discontinuation and/or replacement of immunoglobulin therapy is recommended, and anti-VEGF therapy with acetazolamide inhibitors is prescribed. At the control examination, after 2 months, there are morphological improvements, in the form of a significant reduction of optic nerve edema and recovery of visual acuity BCVA 0.4 for both eyes.

Conclusion: neuro-ophthalmological complications as part of chronic inflammatory demyelinating polyneuropathy occur due to increased intracranial pressure, but also due to unwanted thromboembolic events after intravenous administration of immunoglobulin with accompanying patient comorbidities.

Key words: chronic inflammatory demyelinating polyneuropathy, immunoglobulins, retinal vein occlusion.

197

Medical Retina

Central retinal artery occlusion after a complicated cardiac surgery: Luckily alive but dramatically blind in one eye

E. Casas Maroto[1,2], **A. Luque Gómez**[1], L. Modamio Gardeta[3], C. F. Rodríguez Hernández[3], N. Rubio Díaz[1]

[1]*Department of Medical Retina, Hospital Infanta Cristina, Spain*
[2]*Department of Medical Retina, Clinica Rementeria, Spain*
[3]*Department of Glaucoma, Hospital Infanta Cristina, Spain*

Purpose: To present clinical course, management and final outcome of unilateral central retinal artery occlusion (CRAO) after a cardiogenic shock during a percutaneous coronary intervention (PCI) for coronary artery disease.

Methods: Case report of a 38-year old caucasian woman with Turner syndrome who complained of painless and severe unilateral visual loss immediately after a PCI for dilated myocardiopathy. During the surgery, the patient experienced a cardiac arrest requiring cardiopulmonary resuscitation. Complete ocular evaluation including slit lamp examination, funduscopy, Optical Coherence Tomography (OCT) and fluoresceine angiography (FA) were performed.

Results: Left eye (LE) vision was non perceptive to light (NPL) with dense relative afferent pupillary defect (RAPD). Right eye had 20/20 vision. Slit lamp examination was normal as the intraocular pressure. Dilated funduscopic examination of LE revealed pallor of the optic nerve, classical cherry-red spot surrounded by a whitish ischemic retina and attenuated arterioles. Hyper-reflectivity of the inner retinal layers was found by OCT. FA showed reduced arteriolar perfusion and macular ischemia. Panretinal photocoagulation in LE was indicated. LE has remained NPL.

Conclusions: CRAO is a possible complication post PCI. Patients with high risk factors need to be informed. Our case stands out an unusual risk factor such as Turner syndrome, known by having a high prevalence of congenital heart diseases. It is mandatory an ocular examination in cases of painless and acute vision loss after a cardiac surgery. Prompt referral by the cardiologist and early treatment may help preserve or reduce the extent of ischemic damage.

201

Medical Retina

Effectiveness and safety of ranibizumab biosimilar Ranivisio® compared to reference Lucentis® in real life

M. Bautista Salamanca[1], A. Gomez Verdejo[1], O. Cejudo Corbalan[1]
Ophthalmology Department, University Hospital of Puerto Real, Spain

PURPOSE

The expiry of the patent of Lucentis lead to the introduction of the first biosimilars of ranibizumab in the market. Due to their cost benefits, many hospital pharmacies in Spain favoured the use of ranibizumab biosimilars for retinal diseases treatment.

The aim of this study is to assess the effectiveness and safety of ranibizumab biosimilar Ranivisio compared to its reference Lucentis in a real life data study in a public hospital in Spain.

METHODS

This was a retrospective analysis of our population of patients treated with Ranivisio since its introduction in our hospital pharmacy in April 2023 substituting Lucentis.

To assess its effectiveness, variables as visual acuity (VA), central retinal thickness (CRT) and longest period of time being dry on OCT were documented, as well as the need to switch to a different drug due to suboptimal response. To determine its safety, any complication was reported and registered.

RESULTS

A total of 81 patients were treated with Ranivisio. 47 of them had been treated with Lucentis prior to that, and all of them were included.

In 80.8% of the patients, VA remained stable or improved, and the CRT was reduced in a 40.4% compared to the scans while on Lucentis. 72.4% of the patients maintained or increased the number of weeks being dry on OCT. Lastly, 19.1% needed a switch.

Related to safety, no local or systemic complications were reported during the time of the study.

CONCLUSIONS

Ranibizumab biosimilar Ranivisio seems to be a safe drug with comparable effectiveness to Lucentis in real life.

204

Medical Retina

Uncommon Presentations of Retinal Angiomatous Proliferation in Pachychoroidopathy and Diabetic Choroidopathy

S. Del Valle Buzón, A. González Acosta, F.V. Sánchez Oliver, F.J. Cordero Bellido, F. López Herrero, B. Lechón Caballero, J.L. Sánchez Vicente
UGC Oftalmología, Hospital Universitario Virgen del Rocío, Spain

Purpose:
To report three clinical cases of retinal angiomatous proliferation (RAP) in atypical contexts and to discuss potential underlying mechanisms.
Methods:
Patients were evaluated with comprehensive multimodal imaging, including spectral-domain OCT (SD-OCT), OCT angiography (OCTA), fundus autofluorescence (FAF), and fluorescein angiography (AFG), to assess retinal and choroidal structures.
Results:
Case 1: A 73-year-old patient with type 2 diabetes (without diabetic retinopathy) showed large-caliber choroidal vessels, choriocapillaris attenuation, intraretinal thickening, and fluid in both eyes. OCTA of the right eye revealed a hyperreflective lesion in the deep vascular plexus and outer retina; Angio B mode demonstrated a retinal–choroidal communication, with a bilobulated pigment epithelial detachment (PED) in the left eye, supporting a diagnosis of pachychoroidopathy-associated RAP.
Case 2: A 66-year-old patient with decreased visual acuity presented a vascular lesion in the deep plexus, outer retina, and choriocapillaris, along with prominent choroidal vessels and irregular FAF patterns. Angio B mode confirmed an anastomosis between the deep plexus and choroidal circulation.
Case 3: An 81-year-old with severe nonproliferative diabetic retinopathy and macular edema exhibited a yellow-gray juxtafoveal lesion with central pinpoint hemorrhage. Imaging revealed a hypoautofluorescent PED on FAF, multilayer vascular lesions on OCTA, and a chorioretinal anastomosis.
Conclusions:
Although rare, RAP can develop in the context of pachychoroidopathy—possibly due to ischemia from choriocapillaris compression—and in diabetic retinopathy as part of diabetic choroidopathy. Recognizing these associations is essential for accurate diagnosis and tailored treatment strategies.

206

Medical Retina

Can Liquid Biopsy Proteomics Revolutionize Clinical Trial Design and Drug Development?

Vinit Mahajan[1], Antoine Dufour[2], David Almeida[3]
[1]*Ophthalmology, Stanford University, United States*
[2]*Physiology and Pharmacology & Biochemistry and Molecular Biology, University of Calgary, Canada*
[3]*Research, Erie Retinal Research, United States*

Purpose: To challenge traditional imaging-based trial endpoints by demonstrating how liquid biopsy proteomics can provide rapid molecular feedback on therapeutic targets and disease pathways.

Methods: Diagnostic aqueous and vitreous paracentesis analyzed using TEMPO (Tracing Expression of Multiple Protein Origins) AI-driven proteomics platform, which enables identification of ~6,000 proteins per 50μL sample - including key therapeutic targets like VEGF and complement pathways.

Results: Liquid biopsies from aqueous and vitreous demonstrated excellent safety profile. Analysis using the TEMPO bioinformatic tool, proteomic analysis identified thousands of proteins in individual patients, including drug-sensitive pathways and specific cell types active in eye disease. In uveal melanoma, proteomic panels identified diagnostic, prognostic, and therapy selection markers. Macrophage cells and angiogenic protein patterns distinguished non-proliferative and proliferative diabetic retinopathy. Immune and retinal cell patterns were identified in uveitis cases. AMD-associated pathways, including RPE cell health, could be measured.

Conclusions: Liquid biopsy proteomics represents a transformative approach for clinical trials and drug development through: (1) comprehensive pathway analysis, (2) safe, repeatable sampling enabling longitudinal monitoring, and (3) rapid molecular feedback (6-8 weeks) for go/no-go decisions

Industry Impact: Implementation could reduce trial costs through improved patient stratification and earlier endpoint detection while providing mechanistic insights unavailable through current methods.

Financial Disclosure: David Almeida and Vinit Mahajan have patents and equity in ClinOmicsAI

209

Medical Retina

Choroidal macrovascular anomaly diagnosed with OCT-A: A case report

I. Romero Barranca[1], JA. Aguiar Caro[1], A. Flores Cano[1], A. Moreno Guerrero[1], MJ. Morillo Sánchez[1], E. Gutiérrez Sánchez[1]
Ophthalmology, Hospital Universitario Virgen Macarena, Spain

A 59-year-old woman undergoing routine screening for a family history of glaucoma presented with incidental findings in the left eye (LE) during fundus photography. Her visual acuity was 1.0 / 0.9, with no anterior segment abnormalities. Fundus examination revealed three yellowish lesions in the posterior pole, sparing the foveal area, previously documented four years ago.

Optical coherence tomography (OCT) of the macula showed choroidal thickening with dilated vessels. A subtle subretinal fluid (SRF) and elevation of the Bruch's membrane-retinal pigment epithelium (BM-RPE) complex suggested a compressive lesion on the choriocapillaris. Autofluorescence imaging showed small hyperautofluorescent areas, while fluorescein angiography revealed mottled hyperfluorescence due to RPE changes. Indocyanine green angiography (ICGA) confirmed a temporal choroidal macrovascular anomaly.

OCT-angiography (OCT-A) provided crucial insights, with en-face segmentation of the choriocapillaris slab revealing a well-defined choroidal macrovasculature. Deep segmentation demonstrated hyperreflectivity in avascular and choriocapillary layers, correlating with structural OCT protrusions. MRI excluded orbital pathology.

A differential diagnosis included pachychoroid disease, choroidal hemangioma, and hamartoma, which were ruled out based on multimodal imaging. The final diagnosis was choroidal macrovasculature, confirmed by OCT-A deep segmentation and ICGA.

This case underscores the diagnostic value of OCT-A in detecting choroidal macrovascular anomalies, potentially reducing the need for invasive procedures. A refined segmentation and en-face analysis of the choriocapillaris could have led to an earlier, non-invasive diagnosis.

212

Medical Retina

The influence of country and income: An exploratory analysis of Barometer Global Survey data in nAMD

Winfried M. Amoaku

Purpose: This analysis of Barometer Global Survey data explored how income influences the challenges experienced, and opportunities for better support desired, by patients with neovascular age-related macular degeneration (nAMD).

Methods: Patients (n=4558) from 24 countries worldwide completed the Barometer Global Survey assessing demographics, challenges, opportunities, and experiences with receiving treatment for nAMD. Based on World Bank income groups, 1402 patients were from higher-income countries (HIC), 2284 from upper-middle-income countries (UMIC), and 872 from lower-middle and lower-income countries (LMIC/LIC). Data were analyzed descriptively; a proportionate difference of ≥30% between HIC and LMIC/LIC was considered meaningful.

Results: More patients from HIC than LMIC/LIC (61.3% vs 17.4%) were treated at clinics using predominantly treat-and-extend regimens. LMIC/LIC patients reported greater treatment/appointment challenges than HIC patients (70.3% vs 30.1% thought the frequency of treatment was too much; 82.7% vs. 31.2% found it difficult to stay on treatment and wanted support, and 39.6% vs. 8.3% had missed ≥2 appointments in the past year). More patients from LMIC/LIC than HIC had challenges with reimbursement (52.5% vs. 9.9%) and worried about the potential need for an injection (71.9% vs 37.5%). Whilst more LMIC/LIC patients felt informed about their nAMD than HIC patients, significant gaps in their understanding and expectations following treatment were reported.

Conclusions: Different perceptions of treatment challenges reported by patients in HIC vs. LMIC/LIC indicates that appropriate, specific interventions may be required to improve health equity and access. These data are observational; additional work is required to understand causal relationships, and to further interpret these findings.

213

Medical Retina

Implementation of a Robotic Ophthalmic Diagnostic System AI-Based in a Tertiary Hospital

María Del Pino Cidad Betegón[1], Félix Armadá Maresca, Rosa María Cordero Ros, María Capote Díez, Paola Vázquez Colomo, Lilian Martínez Godoy
Ophthalmology, Hospital Universitario La Paz, Spain

Purpose:

To evaluate the efficiency and clinical impact of Eyelib™ Robotized Scan (MIKAJAKI, Geneva, Switzerland), a robotic ophthalmic diagnostic system AI-based, in optimizing patient flow and enhancing diagnostic accuracy in a tertiary hospital setting.

Methods:

A retrospective study was conducted at Hospital Universitario La Paz (Madrid), using the Eyelib™ Robotized Scan (MIKAJAKI, Geneva, Switzerland) system integrated with artificial intelligence. The system performs comprehensive ophthalmic evaluations, including OCT of the anterior and posterior segments, topography, aberrometry, tonometry and retinography, within an 8-minute automated cycle. Data from 1,660 patients were analyzed, focusing on diagnostic outcomes, referral optimization, and reduction in specialist workload. Ophthalmologists remotely reviewed and validated the generated reports.

Results:

Of the 1,660 patients screened, 44.9% were discharged or referred to primary care, 36.2% were managed in specialized outpatient clinics, and 10.3% required cataract surgery. The implementation of Eyelib™ significantly reduced unnecessary specialist consultations, optimized patient triage, and improved diagnostic accuracy for conditions such as keratoconus, glaucoma, and retinal pathologies. Additionally, it decreased the clinical workload in outpatient settings, allowing specialists to focus on complex cases.

Conclusions:

The Eyelib™ Robotized Scan (MIKAJAKI, Geneva, Switzerland) system demonstrated high efficiency in streamlining ophthalmic diagnostics, enhancing patient care accessibility, and reducing the burden on ophthalmology services. Its approach represents a transformative model for future ophthalmic practice, offering scalable solutions for healthcare systems facing increasing demand.

214

Medical Retina

Different challenges and burdens experienced by patients with nAMD versus those with DME: An exploratory analysis of Barometer Global Survey data

T. Aslam[1], W.M. Amoaku[2], J. Barratt[3], Alessandra Bisquera[4], B. Eldem[5], R.P. Finger[6], R.P. Gale[7], L. Kodjikian[8], A. Koh[9], J-F. Korobelnik[10,11], A. Loewenstein[12], P. Mitchell[13], M. Okada[14], D.R. Owens[15], N. Parker[16], I. Pearce[17], F.J. Rodriguez[18], M. Sylvanowicz[19], S.J. Talks[20], D.T. Wong[21,22], T.Y. Tsinghua Medicine, Tsinghua University[23], F. Ziemssen[24,25], G.C.M. Cheung[26]

[1]*Manchester Royal Eye Hospital, NHS Central Manchester University Hospitals and University of Manchester, UK;* [2]*Department of Ophthalmology, University of Nottingham and Queen's Medical Centre, UK;* [3]*International Federation on Ageing, International Federation on Ageing, Canada;* [4]*Exploristics, Ltd., Exploristics, Ltd., UK;* [5]*Department of Ophthalmology, Hacettepe University, Turkey;* [6]*Department of Ophthalmology, University Medical Centre Mannheim, University of Heidelberg, Germany;* [7]*Department of Ophthalmology, York and Scarborough Teaching Hospital NHS Foundation Trust, UK;* [8]*Croix-Rousse University Hospital, University of Lyon, France;* [9]*Eye and Retina Surgeons, Camden Medical Centre, Singapore;* [10]*Service d'Ophtalmologie, CHU Bordeaux, France;* [11]*BPH, Universitaire Bordeaux, INSERM, 33000, France;* [12]*Department of Ophthalmology, Tel Aviv Medical Center, Faculty of Medicine, Tel Aviv University, Israel;* [13]*Department of Ophthalmology, University of Sydney (Westmead Institute for Medical Research), Australia;* [14]*Department of Ophthalmology, Royal Victorian Eye and Ear Hospital, Australia;* [15]*Department of Ophthalmology, Cardiff University, UK;* [16]*International Agency for the Prevention of Blindness, International Agency for the Prevention of Blindness, UK;* [17]*Department of Ophthalmology, Royal Liverpool University Hospital, UK;* [18]*Fundación Oftalmologia Nacional, Escuela de Medicina y Ciencias de la Salud, Universidad del Rosario, Colombia;* [19]*Bayer Consumer Care AG, Bayer Consumer Care AG, Switzerland;* [20]*Department of Ophthalmology, The Newcastle Upon Tyne Hospitals NHS Foundation, UK;* [21]*Department of Ophthalmology and Vision Sciences, University of Toronto, Canada;* [22]*Unity Health Toronto, St. Michael's Hospital, Canada;* [23]*Tsinghua Medicine, Tsinghua University, China;* [24]*Department of Ophthalmology,, University Hospital Leipzig, Germany;* [25]*Centre for Ophthalmology, Eberhard Karl University of Tübingen, Germany;* [26]*Duke-NUS Medical School, National University of Singapore, Singapore*

Purpose: The treatment options for neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME) are similar, however patients in these groups are different. This analysis sought to explore differences in the experiences, challenges and opportunities of managing nAMD and DME from the patient`s perspective.

Methods: Patients with nAMD (n=4558) and DME (n=3752) from 24 countries worldwide completed the Barometer Global Survey assessing demographics, challenges, opportunities, and experiences of treatment. Differences were analyzed descriptively; a proportionate difference of ≥10% between nAMD and DME cohorts was considered meaningful.

Results: A greater proportion of patients with nAMD (vs DME) strongly agreed that their eye treatment was a priority (72.6% vs 62.5%) and said they never questioned whether treatments were necessary (48.4% vs 37.7%). More patients with DME (vs nAMD) expected their vision to significantly improve (45.1% vs 35.0%). Additionally, more patients with DME said chronic health conditions made managing their disease difficult (45.0% vs 31.3%); however, more patients with DME knew what steps to take to reduce the likelihood of disease progression (74.3% vs 60.4%).

Conclusions: While patients with nAMD and DME are often seen in the same clinic, they have different needs, and experience different disease- and appointment-related challenges. These findings support the need for tailored support to empower patients to be actively involved in their care.

Medical Retina

Macular Edema Associated with Systemic Drugs

A. Avendaño Flores[1], J. Cañas Costa[1], S. Inat Moreno[1], D. Martínez Tormo[1], P. Udaondo[1]
Ophthalmology Department, Hospital Universitari i Politècnic La Fe, Spain

Purpose

To describe two cases of macular edema (ME) associated with systemic drug use—one linked to a 5α-reductase inhibitor (5-ARI) and the other to siponimod—highlighting their clinical presentation, imaging findings, and management.

Methods

ME was evaluated using multimodal imaging, including color fundus photography (CFP), optical coherence tomography (OCT), and fluorescein angiography (FA), to better characterize it. The corresponding medications were discontinued, and follow-up was conducted using the same multimodal approach.

Results

The first case involves a 61-year-old woman with high myopia who developed unilateral ME after prolonged 5-ARI use for androgenic alopecia. ME resolved completely following drug discontinuation. The second case concerns a 57-year-old woman with type 2 diabetes mellitus (DM2) receiving siponimod for multiple sclerosis, who developed bilateral ME. Complete resolution was achieved after discontinuing siponimod.

Conclusions

This case series highlights the importance of recognizing drug-induced ME as a potential adverse effect of systemic treatments such as 5-ARI and siponimod. It is essential to consider that not all ME cases in DM2 patients correspond to diabetic macular edema (DME), as certain drugs can induce macular toxicity. Timely identification of drug- induced ME is crucial for accurate diagnosis and to prevent unnecessary treatments. Furthermore, not all ME cases require intravitreal therapy; as demonstrated in this study, discontinuation of the causative drug can lead to complete resolution.

218

Medical Retina

Is fluocinolone acetonide implant neuroprotective in diabetic macular edema? A Case Report

Bernardo Monteiro[1], Teresa Varandas[1], Mun Faria[1]
Ophthalmology, ULS Santa Maria, Portugal

Purpose
The objective of this study is to document the observed regeneration of the retinal outer layers in response to the administration of fluocinolone acetonide intravitreal implant, utilised for the management of persistent and recurrent diabetic macular oedema.
Methods
Case Report.
Results
A 79-year-old male patient was referred to our hospital with diabetic macular edema (DME) in the right eye. Ocular examination revealed a best-corrected visual acuity (BCVA) of 85 letters, with complaints of metamorphopsia and disorganization of the retina's outer layers (DROL). Prior to undergoing the fluocinolone acetonide (FAc) implant, the patient received treatment with three loading-dose injections of aflibercept (2q4w), which resulted in no response, and two dexamethasone (DEX) intravitreal implants, yielding favourable outcomes. However, DME recurred approximately five months post-DEX injection, prompting the decision to proceed with the FAc intravitreal implant. During a six months follow-up period, there was stability in BCVA from the baseline, a reported disappearance of metamorphopsia, and OCT showed a relative improvement of DROL, which was measured quantitatively. This observation aligns with existing literature, which suggests a positive effect of corticosteroids on the outer retinal layers, namely the ellipsoid zone.
Conclusions
Intravitreal implantation of fluocinolone acetonide maintained visual quality and seemed to promote regeneration of ellipsoid zone in a patient with recurrent diabetic macular oedema. This is likely indicative of the neuroprotective effect of corticosteroids in patients with diabetic macular edema.

Financial Disclosure: No

220

Medical Retina

Adult Coats disease in an adult woman. A challenging diagnosis

E. M. Gámez-Jiménez[1], F.V Sánchez-Oliver[1], S. Del-Valle-Buzón[1], J.A. Aragón-Amador[1], J.L. Sánchez-Vicente[1], B. Lechón-Caballero[1], A.M. Moruno-Rodríguez[1]
Ophthalmology, Virgen del Rocío University Hospital, Spain

Introduction: Coats disease is an idiopathic exudative retinal vasculopathy that typically manifests in males during the first decade of life. The absence of specific diagnostic tests poses a challenge, particularly in rare presentations such as adult cases.

Purpose: To present our experience in the diagnosis, treatment, and follow-up of an atypical case of adult Coats disease.

Methods: A case of adult Coats disease is described, including clinical manifestations, serological studies, treatment, and evolution through multimodal imaging.

Results: A 52-year-old woman was referred with a diagnosis of retinal venous occlusion of the temporal branch of the OS and macular oedema refractory to three intravitreal bevacizumab injections. Examination revealed VA of light perception, a vascularised subretinal nodule, and telangiectatic vessels leading to macular exudative detachment. FA showed retinal vascular tortuosity, telangiectasias, areas of ischaemia, and exudative detachment with macular involvement.

After excluding other causes via serological and immunological studies, adult Coats disease was suspected. Treatment started with one intravitreal faricimab injection and photocoagulation of telangiectatic vessels. At four weeks, partial resolution of exudates and serous detachment was observed, though VA remained unchanged. OCT demonstrated subretinal fluid resolution, foveal profile recovery, and outer layer atrophy. Two additional faricimab injections were administered at four-week intervals. At six months, the patient retained hand movement VA with no macular subretinal fluid.

Conclusions: Adult Coats disease presents a diagnostic challenge due to its rarity. Recognising its clinical findings is crucial for accurate differential diagnosis and timely treatment.

221

Medical Retina

Macular ischaemia after perforation of the eyeball and intravitreal injection of anesthetic agents during retrobulbar anaesthesia

R. García-Serrano Fuertes[1], V. Guijarro Ambel[1], M. Portillo Martínez[1], A. González Acosta[1], J. Suárez Pérez[1], B. Lechón Caballero[1], M.E. Mantrana Bermejo[1]
Ophthalmology department, Virgen del Rocío University Hospital, Spain

Purpose: Perforation of the eyeball during retrobulbar anesthesia is rarely reported. A case of inadvertent ocular perforation during retrobulbar anesthesia in cataract surgery is presented. Retinal complications and follow up after six months are described.

Methods: A 58-year-old man presented with vision loss following cataract surgery on his right eye by phacoemulsification and intraocular lens implantation under retrobulbar anaesthesia performed 1 week earlier. Visual acuity was 0.05. Fundus examination revealed a vitreous haemorrhage in the lower area. A rounded haemorrhage was present next to the lower temporal arcade with a possible entry orifice. Optical coherence tomography, tomographic angiography and fluorescein angiography showed retinal ischaemia in the juxtapapillary macular area.

Results: The patient was followed for 6 months. Visual acuity improved to 0.6. Optical coherence tomography and tomographic angiography showed a reduction of the oedema in the retinal layers, with a persistent loss of the inner nuclear and outer plexiform layer.

Conclusions: Accidental intravitreal injection of bupivacaine and lidocaine during retrobulbar anaesthesia can result in permanent visual impairment. Extreme attention should be paid to the injection technique to avoid this complication.

Financial Disclosure: No.

228

Medical Retina

Post-marketing data support a differentiated safety profile of avacincaptad pegol (ACP) for geographic atrophy (GA) secondary to AMD

M.F. Cordeiro[1,2,3], D.R. Lally[4], D.R.P. Almeida[5], F. Lu[6], A. Desai[7], G. Chichili[8], T. Petkova-Vamvaka[9], A. Iannaccone[10], L. Moreno-Leon[11], A. Afanaseva[12], H. Khanna[13], G.J. Jaffe[14]

[1]*Ophthalmology, Western Eye Hospital, Imperial College Healthcare NHS Trust, UK*
[2]*Ophthalmology, Imperial College London, UK*
[3]*Institute of Ophthalmology, University College London (UCL, UK*
[4]*Ophthalmology, New England Retina Consultants, USA*
[5]*Director of Clinical Research, Erie Retina Research, USA*
[6]*Global Medical Lead/Clinical Development, Medical Safety/PV, Ophthalmology, Astellas Pharma Inc., USA*
[7]*Director, Astellas Pharma Inc., USA*
[8]*Senior Director, Immunology Biomarkers, Translational Medicine, Clinical Pharmacology, Astellas Pharma Inc., USA*
[9]*Senior Medical Director, Medical Lead Cell and GeneTherapy Ophthalmology, Astellas Pharma Inc., USA*
[10]*Global Medical Lead, Cell and Gene Therapy, Biopharma and Ophthalmology, Astellas Pharma Inc., USA*
[11]*Senior Research Scientist Ophthalmology, Astellas Pharma Inc., USA*
[12]*Senior Associate Ophthalmology, Astellas Pharma Inc., Japan*
[13]*VP of Preclinical Ocular Research, Astellas Pharma Inc., USA*
[14]*Ophthalmology, Vitreoretinal Diseases & Surgery, Duke University, USA*

Purpose: Complement system overactivation is central to GA pathogenesis. While complement inhibition is a valid anti-inflammatory target, the outcome depends on which component is targeted. ACP is a synthetic aptamer targeting complement component C5, thereby inhibiting cell death while preserving upstream complement homeostasis. Here, we report unpublished findings about the aptamer immunogenicity profile and its potential connection to real-world post-marketing evidence of the high safety profile of ACP.

Methods: Intraocular inflammation (IOI) events from one-year post-marketing data were reviewed. Anti-drug antibodies (ADAs) were measured in serum (n=616 samples) from participants in an ongoing, open-label study of ACP in GA. In vitro gel shift assays and structure modeling assessed C5-ACP binding.

Results: As of 03AUG2024, 100,000 vials have been distributed. Infrequent IOI events reported post marketing include 1 report each of retinal vasculitis (off-label use in Stargardt disease) and endophthalmitis. Immunogenicity of ACP was low, as measured by positivity for ADAs: 3.7% for anti-ACP, 2.6% for anti-polyethylene glycol, and 1.1% for anti-aptamer antibodies. ACP has high binding affinity (KD=0.69±0.148 nM at 37°C) and specificity to C5; binding occurs at the MG7 domain of C5b, which inhibits C5 convertase binding and cleavage of C5.

Conclusions: As of 03AUG2024, ACP has not been associated with retinal vasculitis in post-marketing surveillance data. ACP has low immunogenicity likely attributable to C5-specific binding. These data support the differentiated safety profile of ACP and may help explain the low risk of severe inflammation.

231

Medical Retina

Acute Retinal Necrosis in otherwise healthy patients

Stefano Dore[1] Rita Serra[1],
Department of Ophthalmology, University of Sassari, Italy

Purpose: Acute Retinal Necrosis (ARN) is an inflammatory, rapidly progressive necrotizing retinitis and vasculitis, most frequently caused by Varicella-Zoster-Virus (VZV). It begins unilaterally but the infestation of the fellow eye may occur in over the 75% of cases. The aim of this study was to report our experience in ARN management.

Methods: In this small case series, we retrospectively reviewed patients with diagnosed and documented clinical signs of ARN referred to our Unit from July 2024 to January 2025. Status of disease, best corrected visual acuity, intraocular pressure, and complications were evaluated at diagnosis and 3 months later.

Results: Two otherwise healthy middle-aged men affected by unilateral ARN were included. One was 38-year-old and the other 39-year-old. In both cases, unilateral severe vision loss was associated with vitreous inflammation and multiple foci of retinal necrosis, confirmed by multimodal retinal imaging revealing also an occlusive vasculitis in one case and a papillitis in the other. Clinical ARN diagnosis based on the criteria defined by American Uveitis Society was confirmed by aqueous sample collection and multiplex polymerase chain reaction showing VZV DNA detection in both cases. Intravenous acyclovir was started immediately and given for two weeks, and then switched to oral valacyclovir for several months. In both cases, total retinal detachment occurred after 6 weeks, but no involvement of the fellow eyes was observed during the 3-month-follow-up.

Conclusions: Our study confirms that early ARN diagnosis associated with a prompt antiviral therapy may play a crucial role to prevent involvement of the fellow eye

232

Medical Retina

Clinical and anatomical outcomes in patients with diabetic macular edema treated with faricimab in Hospital Universitario Virgen Macarena

I. Romero Barranca[1], E. Alegre Rueda[2], ML. Martín Moya[2], E. Gutiérrez Sánchez[1], MA. Calleja Hernández[2], E. Rodríguez de la Rúa Franch[1]
[1]*Hospital Universitario Virgen Macarena, Ophthalmology, Spain*
[2]*Hospital Universitario Virgen Macarena, Pharmacology, Spain*

Objective: To report initial responses to intravitreal faricimab in diabetic macular edema (DME) in patients previously receiving other anti-VEGF therapies.

Methods: A total of 63 eyes from patients with refractory DME undergoing intravitreal therapy at a tertiary hospital were switched to faricimab. A retrospective review was conducted for patients treated since October 2023 with at least three months of follow-up. Data collected included sex, age, previous treatments, visual acuity (VA) before and after treatment, hemoglobin A1c (HbA1c), and optical coherence tomography (OCT) biomarkers. Primary outcomes included changes in VA, central macular thickness (CMT), and intraretinal/subretinal fluid (IRF/SRF) after at least one faricimab injection. OCT scans, VA assessments, and patient symptom reports were analyzed.

Results: Of the patients included, 66% were male, with a median age of 67 years. 71% of the patients received 4 inyections. After at least one faricimab injection, the mean baseline VA (ETDRS score) improved from 56 to 60, 28.6% of the patients experienced an improvement of more than 5 lines. Additionally, 53% (n=37) showed a reduction in CMT, with a mean decrease from 333 µm to 292 µm. There was a significant decrease in intraretinal fluid and macular edema (p 0.001). Neurosensory detachment did not show statistically significant changes (p 0.05). Faricimab treatment resulted in a significant reduction of intraretinal hyperreflective foci. However, it did not show any differences in the presence of DRIL or epiretinal membranes. The median HbA1c was 7% (IQR: 6.9-7.6).

Conclusions: Preliminary results are promising. Faricimab demonstrates potential in stabilizing patients with refractory DME who did not respond to prior intravitreal treatments. Its dual inhibition mechanism may help optimize treatment regimens and reduce the burden of frequent injections in these patients.

233

Medical Retina

Successful management of neovascular AMD with faricimab: A case report

I. Romero Barranca[1], E. Alegre Rueda[2], JA. Aguiar Caro[1], A. Flores Cano[1], A. Moreno Guerrero[1], J. Ruiz Jiménez[1], MA. Avellaneda Pousa[1], E. Gutiérrez Sánchez[1]
[1]*Ophthalmology, Hospital Universitario Virgen Macarena, Spain*
[2]*Pharmacology, Hospital Universitario Virgen Macarena, Spain*

Case Description:
A 62-year-old woman with a history of neovascular age-related macular degeneration (nAMD) in the left eye (LE) for seven years under intravitreal treatment and intermediate AMD in the right eye (RE) without prior treatment.

Baseline Examination Before Faricimab:

VA RE: 20/30
Slit-lamp: Nuclear sclerosis in progression, clear corneas
Fundoscopy: Medium and large drusen, retinal pigment epithelium detachment (PED), and thickening
OCT RE: Presence of PEDs and subretinal fluid (SRF) (CMT: 243 µm)
Faricimab Intervention:
Given the patient's poor response in the contralateral eye, treatment with a loading dose of Faricimab (4 monthly injections, Q4) was initiated in the RE.

After the first injection: VA 20/22, PEDs and SRF resolved.
After three injections: VA 20/20, macula dry with flattened PEDs.
The regimen was extended to bimonthly (Q8) and subsequently to Q12, maintaining disease inactivity.

Discussion:
This case illustrates the successful use of Faricimab in a treatment-naïve nAMD patient. Conventional VEGF-A inhibitors have limitations, including resistance and frequent injections. Faricimab, targeting both VEGF-A and Ang-2, improves vascular stability and reduces inflammation, offering sustained disease control.

Key advantages include a rapid and durable response, reduced treatment burden, and a favorable safety profile. Faricimab`s ability to extend injection intervals may enhance adherence and long-term visual outcomes, particularly for elderly patients with intensive treatment challenges.

234

Medical Retina

A series of five cases of unilateral acute idiopathic maculopathy (UAIM)

M. Portillo, E. Gámez, J. Suárez, M.V. Pérez, A. Moruno, F. López

INTRODUCTION

Acute unilateral idiopathic maculopathy (UAIM) is an entity that presents with an abrupt and painless loss of visual acuity, usually affecting young adults. It is characterised by the presence of a greyish-yellow macular lesion with a larger central lesion accompanied by smaller satellite lesions. Optical coherence tomography (OCT) shows serous detachment of the neuroepithelium and altered choroidal vascularization. Fluorescein angiography usually produces a combined pattern of early hypo and hyperfluorescence, eventually leading to late hyperfluorescence.

PURPOSE

To describe, with a multimodal imaging study, the clinical findings and evolution of 5 patients with UAIM.

METHODS

Study of the cases of UAMI treated at the Virgen del Rocio University Hospital of Seville from 2018 to 2023 through multimodal image study including retinography, OCT, OCT-A, autofluorescence (FAF) and fluorescein angiography (FAG).

RESULTS

Two of the patients received oral corticosteroid treatment for one month, the other three did not receive any corticosteroid treatment. Even so, all patients experienced a clear improvement of their visual acuity.

The follow-up period ranged from 5 months to 3 years. The final maximum corrected visual acuity (CMVA) in all patients was higher than 0.8. At the end of follow-up three patients showed minimal disruption of the outer layers on OCT, while the remaining two patients did not show any disruption of the outer layers.

CONCLUSIONS

UAMI is an uncommon pathology with characteristic signs and symptoms but there are others, not so well known until now, which could also help to reach a definitive diagnosis.

235

Medical Retina

Ten-year evolution of contralateral eye in age-related macular degeneration.

C. Molero Langa[1], S. Mediero Clemente[1], C. Arruabarrena Sánchez[1]
Ophthalmology, Hospital Principe de Asturias, Spain

Purpose:

Our purpose is to analyze the evolution of the fellow eye, after 10 years of follow-up, in patients with unilateral exudative AMD.

Method:

We carried out a retrospective study, we selected patients with unilateral exudative AMD that debuted between 2011 and 2013, and followed up for 10 years. We collected data of best corrected visual acuity (BCVA), type of neovascular membrane, lesion activity, progression to atrophy and number of injections.

Results:

Of the 30 eyes analyzed, 18 (60%) developed neovascularization, 4 (13.3%) developed geographic atrophy, and 8 (26.7%) presented dry AMD. In the first 2 years 3 patients developed neovascular AMD, between 2 and 5 years 8 patients, and between 5 and 10 years 7 patients. The mean BCVA at time of conversion was 70.94 ETDRS and the mean letter loss after 5 years was 9.54 ETDRS. 40% had a BCVA less than 0.5 (vision useful for driving) 5 years after debut and 26.7% had a BCVA less than 0.3 (vision useful for reading) after 5 years.

Conclusion:

The majority of unilateral AMD become bilateral at 10 years, showing an increase after 2 years of evolution. The diagnosis of the contralateral eye is made early with better VA and after 5 years of treatment, the majority maintain useful vision for reading and 60% for driving. This data is useful for calculating budgets of treatment as well as to determine long term visual prognosis of patients and progression of their disability.

236

Medical Retina

Faricimab as a rescue therapy in refractory neovascular AMD: A case report

I. Romero Barranca, E. Alegre Rueda, B. Trincado García, AL. Villazán Cervantes, L. Roca Navarro, E. Rodríguez de la Rúa Franch

Case Description:
A 62-year-old female with a history of smoking (one pack/day) was diagnosed with neovascular age-related macular degeneration (nAMD) in her left eye (LE) in July 2017.
At diagnosis:

VA LE: 20/50
Fundoscopy LE: Central macular thickening with inferior and temporal neuroepithelial detachment (NED), suggestive of neovascular membrane.
OCT LE: Pigment epithelium detachment (PED), NED, and neovascular membrane.
Over seven years, the patient received 48 intravitreal Aflibercept injections and 9 of Ranibizumab, requiring treatment every 8 weeks to control disease activity. However, persistent subretinal fluid (SRF) and vision decline were noted (best VA: 0.4).

Faricimab Intervention:
Given the poor response, a loading dose of Faricimab (4 monthly injections, Q4) was initiated.

After the first injection: VA 10/20, complete SRF resolution on OCT.
After three injections: VA 20/50, macula dry, flattened PEDs, CMT 210 µm.
The patient was transitioned to bimonthly (Q8) and later to quarterly (Q12) treatment, maintaining disease inactivity with VA 20/30 at 10 months.

Discussion:
This case highlights Faricimab's efficacy as a rescue therapy in refractory nAMD. Unlike VEGF-A inhibitors alone, Faricimab also targets Ang-2, reducing angiogenesis and vascular inflammation. The treatment resulted in improved visual acuity, significant SRF reduction, and the ability to extend injection intervals, improving the patient's quality of life.

Faricimab emerges as a promising alternative for patients unresponsive to conventional anti-VEGF therapies.

239

Medical Retina

Functional Consequences of Avacincaptad Pegol Treatment in the GATHER Trials

F. Bandello[1], U. Chakravarthy[2]
[1]*Department of Ophthalmology, Università Vita-Salute San Raffaele, Italy*
[2]*Professor of Ophthalmology and Vision Sciences, Royal Victoria Hospital (The Belfast Trust) and Queen's University Belfast, Northern Ireland*

Purpose: Controlling geographic atrophy (GA) disease progression is vital for vision preservation. Low luminance deficit (LLD) measures the eye's ability to function in reduced luminance, and baseline LLD may predict vision loss in GA. This study examined the effect of avacincaptad pegol (ACP) 2 mg based on baseline LLD.

Methods: GATHER1 (NCT02686658) and GATHER2 (NCT04435366) were randomized, double-masked, sham-controlled trials that evaluated the efficacy and safety of ACP 2 mg in patients with non-center point involving GA. In this post hoc analysis of pooled GATHER data over 18 months (ACP 2 mg, n=290; sham, n=330), study eyes were classified by baseline LLD, calculated as the difference between best corrected visual acuity (BCVA) and low luminance (LL)-BCVA (quartile 1 = ≤18 letters; quartile 2 = 19-29 letters; quartile 3 = 30-46 letters; quartile 4 = ≥47 letters).

Results: Compared with sham, ACP 2 mg notably decreased vision loss (least squares [LS] mean difference: 5.54 letters; p=0.004) and lowered the rate of ≥15-letter persistent vision loss (i.e., across 2 consecutive visits) in quartile 4. Additionally, ACP 2 mg significantly slowed GA lesion expansion more effectively than sham in quartile 4 (LS mean difference: -1.10 mm2; p0.001).

Conclusions: ACP 2 mg reduced vision loss and decelerated GA lesion growth in the highest LLD quartile, indicating a targeted benefit in patients with pronounced baseline visual function impairment. These results suggest LLD serves as a practical and accessible predictor of disease advancement and therapeutic efficacy.

240

Medical Retina

Persistent Placoid Maculopathy in a Patient Diagnosed with Panuveitis

Francisco Javier Cordero Bellido[1]
Unidad de Retina y Uveítis, Hospital Universitario Virgen del Rocío, España

Purpose

To define the characteristics of persistent placoid maculopathy (PPM) within the spectrum of chorioretinopathies that present with poorly pigmented or yellowish placoid lesions, affecting the outer retina and, particularly, the retinal pigment epithelium. These lesions may involve the foveal or perifoveal area and can be caused by infectious, inflammatory, or idiopathic etiologies. PPM may be associated with vitreous cellularity and is frequently linked to an underlying autoimmune background, often mimicking panuveitis.

The exact etiology of this disease remains unknown. However, one of the leading hypotheses suggests an association with choroidal hypoperfusion (ischemia, vasculitis, etc.), as observed in acute posterior multifocal placoid pigment epitheliopathy (APMPPE).

Methods

We present the case of a 60-year-old woman who had been treated for 14 years for panuveitis and subsequently developed macular atrophy, leading to a reassessment of the initial diagnosis.

Results

Through multimodal imaging analysis during follow-up, and considering the development of macular atrophy along with hypopigmented placoid lesions, we performed a differential diagnosis and established a final diagnosis of PPM.

Conclusions

PPM is a chronic maculopathy that can lead to severe visual acuity impairment as it progresses. However, certain treatments, such as systemic immunosuppressive therapy, may help slow its progression. Recognizing its diagnostic features and performing an appropriate differential diagnosis are crucial for its early identification and proper management.

248

Medical Retina

Faricimab efficacy in a case of polypoidal choroidal vasculopathy (PCV) refractory to previous treatments

C. Rizzo[1], M. C. Savastano[2], R. Kilian[3], S. Rizzo[2]
[1]*Department of Neurosciences, Psychology, Drug Research, and Child Health, Eye Clinic, University of Florence, AOU Careggi, Italy*
[2]*Ophthalmology Unit, Fondazione Policlinico Universitario A. Gemelli IRCCS, Italy*
[3]*Department of Traslational Medicine, University of Ferrara, Italy*

Purpose:
To evaluate anatomical and functional outcomes of Faricimab therapy in a case of Polypoidal Choroidal Vasculopathy (PCV) that was refractory to previous treatments.
Methods:
A 56-year-old patient with PCV and a large pigment epithelial detachment (PED) was treated with a loading phase of 4 monthly Faricimab injections after failing to respond to previous treatments, including Aflibercept, Brolucizumab, and photodynamic therapy (PDT). Anatomical and functional responses were assessed at a 2-month follow-up, measuring Best-Corrected Visual Acuity (BCVA), subretinal fluid (SRF), and PED height reduction.
Results:
The treatment was well tolerated, and no adverse events were reported.
At 2 months, the patient showed a notable improvement in BCVA, a reduction in SRF, and a decrease in PED height. A marked reduction in PED height was also observed in previous studies suggesting Faricimab`s potential for improving "sub-RPE fluid" in PCV cases. Additionally, Faricimab`s dual inhibition of VEGF-A and Angiopoietin-2 (Ang-2) may contribute to improved outcomes in large PED compared to other drugs by enhancing vascular stability, reducing leakage, and promoting fibrocyte contraction. These improvements followed the 4 monthly injections of Faricimab, highlighting its potential efficacy in a previously treatment-resistant PCV case.
Conclusions:
Faricimab demonstrated significant anatomical and functional improvements in a PCV case that was poorly responsive to prior therapies. However, further studies with larger sample sizes are needed to confirm these findings and establish its role as a standard treatment option.

249

Medical Retina

A Case of Posterior Scleritis with Uveitis and Retinal Detachment in a Child

V. Yankova[1], N. Stoyanova[1,2]
[1]*Medical Faculty, Medical University of Plovdiv, Bulgaria*
[2]*Department of Ophthalmology, Saint George University Hospital, Bulgaria*

Purpose

To present a child with posterior scleritis complicated by uveitis and retinal detachment.

Methods

The case describes an 11-year-old child with persistent pain in the left eye and orbit, along with decreased vision in the same eye. The diagnostic process included a comprehensive ophthalmological examination, tonometry, B-scan ultrasonography, optical coherence tomography (OCT), computed tomography (CT) of the orbits, chest X-ray, blood and biochemical tests, a Mantoux test, serology for toxoplasmosis and borreliosis, as well as pediatric and otolaryngology consultations.

Results

Visual acuity was right 1.0 and left 0.4; intraocular pressure was normal. The right eye showed no abnormalities. The left exhibited S-swelling of the upper eyelid, injection of the bulbar conjunctiva, episcleral vessel dilation, and macular edema extending to the temporal vascular arcades and nasally to the papilla. An inflammatory reaction developed in the anterior chamber, along with optic nerve edema. B-scan ultrasonography revealed episcleral fluid accumulation at the posterior pole and around the optic nerve (T-sign), with choroidal thickening. OCT showed serous neuroepithelial detachment extending to the papilla. Laboratory tests indicated leukocytosis, an elevated erythrocyte sedimentation rate, and increased C-reactive protein, with negative serology. Systemic disease was ruled out, and viral etiology was assumed. The patient was treated with corticosteroids and antibiotics.

Conclusion

Our findings confirmed posterior scleritis based on ocular pain, decreased visual acuity, characteristic B-scan findings, and choroidal thickening. Systemic diseases and infections should be excluded. Given the risk of severe complications, early diagnosis and treatment are crucial to preventing vision loss.

Financial Disclosure: No

250

Medical Retina

A Case of Incidental Fahr's Syndrome Diagnosis in a Patient with Retinopathy

V. Yankova[1], N. Stoyanova[1,2]
[1]*Medical Faculty, Medical University of Plovdiv, Bulgaria*
[2]*Department of Ophthalmology, Saint George University Hospital, Bulgaria*

Purpose

To present a patient with the rare Fahr's syndrome, diagnosed incidentally during an ophthalmological evaluation.

Methods

The case presents a 76-year-old woman with one month of redness, pain, and recent swelling in the eye. Comprehensive ophthalmological examination, tonometry, optical coherence tomography, computed tomography, fluorescein angiography, laboratory tests, Doppler imaging, and consultations with other specialists were performed.

Results

Visual acuity was right 0.6 and left 1.0; intraocular pressure was normal. The abnormalities in the right eye included an optic disc at the level of the retina with circular hemorrhage. The left exhibited a conjunctival cyst, focal corneal thinning with initial vascularization, an optic disc with nasal prominence, and wet exudates and hemorrhages. Both eyes exhibited cataracts, macular and retinal degeneration with hyperpigmentation and narrowed retinal vessels. The changes suggested partial ischemic opticopathy and vascular pathology. The right eye lacked a foveolar depression and had an epiretinal membrane, whereas the left eye did not. Perimetry revealed solitary scotomas on the right and a paracentral scotoma in the upper half of the visual field on the left. Doppler showed atherosclerosis. Total and HDL cholesterol were slightly elevated. Head computed tomography confirmed Fahr's syndrome. While rare, retinal and vascular changes have been reported in Fahr's disease in other articles.

Conclusion

Fahr's syndrome is a rare autosomal dominant disorder characterized by abnormal idiopathic calcification, and this case supports its association with ocular pathology. Further research is needed to understand the mechanisms. Such patients should be evaluated for vascular pathology.

Financial Disclosure: No

251

Medical Retina

Global Real-World Clinical and Anatomical Outcomes With Faricimab in Treatment-Naïve Patients With nAMD or DME From a Multi-Country Prospective Non-Interventional Study: The VOYAGER Study

Saturnino Gismero-Moreno[1], M. Parravano[2], C. Bailey[3], V. Chaikitmongkol[4], V. Chaudhary[5], G.C. Chi[6], A. Downey[7], R.P Finger[8], R. Gallego-Pinazo[9], A. Hock Chaun Koh[10], S. Ishida[11], Monica Lövestam-Adrian[12], J.D. Luna Pinto[13], Steffen Schmitz-Valckenberg[8,14], V. Sheth[15], B. Shi[16], E.H. Souied[17], D. Uschner[16], R. Guymer[18]

[1]*Department of Ophthalmology, Costa del Sol University Hospital, Andalucía, Spain*
[2]*Medical Retina Unit, IRCCS-Fondazione Bietti, Italy*
[3]*Bristol Eye Hospital, University Hospitals Bristol, NHS Foundation Trust, UK*
[4]*Retina Division, Department of Ophthalmology, Faculty of Medicine, Chiang Mai University, Thailand*
[5]*Department of Surgery, Hamilton Regional Eye Institute, McMaster University, Hamilton, ON, Canada*
[6]*Ophthalmology, Genentech, Inc., CA, USA*
[7]*Ophthalmology, Hoffmann-La Roche Limited, ON, Canada*
[8]*Department of Ophthalmology, University of Bonn, Germany*
[9]*Unit of Macula and Clinical Trials, Oftalvist Clinic, Comunidad Valenciana, Spain*
[10]*Eye & Retina Surgeons, Camden Medical Centre, Singapore*
[11]*Department of Ophthalmology, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Japan*
[12]*Department of Ophthalmology, Department of Clinical Sciences Lund, Lund University, Skåne University Hospital, Sweden*
[13]*Vitreoretinal Department, Centro Privado de Ojos Romagosa-Fundacion VER, Argentina*
[14]*Department of Ophthalmology & Visual Sciences, John A. Moran Eye Center, University of Utah, UT, USA*
[15]*Ophthalmology, University of Illinois, IL, USA*
[16]*Ophthalmology, Hoffmann-La Roche, Switzerland*
[17]*Department of Ophthalmology, Centre Hospitalier Intercommunal de Créteil, France*
[18]*Macular Research, Royal Victorian Eye and Ear Hospital, University of Melbourne, VIC, Australia*

Purpose: Faricimab is the first bispecific antibody that neutralises angiopoietin-2/vascular endothelial growth factor-A. The global, prospective, non-interventional, 5-year VOYAGER (NCT05476926) study aims to provide insights on clinical and anatomical outcomes in approximately 5000 patients initiating faricimab for nAMD or DME in routine clinical practice.

Methods: Data analysed from November 2022 to August 2024 included treatment-naïve patients (nAMD: 120 eyes/119 patients; DME: 67 eyes/51 patients) from 21 countries. Management was as per usual care, with no mandated scheduled visits or imaging protocol requirements. VA (ETDRS, letters), CST, and the percentage of eyes with SRF and IRF were evaluated at baseline and 6 months. Descriptive analyses were performed.

Results: Mean VA (SD) change from baseline to month 6 was +3.5 (14.3) letters in nAMD eyes and +7.2 (12.2) letters in DME eyes. Mean CST (SD) change from baseline to month 6 was -85.1 (105.6) µm in nAMD eyes and -150.4 (138.7) µm in DME eyes. At baseline and month 6, 69.8% and 25.9% of nAMD eyes had SRF, and 62.7% and 15.8% had IRF, respectively. At baseline and month 6, 29.8% and 3.7% of DME eyes had SRF, and 98.2% and 72.7% had IRF, respectively.

Conclusion: This interim analysis of the VOYAGER study showed early clinical and anatomical improvements supporting the real-world effectiveness and safety of faricimab in a heterogeneous and multinational patient population (Floretina, 2024).

255

Medical Retina

Transient Occlusion of the Central Retinal Artery in a patient with Granulomatosis with Polyangiitis

Asli Perente, Minas Bakirtzis, Aikaterini Giannoukaki, Christina Mitsi, Ioannis Fotiadis, Irfan Perente, Georgios Labiris, Tryfon Rotsos, Doukas Dardabounis

Purpose

To report a case of transient central retinal artery occlusion (CRAO) as an ocular complication in a patient with granulomatosis with polyangiitis (GPA)

Case presentation

A 49-year-old male with a 2-year history of GPA presented due to three episodes of sudden-onset, transient, painless vision loss in his right eye. The patient reported episodes of amaurosis fugax in his right eye followed by complete recovery. Best-corrected visual acuity (BCVA) in each eye was 20/20 Snellen. The anterior segments were normal. Dilated fundus examination of the right eye revealed areas of diffuse retinal ischemia with vascular attenuation and "box-carring" of flow in arteries and veins. Immediately, Optical Coherence Tomography (OCT), OCT–Angiography, and Fluorescein Angiography (FA) were performed. Shortly before the FA, he experienced another episode of amaurosis fugax. Visual acuity deteriorated to hand movements. Fundus examination revealed a slightly pale, oedematous retina and a cherry-red spot at the macula. The patient was diagnosed with transient CRAO secondary to a flare of GPA-related vasculitis and he was admitted for high-dose corticosteroids, low-dose aspirin, and aggressive immunosuppressive therapy. Topical vasodilators and ocular massage were attempted to improve retinal perfusion. Within 30 minutes, the patient reported a full recovery of his vision, had no new episodes of CRAO and no further evidence of vasculitis was noted at the three-month follow-up.

Conclusion

Transient CRAO is an uncommon but severe vision-threatening complication of GPA. This case highlights the importance of early diagnosis and prompt treatment in patients presenting with ocular symptoms associated with GPA.

256

Medical Retina

Real-world clinical outcomes of treatment for neovascular AMD in patients with good visual acuity at baseline

Marta Bautista Salamanca[1], Vasuki Sivagnanavel[1], Clara Vazquez Alfageme[1]
Royal Eye Unit, Kingston and Richmond Hospital Foundation Trust, United Kingdom

PURPOSE

In England, antiVEGF treatment for neovascular AMD (nAMD) is only publicly funded in patients with a baseline visual acuity (VA) of 6/12 Snellen or less, based on the inclusion criteria of the pivotal clinical trials. In some areas, local agreements with the commissioning bodies can be reached to fund treatment for these patients.

Some studies have shown that baseline visual acuity is the strongest predictor of visual acuity outcomes in patients treated for nAMD, although visual gain in these patients is compromised due to the ceiling effect.

METHODS

This was a retrospective analysis of naïve patients diagnosed with nAMD with VA above 6/12, treated with off-licensed bevacizumab and followed up for at least one year in our unit. VA, central retinal thickness, disease activity on OCT, number of injections and treatment switches during follow up were collected.

RESULTS

98 eyes from 95 patients were included in the study. At the end of the first year, VA was above 6/12 in 94% (92/98) and above 6/9.5 in 90% (88/98) of treated eyes, requiring a median of 7 injections (IQR 2). At the end of the second year, 90% (27/30) of treated eyes had VA above 6/12. Only 26% eyes were switched to a different anti-VEGF.

CONCLUSIONS

In TENAYA and LUCERNE, only 14% of patients had VA above 6/9.5 at 48 weeks. Real-world clinical outcomes are consistently poorer than the results of clinical trials. Our study shows that a possible strategy to overcome this is early treatment of the disease.

259

Medical Retina

Prevalence and causes of age-related visual loss in Pakistan

Muhammad Junaid

Problem Statement: Age-related visual loss is a significant public health challenge, particularly in regions with an aging population. This study aims to assess the prevalence and causes of visual impairment among elderly individuals in Pakistan.

Methodology: A quantitative, cross-sectional study was conducted at Saba Deseret Eye Hospital, Pakistan, from January 2013 to February 2014. Ophthalmic examinations, including visual acuity tests, slit-lamp bio microscopy, and fundus examinations, were performed on 621 elderly individuals. In addition, between November 2024 and January 2025, 100 more patients were examined at Mehboob Charity Vision International Eye and General Hospital ,Pakistan to validate and further explore the findings.

Objectives: This study aimed to determine the prevalence of age-related visual loss, identify major causes of visual impairment, and assess demographic factors associated with visual loss.

Results: The prevalence of visual impairment among individuals aged 50 and above was 25.6%, with cataracts being the leading cause (60%), followed by age-related macular degeneration (20%), diabetic retinopathy (10%), and glaucoma (5%). The analysis revealed that older age significantly correlated with increased visual impairment.

Conclusions: Age-related visual impairment remains a major concern in Pakistan, exacerbated by limited access to healthcare. Early detection and timely interventions are critical.

Recommendations: Increased eye care services, regular screenings, and public awareness programs are necessary to address this growing issue. Additionally, improving healthcare access in rural areas can help reduce the burden of age-related visual impairment.

Keywords: Age-related visual loss, Prevalence, Cataracts, Macular Degeneration, Mansehra, Eye Care

261

Medical Retina

Choroidal Rupture: The Value of Multimodal Imaging in Diagnosis and Follow-up

B. Anguís-Ayllón[1], R. Abreu-González[1], G. Quezada-Peralta[1], K.N. Posa[1], M.A. Gil-Hernández[1]
Department of Ophthalmology, University Hospital of La Candelaria, Spain

Purpose:
To present a comprehensive multimodal imaging assessment of a choroidal rupture in a young patient following blunt ocular trauma, emphasizing the role of different imaging modalities in diagnosis, prognosis, and management.

Methods:
Single case report.

Results:
Ultra-widefield fundus photography revealed a circumferential retinal pigment epithelium (RPE) lesion around the optic nerve, consistent with a choroidal rupture, along with areas of retinal commotio in the peripheral retina. Widefield fundus imaging provided a more detailed visualization of the rupture, as well as a subretinal hemorrhage extending inferiorly. Autofluorescence imaging demonstrated a hypo-autofluorescent lesion due to RPE loss at the rupture site. Structural OCT confirmed disruption of the choroid, Bruch's membrane, and RPE, with associated hypertransmission of the signal, highlighting the extent of tissue damage.

Conclusions:
Multimodal imaging plays a critical role in the evaluation of choroidal rupture by offering detailed structural insights that facilitate early detection of complications and guide clinical decision-making. The integration of these imaging techniques allows for precise, non-invasive monitoring, which is essential for optimizing patient outcomes. Further studies are warranted to establish standardized imaging protocols for choroidal trauma assessment and long-term follow-up.

Medical Retina

Focal choroidal excavation in the pediatric population: case reports

B. Arias-Peso[1], M. López Domínguez[1]
Department of Ophthalmology, Virgen Macarena University Hospital, Spain

Purpose
To describe two cases of focal choroidal excavation (FCE) in the pediatric population and conduct a literature review on this condition in children.

Methods
A retrospective evaluation of case reports.

Results
Case 1: An 11-year-old patient under follow-up for microendotropia and anisometropic amblyopia in the left eye. Complementary examinations revealed FCE in the upper temporal arcade of the left eye, diagnosed via optical coherence tomography (OCT).

Case 2: A 9-year-old patient with mild hyperopia, diagnosed with FCE in the left eye during a routine examination using OCT.

In both cases, the FCE was of the conforming type, extrafoveal, and had no apparent impact on visual function. No other associated retinal alterations were identified. Isolated cases of FCE in the pediatric population have been described in association with retinochoroidal alterations. It has also been reported in young adults. To our knowledge, these are the first documented cases in pediatric patients without other associated alterations.

Conclusions
Focal choroidal excavation is a rare condition in the pediatric population. Although it appears to be asymptomatic, prospective studies are necessary to analyze its progression and determine whether it may evolve into other entities within the pachychoroid spectrum during childhood.

Financial disclosure: No

270

Medical Retina

Usefulness of ocular ultrasound in the study of acute arterial ischemia of the retina

AJ Gómez Escobar[1], L Castilla Guerra[2], E Gutierrez Sanchez[1], B Dominguez García[1], MC Fernandez Moreno[3]

[1]*Ophthalmology Service, Hospital Virgen Macarena, Spain*

[2]*Vascular Risk Unit, Internal Medicine Service, Hospital Virgen Macarena, Spain*

[3]*Neurology Department, Valme Hospital, Spain*

Purpose: The ocular ultrasound spot sign negatively predicts the success of thrombolytic treatmentin retinal arterial occlusions. We evaluated the presence of the spot sign in these patients

Methods: Retrospective study of patients with acute central retinal artery occlusion (CRAO) or its branches (BRAO). An ocular ultrasound was performed to assess the presence of spot sign

Results: Twenty patients were included, 13 CRAO and 7 BRAO. Carotid stenosis was the most commonetiology, in 50%, 7 CRAO and 3 BRAO. A spot sign was observed in 9 patients (45%), 7 CRAO and 2 BRAO.We did not observe significant differences between patients with CRAO and BRAO. Patients with the spotsign were significantly older: 73 (± _9) vs. 66 (± _6) years (p = 0.028)

Conclusions: Ocular ultrasound is very useful in the evaluation of patients with acute retinal ischemia.More than 50% of CRAOs and one in 4 with BRAOs have the spot sign and would not benefit from systemic thrombolysis

Medical Retina

Design of an Artificial Intelligence-Based Screening Strategy for Retinal Diseases

B. Arias-Peso[1], C. Zaccaro[2], B. Domínguez García[1], E. Rodríguez-de-la-Rúa-Franch[1], MS. Gómez del Río[1], I. Relimpio-López[1], JA. Álvarez-García[2]
[1]*Department of Ophthalmology, Virgen Macarena University Hospital, Spain*
[2]*Department of Languages and Computer Systems, Universidad de Sevilla, Spain*

Purpose
To describe the development of an artificial intelligence (AI)-driven tool aimed at the screening of various retinal pathologies.
Methods
A cohort of expert ophthalmologists annotated fundus photographs (Retinograph Zeiss CLARUS 700) encompassing a spectrum of retinal diseases as well as images from healthy individuals. Subsequently, multiple algorithms were trained utilizing selected high-quality subsets of these images.
Results
Out of 7,926 anonymized fundus photographs, 4,661 were excluded due to substandard quality. The remaining images were categorized as follows: 309 labeled "no retinal disease," 117 as "non-referable diabetic retinopathy," 549 as "referable diabetic retinopathy," 442 as "retinal/choroidal tumor," 243 as "hereditary retinal dystrophy," 329 as "macular pathology," and 1,176 as "other retinal pathology."
Three distinct algorithms were developed, with the following performance metrics:
Seven categories: sensitivity (SN) of 74.11, specificity (SP) of 63.47, and accuracy (ACC) of 75.2.
Three categories (diabetic retinopathy, other retinal pathology, or no retinal disease): SN of 83.15, SP of 83.17, and ACC of 85.78.
Two categories (retinal disease or no retinal disease): SN of 88.41, SP of 88.44, and ACC of 94.79.
Conclusions
The implementation of an AI-based screening tool has the potential to facilitate the prompt referral of severe retinal conditions, such as retinochoroidal tumors, and complex diagnostic cases, including hereditary retinal dystrophies, to specialized units. Enhancing the tool`s performance may be achievable by increasing the volume of processed images. Future research should focus on validating these findings within clinical practice settings as well as its usefulness in the educational training of health professionals.

Finalcial Disclosure: No.

278

Medical Retina

Real World Outcome: Wet AMD treatment in the first year. Three agents compared

Luke Tanner

East Suffolk and North Esses Foundation Trust NHS, UK

Purpose: Retrospective review of the effect of ranibizumab, aflibercept and faricimab in treatment-naïve age related subfoveal neovascular membrane meeting NICE (National Institute of Clinical Excellence) criteria
Methods: Ranibizumab and aflibercept (fixed bimonthly or treat and extend (T&E) schedule, initial load of three) and faricimab (T&E schedule, initial load of four). Treatment schedule was followed after the load. All patients were assigned consecutively to drug and schedule. Early Treatment Diabetic Retinopathy Study (ETDRS) Letters vision assessment and Optical Coherence Tomography at each visit
Results: More females than males, age range 68 to 96. Between 16 to 22 patients were in each group. Between 12-14 months from baseline, ranibizumab and aflibercept groups showed average improvements in vision: fixed bimonthly 6L, T&E aflibercept 8L and T&E ranibizumab 4L. Faricimab showed varying increase up to 14L. No treatment extension seen with ranibizumab and aflibercept. In the faricimab group fourteen (out of 22) were extended to between 10 to 14 weeks
Conclusion: Faricimab showed the largest increase in vision and extension of treatment.

Medical Retina

Serum apolipoproteins are stronger biomarkers of diabetic retinopathy than traditional lipids

NADA Avram[1], D. Risimic[2], J. Ćuk[2], J. Papić[3]
[1]*Eye Department, Foča University Hospital, Republic of Srpska*
[2]*Clinic for Eye Diseases, University Clinical Center of Serbia, Belgrade, Serbia*
[3]*Eye Clinic, University Clinical Centre of the Republic of Srpska, Banja Luka*

Introduction. The role of traditional lipids as one of the risk factors in the pathogenesis of diabetic retinopathy (DR) is controversial. In recent years, there has been a great interest in examining the association of apolipoprotein (Apo A1 and Apo B) with the DR.

Aim: to investigate the association of DR with the concentration of serum lipoproteins (cholesterol, HDL, LDL, triglycerides), as well as with the concentration of apolipoprotein (Apo A1, Apo B, Apo A1 ratio/Apo B).

Material and methods. Cross-sectional study included 200 respondents diagnosed with T2 diabetes (100 patients with DR and 100 patients without DR). The criterion for inclusion in this study were patients diagnosed with T2D, which lasted at least five and a maximum of 20 years. Serum samples (taken 12h after the last meal, and before taking insulin and medications) were processed on an automatic biochemical analyzer Architect c 4000 Abbott Company (USA) with the finished reagents.

Results. Patients with DR have significantly lower values of Apo A1 (1,16 ± 0,44) patients group compared to those without DR (1,67 ± 0,24), significantly higher values of Apo B (1,83 ± 0,64) vs without DR (1,06 ± 0,41). Apo a1/Apo B ratio has a statistically significant difference between the groups divided by weight of DM and DR compared to traditional lipids, were this difference was not statistically significant.

Conclusion. The results of this research indicate that apolipoproteins represent more significant predictive factor for occurrence and progression of DR and DME in relation to traditional lipids.

Key words: diabetic retinopathy, diabetes T2 traditional lipids, apolipoproteins

284

Medical Retina

Potential Role of Carbonic Anhydrase Inhibitors in the Treatment of Myopic Foveoschisis: A Case Series

Ana Flores Cano[1], Isabel Romero Barranca[1], María José Morillo Sánchez[1], María José Cano Gómez[1], Álvaro Moreno Guerrero[1], José Antonio Aguiar Caro[1], Beatriz Trincado García[1], Álvaro Luis Villazán Cervantes[1], Javier Ruiz Jiménez[1], Manuel Alberto Avellaneda Pousa[1], Luis Roca Navarro[1]

Department of Ophtalmology, Hospital Universitario Virgen Macaena, Spain

Purpose:

To report two cases of myopic foveoschisis (MF) that showed significant anatomical and functional improvement with carbonic anhydrase inhibitor (CAI) treatment, highlighting potential mechanisms by which CAIs may facilitate MF resolution.

Methods:

Two female patients with high myopia and acute MF symptoms were treated with topical CAIs. A 60-year-old woman (BCVA 20/125 OD) and a 43-year-old woman (BCVA 20/40 OD) both presented with MF and epiretinal membrane on OCT. They were treated with brinzolamide-based therapy. Follow-up examinations at three months and three weeks, respectively, showed complete resolution of MF with BCVA improvement to 20/100 and 20/25.

Results:

Both patients demonstrated rapid anatomical resolution of MF and symptomatic improvement following CAI treatment.

Conclusion:

These cases suggest that CAIs may play a role in MF management via two possible mechanisms: (1) reduction of IOP leading to a decrease in axial length and mechanical relief of foveoschisis, particularly in eyes with posterior staphyloma, and (2) direct facilitation of fluid absorption through carbonic anhydrase receptors in Müller cells, astrocytes, and the retinal pigment epithelium. While spontaneous resolution of MF has been reported in a minority of cases, the rapid response observed in both patients suggests a potential therapeutic effect of CAIs. Further studies are needed to explore their efficacy as a non-surgical alternative for MF.

287

Medical Retina

1 year outcomes of wet age-related macular degeneration (AMD) patients switched from ranibizumab biosimilar (ongavia) to faricimab

Farzeen Hashmi Hashmi[1], Faris Arif[1], Mythri Hanosage[1], Sheldon Fernandes[1], Emma Hurley[1], Sheeja Thomas[1], **William Fusi-Rubiano**[1]
Ophthalmology, Wye Valley NHS Trust, UK

Purpose: The number of patients needing intravitreal therapy (IVT) is rising and continues to rise placing pressure on ophthalmology departments. Biosimilars versions of drugs offer cheaper treatment with many UK departments using these in a bid to reduce costs. This small study looks at 1 year outcomes of patients switched from ranibizumab biosimilar to faricimab for wet amd

Methods: Retrospective analysis of wet AMD patients commenced on faricimab from ranibizumab biosimilar between 1/6/23 and 1/9/23 in a UK NHS Trust. Notes review was performed for 1 year pre and post faricimab switch. Main outcomes: Visual acuity (VA) and Treatment interval. Secondary outcomes: Central retinal thickness (CRT) preswitch, post-loading and 1 year; number injections 1 year pre and post switch; safety outcomes.

Results: Eleven patients (11 eyes) identified. Mean age:78. Median number previous IVT:44. Mean VA pre switch:0.44; 1 year post switch:0.4. Mean IVT extension pre switch:4.1 weeks; 9 weeks year 1. 91% patients at 8 weeks interval or more at year 1. CRT pre switch:245 um; after loading:196; year 1 post switch:189. Total number injection 1 year pre-switch:140; post-switch:100. No complications or serious events noted

Conclusions: Ninety-one percent achieved interval of 8 weeks whilst maintaining vision at 1 year. Total IVT reduced by 40 injection in year 1. Reduced visits and treatments reduces burden on both patients and hospital without compromising vision. Extrapolating this to year 2 if patients continue on 8 weekly or more then further reduction in IVT numbers expected.

288

Medical Retina

Quality of Life in nAMD patients switching to Brolucizumab after non-optimal response to other anti-VEGF

J Gismero-Rodríguez[1], A Gismero-Rodríguez[2], I García-Basterra[3], **S Gismero-Moreno[4]**, C Alba-Linero[2,5]

[1]*Residente Oftalmología, Hospital Universitario Virgen de la Victoria, Servicio Andaluz de Salud, Spain*

[2]*Facultad de Medicina, Universidad de Málaga, Spain*

[3]*FEA Oftalmología, Hospital Universitario Virgen de la Victoria, Servicio Andaluz de Salud, Spain*

[4]*FEA Oftalmología, Hospital Costa del Sol, Spain*

[5]*FEA Oftalmología, Hospital Universitario Virgen de la Victoria, Spain*

Purpose: To examine the impact of Brolucizumab on quality of life and anatomical and functional outcomes in patients with neovascular age-related macular degeneration (nAMD) who show non-optimal responses to Ranibizumab or Aflibercept. It also explores the differences between the effect of prior treatment with these drugs separately and assesses adverse effects.

Methods: A quasi-experimental before-after study was conducted on 35 eyes from 35 patients with nAMD, each receiving at least three intravitreal injections of Brolucizumab with a minimum six-month follow-up. Prior treatment involved Ranibizumab or Aflibercept, showing non-optimal responses. Quality-adjusted life years (QALYs) were calculated by converting best corrected visual acuity (BCVA) into utility values, adjusted for the follow-up period. Other evaluated parameters included central retinal thickness (CRT) and macular volume (MV).

Results: Pre-treatment utility values averaged 0.663 (0.332 QALYs), dropping slightly post-treatment to 0.652 (0.329 QALYs), indicating no significant differences. BCVA decreased by 0.028 on average, while mean CRT and MV increased by 9.568 µm and 0.165 mm^3, respectively. 5.9% of cases improved their health-related quality of life, while 14.7% showed a deterioration. No significant differences were found in outcomes based on prior use of Ranibizumab or Aflibercept.

Conclusions: Brolucizumab did not statistically enhance QALYs in patients with nAMD who previously responded poorly to Ranibizumab or Aflibercept, in fact, slight decreases in QALYs were observed. Although anatomical parameters increased, implying progression, there were no significant differences between the effects based on prior drug treatment. Long-term, Aflibercept may offer better clinical outcomes.

296

Medical Retina

Trilateral Retinoblastoma Involving the Suprasellar Region: A Case Report

JA Aguiar Caro[1], I Romero Barranca[1], A Flores Cano[1], A Moreno Guerrero[1], A Villazán Cervantes[1], B Trincado García[1], M López Domínguez[1], F Espejo Arjona[1]
Ophthalmology Department, Virgen Macarena University Hospital, Seville

Introduction

Trilateral retinoblastoma (TRB) is a rare and aggressive condition characterized by bilateral retinoblastoma and an associated midline intracranial tumor. Despite advances in retinoblastoma treatment, TRB remains a life-threatening diagnosis with a poor prognosis.

Objective

To describe a case of TRB with suprasellar involvement, emphasizing the importance of early detection and multimodal management.

Methods

A 16-month-old girl referred to our hospital for suspected bilateral retinoblastoma. Fundus examination revealed a nasal-inferior tumor with thickened vessels near the optic disc and another smaller tumor in the inferior temporal quadrant in the right eye (OD) and a large tumor in the OS with vitreous seeding and retinal detachment. B-mode ultrasound and magnetic resonance imaging (MRI) confirmed the presence of bilateral intraocular tumors with calcifications. MRI also detected a suprasellar midline lesion compressing the optic chiasm, highly suggestive of BTR. Genetic testing confirmed a heterozygous germline deletion in the RB1 gene.

Management and Outcome

The patient received chemotherapy following the modified ARET0321 protocol (vincristine, cyclophosphamide, etoposide, without cisplatin for ototoxicity risk). After four cycles, there is a marked tumor size reduction in both ocular and suprasellar lesions with no further spread. Is currently awaiting consolidation treatment with high-dose chemotherapy and autologous hematopoietic stem cell transplantation.

Conclusion

TRB remains a devastating disease with limited treatment options. Early diagnosis and aggressive multimodal therapy may improve survival. This case highlights the importance of neuroimaging in patients with bilateral retinoblastoma and underscores the role of genetic analysis for precise diagnosis and treatment planning.

298

Medical Retina

Pediatric Uveal Melanoma: A Case Report

J.A. Aguiar Caro[1], I. Romero Barranca[1], A. Moreno Guerrero[1], A. Flores Cano[1], B. Trincado García[1], A.L. Villazán Cervantes[1], J. Ruiz Jiménez[1], M.A. Avellaneda Pousa[1], L. Roca Navarro[1], M. López Domínguez[1], F. Espejo Arjona[1]
Ophthalmology Department, Virgen Macarena University Hospital, Seville

Objective
To report a case of pediatric uveal melanoma and highlight its distinctive clinical and imaging characteristics.

Methods
We present the case of a 3-year-old girl referred for evaluation of an iris lesion in the right eye (OD). A comprehensive ophthalmologic examination, imaging studies, and histopathological analysis were performed. A literature review was also conducted to compare this case with previously reported pediatric uveal melanomas.

Results
The patient exhibited an iris mass with vascularization, pupil deformation, and endothelial contact causing corneal edema. Imaging studies revealed a circumferential pigmented tumor affecting the iris, ciliary body, and choroid, predominantly in the nasal region. Doppler ultrasound showed a bilobed, highly vascularized lesion with arterial low-resistance flow. MRI confirmed a hyperintense lesion on T1, hypointense on T2, with intense contrast enhancement and no extraocular extension. The initial differential diagnosis included melanoma vs medulloepithelioma, with the rapid progression and vascular pattern favoring melanoma. Due to the extent of the lesion, enucleation of the right eye was performed, followed by histopathological confirmation of epithelioid cell melanoma (90%), positive for Melan-A and HMB45, without BAP1 loss.

Conclusions
Pediatric uveal melanoma is rare, especially at early ages, and presents distinct characteristics compared to adult melanoma. Early clinical suspicion and multimodal imaging are essential for an accurate diagnosis and timely intervention.

300

Medical Retina

Optimizing Early Ophthalmology Trials: Home OCT and Modeling Cut Sample Size by 30%

Jacques Hermes[1], Bernhard Steiert[2]
[1]*1Roche Pharma Research and Early Development, Pharmaceutical Sciences, Switzerland*
[2]*Institute of Physics, University of Freiburg, Germany*

Purpose: Clinical trials in ophthalmology face significant challenges due to the slow progression of retinal diseases and frequent imaging and treatment visits. This in-silico study investigates the integration of home optical coherence tomography (OCT) monitoring with pharmacokinetic/pharmacodynamic (PK/PD) modeling to reduce sample size while maintaining statistical power.

Methods: A population PK/PD model was developed to characterize the central subfield thickness (CST) dynamics under anti-VEGF therapy in neovascular age-related macular degeneration (nAMD) patients. The model was calibrated using longitudinal CST data from a previously published home OCT study. Monte Carlo simulations and bootstrapping were used to evaluate the impact of different monitoring strategies—traditional in-clinic visits versus frequent home OCT imaging—on sample size requirements. A statistical error propagation approach was employed to determine the minimum number of patients per arm needed to detect a clinically relevant CST reduction at week 8 post-final dose.

Results: The model successfully captured CST dynamics following anti-VEGF treatment and exhibited good goodness-of-fit properties. When applying traditional biweekly in-clinic monitoring, the estimated minimum sample size was 50 (41–54) patients per arm. In contrast, integrating high-frequency home OCT monitoring with modeling reduced this requirement to 34 (33–35) patients, demonstrating a 20–40% reduction in sample size. These findings highlight the potential efficiency gains of leveraging home monitoring data for clinical trials.

Conclusions: The combination of home OCT monitoring and mathematical modeling significantly reduces sample size. Future research may explore the broader applicability of this methodology across different retinal diseases and therapeutic strategies.