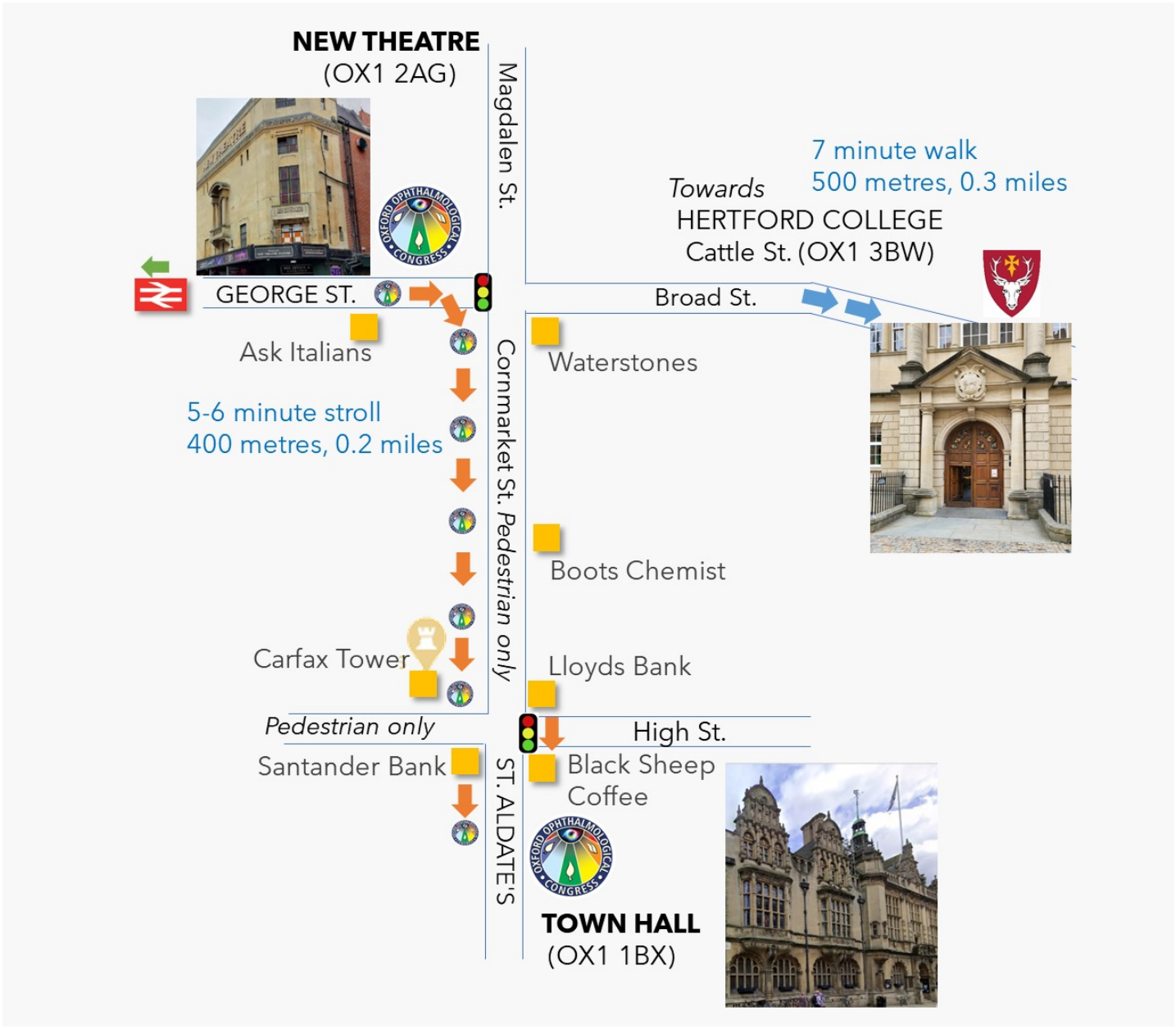
107th Oxford Ophthalmological Congress

1st –3rd July 2024

FULL Delegate Programme

Map and locations



MONDAY 1st JULY	TUESDAY 2nd JULY	WEDNESDAY 3rd JULY
Registration: 08:00 - 09:45	Registration: 08:00 - 09:00	Registration: 08:00 - 09:00
Scientific sessions: START 09:45 VENUE: **New Theatre**	**Scientific sessions:** START 09:00 VENUE: **New Theatre**	**Scientific sessions:** START 09:00 VENUE: **New Theatre**
Refreshments, Posters and Exhibition VENUE: **Town Hall**	**Refreshments, Posters and Exhibition** VENUE: **Town Hall**	**Refreshments** VENUE: **New Theatre**
Drinks Reception VENUE: **Town Hall**	**Gala Dinner** VENUE: **Hertford College**	**Scientific sessions:** CLOSE 16:15

Welcome to the 107th Oxford Ophthalmological Congress

Registration desk: Open 08:00 - 18:00

Louise Richards and her team will be available if you have any questions about proceedings.

CPD

The Royal College of Ophthalmologists approves Oxford Ophthalmological Congress to award up to 24.5 self-accredited points (including scientific lecture attendance and poster viewing opportunities). An e-copy of your CPD Certificate will be emailed to you shortly after the meeting.

Meeting evaluation

Your feedback about the meeting is invaluable to Oxford Ophthalmological Congress and the speakers presenting. Please complete your evaluation survey online by the 15 July 2024. The survey link emailed to all delegates is also available via the meeting website: https://www.ooc.uk.com/evaluation.

Electronic Programme

The full programme is available on the website.

Contents

107th Oxford Ophthalmological Congress, 1-3rd July 2024
Master's Welcome

Mr S. James Talks

Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK.

Welcome to the Oxford Ophthalmological Congress. Since 1909 the council has been organising a high-quality ophthalmology meeting, combining practical ophthalmology teaching with the latest scientific advances. Ophthalmologists are tending to become more and more specialised and may only go to meetings in their specialist area however we should not forget that the eye works as a whole and develops in one area may benefit others. Symposia will include medical retina, glaucoma, emergency medicine, genetics, a very practical session on managing corneal emergencies which will be relevant to all who do on call and we will branch into AI and into space.

The Master's symposium starts with the under researched area of sickle cell retinopathy then considers the consequence of being female on anti-VEGF therapy. New imaging methods will be presented and then the potential next big thing of treating dry AMD will be discussed both from a scientific angle, considering what could be the best targets to treat this end stage of the aging macular, and what outcomes there are so far in clinical trials. The session will finish with David Brown from Texas discussing what determines the longevity of anti-VEGF treatments. And what he has learnt as the Ophthalmologist for NASA.

We will look at how to manage glaucoma, where the biggest challenge is the increasing numbers of patients, and by contrast there is a session on the promise of personalised medicine. The emergency session will focus on how to manage what really could cause rapid blindness. There is also an eclectic mix of talks covering AI to the use of GLP-1 agonists.

Other highlights include the rapid fire session, posters, cases and the Doyne Lecture, in memory of the founder of the Congress, this year given by Prof. Robert MacLaren on gene therapy treatments for retinal diseases.

There has been a change of logistics with the meeting starting on Monday morning and running through to Wednesday afternoon. The lectures remain in the New Theatre however the food, trade exhibition and posters have moved to the old Town Hall, which is a magnificent building with a lot more space than was previously available and makes a fine building for a drinks reception on Monday. The congress dinner will be, for the first time, in Hertford College, famous for its 'Bridge of Sighs'. It has a fine wooden panelled dining room which will help facilitate the mission of the Congress of enabling the cultivation of the spirit of good fellowship and of unconventionality, the right of our youngest member to rank with his oldest colleague, and last, but assuredly not least, the frank, free and tolerant discussion of scientific matters brought before its gathering.

S. James Talks, OOC Master 2023–2024

2024 Programme Overview

Registration and badge pick up at the New Theatre.

09:45 - 17:30	MONDAY 1st JULY
09:45 - 10:50	**MASTER'S SYMPOSIUM: Advances in Diagnosis and Treatment in Medical Retina** Chair: Mr **S. James Talks**, Newcastle, UK
10:50 - 11:40	***Refreshments, Posters and Exhibition: TOWN HALL***
11:40 - 12:45	**MASTER'S SYMPOSIUM: Advances in Diagnosis and Treatment in Medical Retina** *continued* Chair: Mr **S. James Talks**, Newcastle, UK
12:45 - 14:15	***Lunch, Posters and Exhibition: TOWN HALL***
14:15 - 16:00	**Meeting the (UK) Challenges of Glaucoma in 2024** Chairs: Prof. **Augusto Azuara-Blanco**, Belfast, UK & Prof. Sir **Peng T. Khaw**, London, UK
16:00 – 16:30	***Refreshments, Posters and Exhibition: TOWN HALL***
16:30 - 17:30	**Poster Viewing Session: TOWN HALL**
17:30 – 19:00	**TOWN HALL, Grand Hall: OOC Drinks Reception**

09:00 - 17:30	TUESDAY 2nd JULY
09:00 - 10:30	**RAPID FIRE SESSION** Chair: Prof. **Rachel Pilling**, Bradford, UK
10:30 - 11:15	***Refreshments, Posters and Exhibition: TOWN HALL***
11:15 - 12:30	**DOYNE LECTURE: Gene therapy treatments for retinal diseases** Lecturer: Prof. **Robert MacLaren**, Oxford, UK
12:30 - 14:00	***Lunch, Posters and Exhibition: TOWN HALL***
14:00 - 15:30	**The Promise of Personalised Medicine – Challenges and Opportunities** Chair: Prof. **Graeme Black**, Manchester, UK
15:30 – 16:00	***Refreshments, Posters and Exhibition: TOWN HALL***
16:00 - 17:30	**The Eye is not the Limit** Chair: Prof. **Susan Mollan**, Birmingham, UK
From 19:30	**HERTFORD COLLEGE: OOC Gala Dinner (Drinks from 19:30, called to dinner promptly at 20:00)**

09:00 - 16:15	WEDNESDAY 3rd JULY
09:00 - 11:00	**Emergency Ophthalmology** Chairs: Miss **Samantha R. De Silva**, Oxford, UK & Ms **Roxane Hillier**, Newcastle, UK
11:00 - 11:30	***Refreshments: NEW THEATRE***
11:30 - 12:50	**Interesting Cases** Chair: Prof. **Mandeep S. Sagoo**, London, UK
12:50 - 14:00	***Lunch: NEW THEATRE***
14:00 - 16:00	**Corneal Procedures for all Ophthalmologists** Chairs: Prof. **Harminder S. Dua**, Nottingham, UK & Mrs **Dalia Said**, Nottingham, UK
16:00 - 16:15	**Prizes & Handover to the next Master**

Gene therapy treatments for retinal diseases

107th Oxford Ophthalmological Congress
DOYNE LECTURER

Robert MacLaren MB ChB DPhil FRCS FRCOphth FACS FMedSci

Robert MacLaren is Professor of Ophthalmology at the University of Oxford and a Consultant Vitreoretinal Surgeon at the Oxford Eye Hospital.

He graduated with a degree in medicine from the University of Edinburgh followed by a DPhil in Optic Nerve Regeneration from the University of Oxford. After Foundation Year training in Edinburgh, Reading and Oxford, he completed specialty training at Moorfields Eye Hospital where he also undertook fellowship training in vitreoretinal surgery and medical retina research. He currently leads a team of 20+ clinicians, scientists and research optometrists in the Nuffield Laboratory of Ophthalmology at the University of Oxford in what has now become the largest retinal gene therapy group worldwide. Work from his team has led to several first in human clinical trials, including gene therapy for choroideremia, age-related macular degeneration and X-linked retinitis pigmentosa. In addition he led the world's first use of a remotely controlled robot to operate successfully inside the eye in 2016.

MONDAY 1st JULY 2024

09:45 - 10:50	**MASTER'S SYMPOSIUM: Advances in Diagnosis and Treatment in Medical Retina**	
	Chair: Mr **S. James Talks**, Newcastle, UK	
09:45 - 09:50	Introduction	**S. James Talks**, Newcastle, UK
09:50 - 10:10	The Sickle Eye Project: The long road towards efficacious therapy for sickle cell retinopathy	**Christiana Dinah**, London, UK
10:10 - 10:30	How could being female affect your treatment with anti-VEGF?	**Christine Kiire**, Oxford, UK
10:30 - 10:50	Clinical benefits of new technologies for pan-retinal "Ora to Ora" visualisation and imaging	**Paulo Stanga**, London, UK
10:50 - 11:40	***TOWN HALL: Refreshments, Posters and Exhibition***	

11:40 - 12:45	**MASTER'S SYMPOSIUM: Advances in Diagnosis and Treatment in Medical Retina**	
	Chair: Mr **S. James Talks**, Newcastle, UK	
11:40 - 11:55	Consideration of targets for treating dry AMD	**Andrew Dick**, Bristol, UK
11:55 - 12:10	Clinical trials update and treatment for GA	**Ian Pearce**, Liverpool, UK
12:10 - 12:25	Aiming at longer lasting anti-VEGF treatments	**David Brown**, Bellaire, USA
12:25 - 12:40	Space flight associated neuro-ocular syndrome (SANS)	**David Brown**, Bellaire, USA
12:40 - 12:45	Session speakers Q&A	
12:45 - 14:15	***TOWN HALL: Lunch, Posters and Exhibition***	

14:15 - 16:00	**Meeting the (UK) Challenges of Glaucoma in 2024**	
	Chairs: Prof. **Augusto Azuara-Blanco**, Belfast, UK & Prof. Sir **Peng T. Khaw**, London, UK	
14:15 - 14:20	Introduction	**Agusto Azura-Blanco**, Belfast, UK
14:20 - 14:40	Case for Hercules Fast Track Clinic	**Paul Foster**, London, UK
14:40 - 15:00	Case for virtual clinics	**James Morgan**, Cardiff, UK
15:00 - 15:20	Case for delivering glaucoma care in the community	**Robert Harper**, Manchester, UK
15:20 - 15:40	Case for primary laser trabeculoplasty SLT and Direct SLT	**Gus Gazzard**, London, UK
15:40 - 16:00	Case for modern surgery including MIGS or other devices	**Gok Ratnarajan**, East Grinstead, UK
16:00 - 16:30	***TOWN HALL: Refreshments, Posters and Exhibition***	

16:30 - 17:30	**TOWN HALL: Poster Viewing Session**
	Posters at the Town Hall: Found in The Library and Assembly Room.
	E-posters available on the OOC website.

17:30 - 19:00	**TOWN HALL, Grand Hall: OOC Drinks Reception**

TUESDAY 2nd JULY 2024

09:00 - 10:30 RAPID FIRE SESSION

Chair: Prof. **Rachel Pilling**, Bradford, UK

09:00 - 09:05	Introduction	**Rachel Piling**, Bradford, UK
09:06 - 09:11	**1**- Posterior capsular rupture in cataract surgery: A multivariate analysis of risk factors	**Rishi Ramessur**, London, UK
09:12 - 09:17	**2** - A biosynthetic alternative to human amniotic membrane for use in ocular surface surgery	**Prity Sahay**, Nottingham, UK
09:18 - 09:23	**14** - Acanthamoeba keratitis: PCR and early treatment	**Aaron Goldberg**, Oxford, UK
09:24 - 09:29	**19** - Outcomes of glaucoma referral filtering schemes UK 2021 to 2024	**Tom Mackley**, Truro, UK
09:30 - 09:35	**25** - CDHR1-associated retinal degeneration: Clinical phenotypes, natural history and molecular genetics from an international study of 135 cases	**Imran H. Yusuf**, Oxford, UK
09:36 - 09:41	**26** - Meta-analysis of gene therapy associated uveitis (GTAU)	**Thomas M. W. Buckley**, Oxford, UK
09:42 - 09:47	**46** - Towards automated optical coherence tomography (OCT) data analysis for a real-world diabetic macular oedema (DMO) treatment cohort	**S. James Talks**, Newcastle, UK
09:48 - 09:53	**47** - Faricimab treatment outcomes with extended dosing and potential for Q20W intervals in DMO: A post hoc analysis of the phase 3 YOSEMITE/RHINE trials	**Maged Habib**, Sunderland, UK
09:54 - 09:59	**48** - Visual acuity and eligibility for sight impairment registration for those with geographic atrophy in the population of Gloucestershire	**Esther Samuel**, Gloucester, UK
10:00 - 10:05	**49** - Current evidence base for immune modulation in uveitis	**Louis Clearkin**, Oxford, UK
10:06 - 10:11	**50** - Prevalence and characteristics of Charles Bonnet syndrome (CBS) in patients with vitreoretinal and inherited retinal disease	**Ariel Yuhan Ong**, Oxford, UK
10:12 - 10:17	**70** - Using deep learning to aid in the differentiation of uveal melanoma from a naevus	**Max Jackson**, Liverpool, UK
10:18 - 10:23	**79** - Optomap derived retinal vascularisation rate predicts threshold retinopathy of prematurity (ROP)	**Emer Chang**, Oxford, UK
10:24 - 10:29	**98** - Withdrawn	

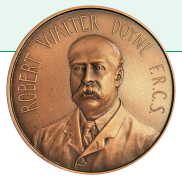
10:30 - 11:15 ***TOWN HALL: Refreshments, Posters and Exhibition***

Posters at the Town Hall: Found in The Library and Assembly Room.

E-posters available on the OOC website.

TUESDAY 2nd JULY 2024

11:15 - 12:30 2024 DOYNE LECTURE



Gene therapy treatments for retinal diseases

Doyne Lecturer: Prof. **Robert MacLaren**, Oxford, UK

Introduction and Doyne Medal presentation:

Mr **S. James Talks**, Newcastle, UK

12:30 - 14:00 *TOWN HALL: Lunch, Posters and Exhibition*

Chair: Prof. **Graeme Black**, Manchester, UK

14:00 - 14:05	Introduction 'The promise of Personalised medicine'	**Graeme Black**, Manchester, UK
14:05 - 14:25	Prediction of complex disorders: Polygenic risk scores	**Kelsey Stuart**, London, UK
14:25 - 14:45	Newborn screening of disease: The Generation Study	**David Bick**, London, UK
14:45 - 15:05	Personalised medicine: Prone to bias?	**Evelyn Mensah**, London, UK
15:05 - 15:25	Clinical trials in rare disease: Starting with endpoints	**Bart Leroy**, Ghent, Belgium
15:25 - 15:30	Questions	

15:30 - 16:00 *TOWN HALL: Refreshments, Posters and Exhibition*

16:00 - 17:30 The Eye is not the Limit

Chair: Prof. **Susan Mollan**, Birmingham, UK

16:00 – 16:30	Advances in artificial intelligence	**Pearse Keane**, London, UK
16:30 – 17:00	Through the eyes into the brain, using artificial intelligence	**Dan Milea**, Paris, France
17:00 - 17:30	Could GLP-1 receptor agonists be used for SANS?	**Susan Mollan**, Birmingham, UK

19:30 HERTFORD COLLEGE: OOC Gala Dinner (pre-booked tickets only)

Drinks from 19:30

Called to dinner promptly at 20:00

Dress: Black tie

WEDNESDAY 3rd JULY 2024

09:00 - 11:00	**Emergency Ophthalmology**	
	Chairs: Miss **Samantha R. De Silva**, Oxford, UK & Ms **Roxane Hillier**, Newcastle, UK	
09:00 - 09:17	Paediatrics - Orbital proptosis in a child	**Manoj Parulekar**, Oxford/Birm., UK
09:17 - 09:34	Orbital/Oculoplastic - Acute retro-orbital haemorrhage	**Lucy Clarke**, Newcastle, UK
09:34 - 09:51	Glaucoma - Acute angle closure	**Leon Au**, Manchester, UK
09:51 - 10:06	Cornea - Infective/inflammatory corneal perforations	**Ankur Barua**, Birmingham, UK
10:06 - 10:25	Neuro-ophthalmology - Papilloedema	**Susan Mollan**, Birmingham. UK
10:25 - 10:42	Uveitis - Acute retinal necrosis	**William Tucker**, London, UK
10:42 - 11:00	Vitreoretinal – Infective endophthalmitis	**Roxane Hillier**, Newcastle, UK
11:00 - 11:30	***NEW THEATRE: Refreshments***	

11:30 - 12:50	**Interesting Cases**	
	Chair: Prof. **Mandeep S. Sagoo**, London, UK	
11:30 - 11:50	Not another preseptal cellulitis!	**Raghavan Sampath**, Leicester, UK
11:50 - 12:10	Firefighting	**Erika M. Damato,** Cambridge, UK
12:10 - 12:30	Peripheral exudative retinal detachments	**Paulo Stanga**, London, UK
12:30 - 12:50	It's enough to make your flesh creep!	**Andrew Pyott**, Inverness, UK
12:50 - 14:00	***New Theatre: Sandwich bag Lunch***	

14:00 - 16:00	**Corneal Procedures for all Ophthalmologists**	
	Chairs: Prof. **Harminder S. Dua**, Nottingham, UK & Mrs **Dalia Said**, Nottingham, UK	
14:00 - 14:20	Suturing corneal lacerations - principles and techniques	**Harminder S. Dua**, Nottingham, UK
14:20 - 14:40	Corneal glueing: Hard and soft	**Dalia Said**, Nottingham, UK
14:40 - 15:00	Dealing with corneal blood vessels	**Harminder S. Dua**, Nottingham, UK
15:00 - 15:20	Corneal sampling (swabs, scrapes, biopsy, impression cytology)	**Mohammed Elalfy**, East Grinstead, UK
15:20 - 15:40	Alcohol delamination of the corneal epithelium for diagnosis and therapy	**Harminder S. Dua**, Nottingham, UK
15:40 - 16:00	Discussion	

16:00 - 16:15	**Prizes** **Handover to the next Master**

16:15	**CLOSE**

Abstracts and Posters

Abstract posters

Posters at the **Town Hall**: Found in **The Old Library** and **Assembly Room**

E-posters available on the OOC **website**. https://www.ooc.uk.com/posters or via QR code

CORNEA & CATARACT

ABSTRACTS: 1–13

EMERGENCY EYE CARE

ABSTRACTS: 14–18

GLAUCOMA

ABSTRACTS: 19–24

INHERITED RETINAL DISEASE

ABSTRACTS: 25–42

LIDS, LACRIMAL & ORBIT

ABSTRACTS: 43–45

MEDICAL RETINA (INC. UVEITIS)

ABSTRACTS: 46–69

OCULAR ONCOLOGY & PATHOLOGY

ABSTRACTS: 70–77

PAEDIATRIC, STRABISMUS & NEURO-OPHTHALMOLOGY

ABSTRACTS: 78–97

SURGICAL RETINA

ABSTRACTS: 98–107

ABSTRACT MENU

POSTER ABSTRACTS

	CORNEA & CATARACT	ABSTRACTS 1–13	
1	**Posterior capsular rupture in cataract surgery: A multivariate analysis of risk factors**	**Rishi Ramessur** *Moorfields Eye Hospital NHS Trust, London, UK.*	**RF** *CR*
2	**A biosynthetic alternative to human amniotic membrane for use in ocular surface surgery**	**Prity Sahay** *University of Nottingham, Nottingham, UK.*	**RF** *LR*
3	**The barriers to eye donation: A systematic review and policy implications**	**Nina Metcalf** *University of Southampton, Southampton, UK.*	P *CR*
4	**An algorithmic decision support software for intravitreal treatment intervals**	**Rosina Zakri** *St Thomas' Hospital, London, UK.*	P *CR*
5	**Prevalence and associated risk factors of dry eye disease in 16 Northern West Bank towns in Palestine: A cross-sectional study**	**Reham Shehada** *National Treatment Centre-NHS Highland, Inverness, UK.*	P *CR*
6	Withdrawn		
7	**Wales' first nurse led corneal cross-linking**	**Shoaib Hassan** *Singleton Hospital, Swansea, UK.*	P *CR*
8	**Cataract surgery outcomes in nonagenarians**	**Doa'a Kerwat** *Maidstone & Tunbridge Wells Hospitals, Maidstone, UK.*	P *CR*
9	**Evaluating the outcomes of keratoconus patients in an optometrist-led corneal clinic following collagen cross-linking**	**Laura Boddy** *Nottingham University Hospitals NHS Trust, Nottingham, UK.*	P *CR*
10	**Outcomes of Descemet membrane endothelial keratoplasty (DMEK) - Single centre study in Wales**	**Arpitha Pereira** *Singleton Hospital, Swansea, UK.*	P *CR*
11	**Penetrating ocular fish-hook injury**	**Mustafa Hammad** *West Suffolk NHS Foundation Trust, Bury St Edmunds, UK.*	DP *CR*
12	Withdrawn		
13	**Advancing biocompatibility assessment in ophthalmic materials: A journey from Harold Ridley to artificial intelligence**	**Daniel Lindegger** *University College London (UCL), London, UK.*	DP *LR*

1 Posterior capsular rupture in cataract surgery: A multivariate analysis of risk factors

Rishi Ramessur (1)

Allan Nghiem (1), Derek Ho (2), Alexander Ionides (1).

1) Moorfields Eye Hospital NHS Trust, London, UK. 2) Gloucestershire Hospitals NHS Trust, Gloucester, UK.

rishi.ramessur@nhs.net

Rapid Fire, Clinical Research

Introduction: Posterior capsular rupture (PCR) is the most significant complication associated with cataract surgery. We sought to understand risk factors associated with this at Moorfields Eye Hospital (MEH). Additionally, we sought to ascertain whether there was any difference in PCR risk following SubTenon's versus topical anaesthetic.

Methods: Using Structured Query Language (SQL), we extracted data on 172,803 cataract operations performed between 2012 and 2022 from Electronic Health Records at MEH. Time Series Analysis and multivariate Ordinary Least Squares Regression were used to identify long-term trends and PCR risk factors.

Results: The average monthly PCR rate remained stable (0.75-1.75%) over the 10-year period, with the exception of a spike to 4% during early 2020 - thought to be due to low volume prioritisation of complex cases during the Covid-19 pandemic. Multivariate regression revealed higher PCR rates associated with Asian (adjusted odds ratio (AOR) 1.003, 95% confidence interval (CI) 1.001-1.005), Black (AOR 1.006, 95% CI 1.004-1.008) and Other ethnicities (AOR 1.003, 95% CI 1.001-1.005). Additionally, higher PCR rates were associated with subconjunctival anaesthesia (AOR 1.012, 95% CI 1.003-1.033) and surgeon grades of registrar (AOR 1.011, 95% CI 1.006-1.017) and fellow (AOR 1.005, 95% CI 1.000-1.009). Lower PCR rates were associated with SubTenon's and topical anaesthetic delivery. There was no significant difference between PCR risk with SubTenon's (AOR 0.993, 95% CI 0.987-0.999) and topical anaesthetic delivery (AOR 0.992, 95% CI 0.985-0.998).

Conclusion: Our insights into risk factors for PCR complications will allow us to tailor our practice in order to optimise outcomes during cataract surgery.

2 A biosynthetic alternative to human amniotic membrane for use in ocular surface surgery

Prity Sahay (1)

Harminder Singh Dua (1), Mehri Behbehani (2), Perla Filippini (1), Gianpaolo Bruti (2), Melissa Townsend (2), Rob McKean (2).

1) University of Nottingham, Nottingham, UK. 2) The Electrospinning Company Ltd., Didcot, UK.

Prity.Sahay@nottingham.ac.uk

Rapid Fire, Laboratory Research

Introduction: The fresh human amniotic membrane hAM, currently widely used in ocular surface surgery, has numerous variations and limitations The purpose of this study was to assess the physical and biological properties of a biosynthetic Symatix® membrane (SM®) alternatives to replace hAM in ocular surgical applications.

Methods: Different physical properties of 20 µm thickness and 1 x 9 mm disc in diameter of SM® were tested ex-vivo by simulation on human corneas. In-vitro, primary human limbal epithelial cells from limbal explants were used to test the biological properties of limbal epithelial cell properties on SM®, hAM, freeze-dried amniotic membrane (FDAM), and plastic as comparators.

Results: The surgical handleability of SM® was equivalent to hAM and FDAM. Ultrastructural and histological studies demonstrated that epithelial cells on SM® had the typical tightly apposed, polygonal, and corneal epithelial cell morphology. The epithelial cells were well stratified on SM®, unlike hAM, and FDAM. Rapid wound healing occurred on SM® within 3 days. Ki-67 revealed increased progressive proliferation, and increased metabolic activity on SM®. Immunofluorescence studies showed positive expression of cytokeratin-19 (CK-19), collagen-1 (col-1), laminin, zonula occludens-1 (ZO-1), fibronectin (FN), and p-63 on SM®, plastic, and FDAM compared to positive expression of ZO-1, col-1, laminin, FN, and p-63 and negative expression of CK-19 in hAM.

Discussion: These results indicate that SM® is a better substrate for limbal epithelial cell migration, proliferation, and tight junction formation. The biocompatibility of corneal epithelial cells with the SM® demonstrated in this study can provide a suitable viable alternative to hAM for surgical application in sight-restoring operations.

3 The barriers to eye donation: A systematic review and policy implications

Nina Metcalf
Parwez Hossain.
Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, UK.
Nkm1g21@soton.ac.uk

Poster-only, Clinical Research

Introduction: Corneal blindness is a common cause of sight loss worldwide and is treatable with keratoplasty. Worldwide, specifically in the United Kingdom, there is a lack of eye donations, resulting in delays for keratoplasty. Currently, the cause of declining donations is unknown. This review analyses barriers to eye donation in hospitals worldwide and applies the findings to the UK's healthcare system.
Methods: Three online databases (MEDLINE, EMBASE and Web of Science) were searched. For inclusion, papers must have analysed a population of potential donors and recorded numerically why donations did not proceed for each lost case. Results were systematically compared to see the primary reasons for lost donation opportunities. Data was extracted into screening, approach, contraindication, consent and donation rates.
Results: The search yielded 1847 publications. Ten articles covering seven countries met the inclusion criteria and were selected for analysis. The eye procurement rate was 6.4%, with Germany having over four times the rate of the UK (13.9% vs 3% respectively). Contraindication rates varied drastically (26.5% vs 84.2%), with the UK being the highest. Consent rates also varied (8.5% vs 71%). Over half of potential donors were lost to reasons other than consent and contraindication (50.5%).
Discussion: Barriers exist at every donation stage, with logistical issues playing a more significant role than previously acknowledged. The UK could increase eye donation significantly by implementing mandatory referrals across the end-of-life pathway, improving logistics, and improving eye procurement based on the data presented in this review.

4 4 - An algorithmic decision support software for intravitreal treatment intervals

Rosina Zakri
Nigel Davies.
St Thomas' Hospital, London, UK.
rosina.zakri@nhs.net

Poster-only, Clinical Research

Introduction: The requirement for timely intravitreal therapy to ensure best outcomes for patients can be difficult to achieve owing to the large number of patients needing treatment. Treatment is now administered by trained injectors; a protocol driven approach to assessment would help trained non-medical staff to make accurate decisions regarding treatment and treatment intervals. We developed algorithmic decision support software and present initial analysis comparing software decision with ophthalmologist decision for treatment interval in wAMD, DMO and RVO patients.
Method: Ethical approval was obtained. 32 wet AMD, 10 DMO and 17 RVO patients with more than one year of treatment were recruited, seen as usual by an ophthalmologist. Visual acuity and OCT values were used to calculate two parameters: treatment response and comparison with normality. The algorithm outputs the number of weeks recommended before next treatment. This was compared with ophthalmologist decision.
Results: There was excellent agreement of algorithm recommendation in comparison with ophthalmologist decision. For wAMD, 21/32 showed exact agreement, 28/32 within 2 weeks and 4/32 outside 2 weeks. For DMO were in 7/10 exact agreement, 10/10 within 2 weeks and RVO 13/17 exact agreement, 15/17 within 2 weeks and 2 outside 2 weeks. Overall 41/59 agreed exactly, 53/59 were within 2 weeks and 7/59 outside 2 weeks. Algorithm decision recommendations outside 2 weeks were shorter treatment intervals than ophthalmologist decision.
Discussion: The decision support algorithm shows excellent agreement with ophthalmologist treatment decisions for wAMD, DMO and RVO. The tool may be a useful aid for trained non-medical staff working in injection clinics.

5 Prevalence and associated risk factors of dry eye disease in 16 Northern West Bank towns in Palestine: A cross-sectional study

Reham Shehada (1)
Yousef Shanti (2), Jamal Qaddumi (2).
1) National Treatment Centre-NHS Highland, Inverness, UK. 2) An-Najah National University, Nablus, Palestine.
shehadareham@gmail.com

Poster-only, Clinical Research

Background: Dry eye disease (DED) is a multifactorial disease of the interpalpebral ocular surface and tear film that leads to discomfort, fatigue and disturbance in vision. This study aims to assess the prevalence of DED and potential associated risk factors in the Northern West Bank of Palestine.
Methods: A cross sectional study was conducted in 16 selected towns in Northern West Bank governorates during December 2016 to September 2017. An interviewer-assisted Ocular Surface Disease Index (OSDI) questionnaire was used to study DED symptoms in the study population. Further evaluation of clinical signs of DED was performed using the following objective tests: tear film break-up time (TBUT), fluorescein corneal staining (FL/S) and Schirmer test. Subjects with an OSDI score of 13 or above were considered symptomatic of DED, and DED was defined if an OSDI score ≥13 was accompanied by at least one of the following signs in the worse eye: TBUT ≤10 seconds, Schirmer score ≤5 mm and fluorescein corneal staining ≥grade 1.
Results: Seven hundred sixty-nine subjects were recruited from the general non-clinical population in the West Bank. The mean age of participants was 43.61±18.57 years ranging from 18 to 90 years. Females constitute 52.7% of the study population. Based on the diagnostic criteria, the prevalence of DED was 64% (95% confidence interval 60.6 - 67.3).
Significance: The prevalence of DED is high in the study population. Older age and female gender were associated risk factors with the development of DED.

7 Wales' first nurse led corneal cross-linking

Shoaib Hassan
Tasneem Bakhiet, Mario Saldanha.
Singleton Hospital, Swansea, UK.
shoaib.hassan@doctors.org.uk

Poster-only, Clinical Research

Background: Corneal cross-linking has emerged as the most effective method to halt the progression of keratoconus. Service delivery in the NHS supports the utilisation of the accelerated CXL protocol due to its shorter exposure time to ultraviolet radiation while preserving the epithelium. Cross-linking was approved in 2021 in Wales and one centre has recently introduced its first specialist nurse practitioner led CXL programme.
Purpose: This study aims to compare the outcomes of accelerated (7.2 J/cm) corneal collagen cross-linking for patients with keratoconus, performed independently by specialist nurse practitioners.
Method: This retrospective comparative study examined 60 eyes of 45 patients with progressive keratoconus undergoing accelerated corneal cross-linking. The procedure was conducted independently by specialist nurse practitioners. Patients' visual acuity (LogMAR) and Pentacam analysis, measuring K1, K2, Kmax, and CCT were recorded before and approximately 10 weeks after treatment. Additionally, patients were reviewed for any post-procedural adverse effects.
Results: The study participants had a mean age of 25 years, with 16 females and 29 males. The results showed a significant improvement in BCVA, with a mean difference of -0.05 (p=0.02). While there was no significant difference in Kmax readings before and after treatment (p=0.48), a change in central corneal thickness (p=0.027) was observed, with a mean difference of 23.7. No post-procedural adverse effects were noted.
Conclusion: Accelerated corneal crosslinking is a safe and effective treatment option that can be independently performed by specialist nurse practitioners without any adverse effects.

8 Cataract surgery outcomes in nonagenarians

Doa'a Kerwat (1)

Ejaz Ansari (1,2).

1) Maidstone & Tunbridge Wells Hospitals, Maidstone, UK. 2) Institute of Medical Sciences, Canterbury Christ Church University, Canterbury, UK.

kerwatdm@hotmail.co.uk

Poster-only, Clinical Research

Background and Aim: Advances in surgical techniques and increased life expectancy have made cataract surgery in the over 90s age group more common. Reports of surgical outcomes in the over 90s is limited. Our aim is to determine if cataract surgery in nonagenarians is beneficial.

Methodology: Single centre, retrospective review of consecutive cases performed from April 2015 to January 2023. Primary outcome was proportion achieving best visual acuity (BVA) ≥6/12 (0.5 decimalised Snellen). Secondary outcomes were intra- and post-operative complications and adverse events. Demographic data included age, gender, ocular and systemic co-morbidities, surgeon rank, anaesthetic type.

Results: 919 cases were reviewed, mean age was 92 (SD 3.63) years. M:F= 1:1.5. Mean pre-operative BVA 0.29 (SD±0.18) (n=658), mean post-operative BVA 0.49 (SD±0.25) (n=493). Overall 74% had improvement in BVA, 52% BVA≥0.5, 5.01% BVA declined by ≥2 lines of Snellen. Consultants performed most (79%) cases. Most common ocular and systemic co-morbidities were glaucoma and ARMD, arterial hypertension, diabetes mellitus, malignant neoplasms. 1.1% of cases had intraoperative complications, all of which were PCRs, and postoperative complications occurred in 0.4% of cases. One case was performed under GA and the remaining were under LA (n=531).

Conclusion: Cataract surgery is generally safe and successful in nonagenarians and improves BVA in most cases. Common ocular co-morbidities, e.g. age-related macular degeneration and glaucoma limited the improvement in BVA in these patients.

9 Evaluating the outcomes of keratoconus patients in an optometrist-led corneal clinic following collagen cross-linking

Laura Boddy (1)

ShinYi Woo (2), Pollyanna Murch (1), Harminder S. Dua (1,2), Dalia G Said (1,2).

1) Nottingham University Hospitals NHS Trust, Nottingham, UK. 2) University of Nottingham, Nottingham, UK.

laura.boddy@nuh.nhs.uk

Poster-only, Clinical Research

Introduction: Keratoconus is a common corneal ectasia characterised by stromal thinning, corneal steepening, and irregular astigmatism. Collagen cross-linking (CXL) remains the only procedure available that prevents disease progression however patients require regular monitoring post-procedure creating a high burden for ophthalmologist-led corneal clinics. Optometrists with a specialist interest in corneal diseases may be able to provide this monitoring. This study examines the outcomes of an optometrist-led keratoconus clinic for patients who have undergone CXL.

Methods: A service evaluation was performed for an optometrist-led keratoconus clinic operating at Nottingham University Hospitals NHS Trust. Patient demographics and subjective refraction were obtained from electronic patient records. Corneal topography data (K1, K2, KMax, Pachymetry, Posterior Float, Higher Order Aberrations) were obtained using Oculus Pentacam AXL software. Statistics were performed using R statistical software using Mann Witney-U tests.

Results: Results were obtained for 130 eyes from 92 patients, 62/130 (47.69%) eyes were reviewed at 12 months. 43/130 (33.08%) eyes were reviewed at 24 months. Visual acuity significantly improved at 12 and 24 months post-CXL ($p<0.05$). Higher order aberrations were significantly reduced at 24 months ($p<0.05$) whilst other topographical values remained unchanged ($p>0.05$). 3/130 (2.31%) eyes experienced stromal haze which was reviewed promptly and by a corneal consultant, final visual acuity was unaffected.

Discussion: Patients monitored in an optometrist-led keratoconus clinic showed disease stability and improvement in vision with minimal complications that were adequately managed. Therefore, optometrist-led keratoconus clinics to monitor patients may help to alleviate the burden on corneal ophthalmologists for routine monitoring.

10 Outcomes of Descemet membrane endothelial keratoplasty (DMEK)- Single centre study in Wales

Arpitha Pereira
Mario Saldanha.
Singleton Hospital, Swansea, UK.
arpitha1988@gmail.com

Poster-only, Clinical Research

Introduction: Descemet membrane endothelial keratoplasty (DMEK) has become a favourite method to treat endothelial dysfunction. The purpose of the present study was to report the indications, clinical outcomes and complications following consecutive DMEK procedures from 2017 to 2023 at a hospital in Wales.
Methods: In this retrospective, consecutive, single-centre case series the medical files of eyes which had received DMEK between 2017 and 2023 for the treatment of endothelial dysfunction was evaluated regarding follow-up time and clinical outcomes.
Results: A total of 93 eyes of 75 patients who underwent DMEK were included. The mean age of the cohort was 78.41±10.57. 57.3% were male and 42.7% were female subjects. Mean pre-op BCVA was 0.8038+/-0.61. Mean post-op BCVA was 0.362+/-0.12 (p= 0.001) The main indication for DMEK was Fuch' dystrophy (87%). There were 10 failed grafts (9%) and 1 surgery which was abandoned due to high intraoperative IOP and vitreous prolapse. Out of them, 7 had undergone repeat DMEK, 1 had a PKP, 2 refused further intervention and 2 are currently awaiting PKP. 16 eyes (17%) underwent rebubbling; of which 3 eyes had the procedure twice. Mean time at which bubbling was performed, 8 days post -op.
Discussion: To our knowledge, this is the first series from Wales with a heterogeneous cohort of DMEK patients with different aetiologies performed by a single surgeon. Our results suggest that DMEK is a safe and effective procedure for endothelial diseases with encouraging surgical and visual outcomes.

11 Penetrating ocular fish-hook injury

Mustafa Hammad (1)
Husain Alharmi (2), Abdulhameed Mahmood (2).
1) West Suffolk NHS Foundation Trust, Bury St Edmunds, UK. 2) Salmaniya Medical Complex, Bahrain, Kingdom of Bahrain.
hammad45@icloud.com

Digital Poster-only, Clinical Research

Introduction: Penetrating ocular injuries caused by fish hooks, although rare, present unique challenges and significant risks to ocular structures and vision.
Case Presentation: We report a case of a 36-year-old male who presented with a fish hook embedded in his right eye. Clinical examination revealed a fish hook perforating the cornea, entering at the nasal cornea at 3 o'clock and exiting at the temporal cornea at 7 o'clock. Despite initial attempts to employ the advance-and-cut technique, the unsuccessful utilisation of a wire cutter led to a shift in the removal approach. The modified backout method was successfully employed, allowing the safe extraction of the fish hook while minimising iatrogenic damage. Follow-up appointments showed a gradual improvement in visual acuity despite early cataract formation and significant central scarring. To optimize the patient's visual outcome, a triple procedure involving penetrating keratoplasty (PKP), extra-capsular cataract extraction (ECCE), and intraocular lens (IOL) implantation has been scheduled.
Conclusion: This case highlights the importance of prompt and adaptable management in ocular fish-hook injuries, emphasising the need for comprehensive follow-up care. It also underscores the value of preventive measures, including the use of protective eyewear, to reduce the incidence of such injuries, given that the majority of ocular traumas are preventable.

12 Withdrawn

13 **Advancing biocompatibility assessment in ophthalmic materials: A journey from Harold Ridley to artificial intelligence**

Daniel Lindegger

University College London (UCL), London, UK.

lindeggerdaniel@gmail.com

Digital Poster-only, Laboratory Research

Introduction: Ophthalmic materials have frequently been developed on an ad-hoc basis, exemplified by Sir Harold Ridley's innovative use of acrylic plastic to manufacture intraocular lenses. He observed that splinters from aircrafts in World War II penetrated a pilot's eye and did not cause any intraocular inflammation. This observation lead to further research and the emergence of acrylic plastic as the standard material for intraocular lenses. Presently, artificial intelligence (AI) is inducing a transition from traditional material and biocompatibility assessment methods towards software-based approaches.

Methods: A literature review explore the historical progression of ophthalmic biocompatibility assessment methods. In vitro methods, animal and clinical studies are evaluated for their strengths and limitations to assess biomaterial compatibility. Additionally, novel approaches using AI are discussed, employing machine learning algorithms to predict and evaluate biocompatibility from different data sources.

Results: The review identifies an evolution in biocompatibility assessment methodologies. Traditional methods are still widely used despite limitations and high costs. The integration of AI in the assessment process emerges as a promising solution to predict compatibility, streamline the engineering process and potentially reduce costs associated with material-tissue interaction assessment.

Conclusion: The evolution of assessment of biocompatibility is undergoing a shift towards artificial intelligence methodologies. Machine learning models hold the potential to enhance efficiency and safety of ophthalmic material development. Further research is needed to define the precise role and maximise the impact of artificial intelligence in this domain.

POSTER ABSTRACTS

	EMERGENCY EYE CARE	ABSTRACTS 14–18	
14	**Acanthamoeba keratitis: PCR and early treatment**	**Aaron Goldberg** *Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	**RF** *CR*
15	**Management of ocular manifestations in Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN):** **A systematic review**	**Felon Mahrous** *Portsmouth Hospital University NHS Trust, Portsmouth, UK.*	P *CR*
16	Withdrawn		
17	Withdrawn		
18	**Seven hundred and fifty days of fungal keratitis, a case report**	**Farida Omar ElZawahry** *University of Nottingham, Nottingham, UK & Nottingham University Hospitals NHS Trust, Nottingham, UK.*	DP *CR*

14 Acanthamoeba keratitis: PCR and early treatment

Aaron Goldberg (1)

Audrey Shwe-Tin (1), Stella Hornby, Monique Andersson (1), Tahir Bozkurt (2), Lloyd Thomas (1).

1) Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) Oxford Eye Hospital, Oxford, UK.

aaron.goldberg1@nhs.net

Rapid Fire, Clinical Research

Introduction: Early diagnosis and initiation of treatment is key for acanthamoeba keratitis (AK), a vision-threatening ocular infection. Therefore, the impact of introducing polymerase chain reaction (PCR) in 2017 on timely AK management at Oxford Eye Hospital was assessed.

Method: Electronic records of 343 patients tested for AK from January 2012 to September 2023 were reviewed, identifying 37 confirmed (13 cultures and 24 PCRs) and 63 suspected cases given antiprotozoal treatment. Non-parametric statistical analysis evaluated PCR's effect on time to AK diagnosis, treatment starting and clinical outcomes.

Results: Compared to culture, PCR has significantly decreased time from presentation to AK diagnosis and treatment initiation by 5 (p=0.048) and 8 days (p=0.023) respectively. Albeit an expected finding, this time reduction benefited PCR-positive patients through early confirmation of suspected AK in 12 cases unresponsive to antibacterial/viral therapy, guiding swift management of rapid deterioration in 4 previously subtle presentations, quickly rationalising treatment for 5 instances of keratitis co-infections and justifying anti-acanthamoebal continuation when drop sensitivity arose twice. Switching to PCR also improved symptoms (p=0.043) and signs (p=0.050) for AK-positive cases on follow-up. AK treatment was initiated based on clinical suspicion in most cases (86%), with no severe outcomes, rather than waiting for culture/PCR confirmation, thus emphasising the importance of early treatment.

Significance: PCR facilitates beneficial early diagnosis of AK, which does translate into improved outcomes. Ultimately, starting treatment on strong clinical suspicion before investigation results are returned is essential for AK management.

15 Management of ocular manifestations in Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN): A systematic review

Felon Mahrous (1)

Parwez Hossain (2).

1) Portsmouth Hospital University NHS Trust, Portsmouth, UK. 2) Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, UK.

felonmahrous19@gmail.com

Poster-only, Clinical Research

Introduction: Stevens-Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN) is a rare and potentially life-threatening immune-complex-mediated hypersensitivity reaction affecting the skin and mucous membranes. SJS/TEN causes serious ocular complications, including symblepharon and corneal keratinisation, resulting in permanent vision loss. Eye care may not be prioritised during initial assessment and management despite potential long-term complications. Whilst various management strategies exist, there has yet to be a recent data collation and review of clinical practice. Our aim is to evaluate the existing practices for managing ocular manifestations in SJS/TEN patients and facilitate refinement of management protocols.

Methods: Screening, data extraction, and quality assessment followed PRISMA guidelines for preferred reporting of systematic reviews. Multiple databases, including Medline, Embase, and Clinicaltrials.gov, were searched for publications before 6 January 2024. Inclusion criteria included studies on managing ocular manifestations in SJS/TEN, adult patients (18+) and publications in English.

Results: 104 studies on managing ocular complications of SJS/TEN were included, 42 focusing on pharmacological interventions such as immunomodulators and steroids. Multiple studies focused on using amniotic membrane transplantation as a low-risk technique, demonstrating significantly positive outcomes. Emerging treatment modalities such as corneal epithelial stem cell transplantation and 5-fluorouracil injections offer increased hope.

Discussion: Early input from ophthalmologists when a patient presents with Stevens-Johnson syndrome (SJS) or toxic epidermal necrolysis (TEN) is crucial. However, there is a need for more consensus regarding the specific management of SJS/TEN, and the effectiveness of current recommendations. Therefore, there is a need for more data comparison to develop a comprehensive guideline for ophthalmologists.

16 Withdrawn

17 Withdrawn

18 **Seven hundred and fifty days of fungal keratitis, a case report**

Farida Omar ElZawahry (1,2)

Maham Khalid (1,2), Wasse Uddin Ahmed Saleh (1,2), Kostas Rallis (1,2), Dalia Galal Said (1,2), Harminder Singh Dua (1,2).

1) University of Nottingham, Nottingham, UK. 2) Nottingham University Hospitals NHS Trust, Nottingham, UK.

farida.zawahry6@gmail.com

Digital Poster-only, Clinical Research

Purpose: The purpose of the case report is to highlight the importance of considering fungal disease early in disease presentation coupled with prompt and accurate initiation and follow up of antifungal therapy. We also discuss the pitfalls of antifungal therapy, optimisation and recurrence.

Observations: We document the prolonged treatment of a 55-year-old man who presented with clinical fungal keratitis but inconclusive corneal scrapings, requiring various different antifungal agents as well as eventual surgical intervention leading to a positive visual outcome.

Conclusions: Fungal keratitis poses an important clinical challenge due to its recurrence and inadequate response to conventional treatment options. Surgical intervention, such as corneal transplantation, can be utilised in severe cases with extensive corneal involvement or vision threatening perforations.

POSTER ABSTRACTS

	GLAUCOMA	ABSTRACTS 19–24	
19	**Outcomes of glaucoma referral filtering schemes UK 2021 to 2024**	**Tom Mackley** *Primary Eyecare Services, Manchester, UK.*	**RF** *CR*
20	**Clinical audit of effectiveness of Preserflow™ MicroShunt with mitomycin for glaucoma**	**Summaya Zaffar** *Leighton Hospital Mid Cheshire Hospitals NHS Trust, Crewe, UK.*	P *CR*
21	Withdrawn		
22	**Does every child require intraocular pressure measurements during a routine ophthalmology exam?**	**Sivanthi Kanagasundaram** *Poznan University of Medical Sciences, Poznan, Poland & East Sussex Healthcare NHS Trust, Conquest Hospital, Hastings, UK.*	P *CR*
23	**The identification of key pathways in the pathogenesis of glaucoma**	**Caoimhe Normile** *University College, Dublin, Ireland.*	P *LR*
24	Withdrawn		

19 Outcomes of glaucoma referral filtering schemes UK 2021 to 2024

Tom Mackley

Amy R. Hughes, Anna Bhan.

Primary Eyecare Services, Manchester, UK.

Tom.Mackley@primaryeyecare.co.uk

Rapid Fire, Clinical Research

Introduction: Glaucoma referral filtering schemes have been in the UK for over 17 years and have been advocated by NICE guidelines. We review current outcomes of activity from 2021 to 2024 of such schemes across localities within 26 Integrated Care Board areas.

Methods: There were 3 active pathways currently in use to filter referrals at routine sight test. The pathway criteria were as follows; in pathway 1, patients were referred to HES if high intraocular pressure (IOP), an abnormal visual field (VF) or both but no other signs (or concerns) of glaucoma noted; in pathway 2, patients were referred if high IOP only, a normal VF and no other signs (or concerns) of glaucoma and if so, a repeat IOP measurement was undertaken before referral to HES; in pathway 3, patients were referred if high IOP, a normal VF and no other signs (or concerns) of glaucoma.

Results: There were 17,639 patients seen in total in the time period from May 2021 to date. Of the 17,639, 10,537 (59.74%) were discharged after their first assessment and a further 1760 (10.0%) were discharged after their second assessment. Hence, in total, 12,279 (69.3%) of patients were discharged from the filtering services. 2058 patients were referred to the HES after their first assessment and 3641 patients after their second (in total 31.7%).

Discussion: Filtering schemes provide a consistent reduction of false positive referrals to HES and have expanded to cover large proportions of the UK.

20 Clinical audit of effectiveness of Preserflow MicroShunt™ with mitomycin for glaucoma

Summaya Zaffar

Dan Nguyen, Ayaz Asghar, Raly Job.

Leighton Hospital Mid Cheshire Hospitals NHS Trust, Crewe, UK.

summaya.zaffar@mcht.nhs.uk

Poster-only, Clinical Research

Introduction: The introduction of the Preserflo™ MicroShunt with mitomycin-C in the context of open-angle glaucoma has marked a significant milestone in the pursuit of effective and minimally invasive glaucoma treatment. When coupled with the application of mitomycin-C, the Preserflo MicroShunt becomes even more potent in preventing scar tissue formation and enhancing the success rate of this micro-invasive glaucoma surgery.

Methods: We included 25 patients of primary open angle glaucoma on randomised probability sampling from patients operated on at Leighton Hospital for Preserflow MicroShunt with mitomycin. Detailed clinical data, including type of glaucoma, best-corrected visual acuity (BCVA), IOP and antiglaucoma medications (topical and oral) were recorded preoperatively and at each postoperative visit (day 1, week 1, month 1, month 3, month 6, month 12).

Results: We lost data for four patients who passed away before 12 months follow-up so they were not included in the final results. At 1 year follow-up, out of 21 eyes 16 (76.1%) achieved CS: IOP of 6–21 mmHg (inclusive) with ≥20% reduction from preoperative IOP without anti-glaucoma medications. At 1 year follow-up, out of 21 eyes 3 (14.3%) achieved QS: the same parameters as CS but with antiglaucoma medications. At 1 year follow-up, out of 21 eyes 2 (9.5%) failed to achieve success.

Conclusion: The recommendation for the Preserflo MicroShunt is based on its potential to offer significant benefits in the management of glaucoma. This innovative microshunt has demonstrated effectiveness in reducing intraocular pressure (IOP) while minimising the risks associated with traditional glaucoma surgeries.

21 Withdrawn

22 Does every child require intraocular pressure measurements during a routine ophthalmology exam?

Sivanthi Kanagasundaram (1,2)

Aneta Choręziak (2), Emilia Zwolińska (2), Anna Rzeszotarska (2), Anna Chmielarz-Czarnocińska (2), Marta Pawlak (2), Anna Gotz-Więckowska (2).

1) Department of Ophthalmology, Poznan University of Medical Sciences, Poznan, Poland. 2) East Sussex Healthcare NHS Trust, Conquest Hospital, Hastings, UK.

sivanthik@outlook.com

Poster-only, Clinical Research

Introduction: The aims of this study were to identify patient cohorts at the greatest risk of developing childhood glaucoma, in whom intraocular pressure (IOP) measurements would be compulsory, to support the diagnosis of glaucoma.

Methods: Medical records of patients diagnosed with childhood glaucoma in our tertiary centre were retrospectively analysed. Patients seen between January 1st 2017 and December 31st 2019 were included in our study.

Results: A group of 74 patients (41; 55.4% males), 127 eyes, were included in the study and assigned to subgroups according to the classification proposed by the Childhood Glaucoma Research Network (CGRN). Primary glaucoma was diagnosed in 16 patients (21.6%), with primary congenital glaucoma in 14 patients (18.9%). Secondary glaucoma was reported in 58 patients (78.4%), including glaucoma following cataract surgery (n=11, 14.9%), glaucoma associated with non-acquired ocular anomalies (11; 14.9%) and glaucoma associated with acquired conditions (28; 37.8%).

Significance: As many as 30 children (40.5%) referred to our tertiary centre were asymptomatic but eventually diagnosed with glaucoma. Asymptomatic individuals were identified when they were classified into the subgroups proposed by CGRN. The CGRN proved to be a useful tool to not only aid in the diagnosis of patients but also as a screening tool to highlight children who were most likely to develop childhood glaucoma. IOP constitutes one of the factors for the diagnosis of childhood glaucoma and therefore, those with risk factors would require routine monitoring of their IOP.

23 The identification of key pathways in the pathogenesis of glaucoma

Caoimhe Normile (1)

Colm O'Brien (1), Mustapha Irnaten (1). Oisin Cappa (2), David Simpson (2), Vadim Zhernokov (1), Boris Kholodenko (1), Bruce Moran (1), Jeffrey O Callaghan (3), Carl Sheridan (4).

1) University College, Dublin, Ireland. 2) Queen's University, Belfast, UK. 3) Trinity College, Dublin, Ireland. 4) University of Liverpool, Liverpool, UK.

normilecaoimhe@gmail.com

Poster-only, Laboratory Research

Introduction: In glaucoma there is considerable remodelling of the connective tissue in the lamina cribrosa (LC), with fibrosis, constipation of axoplasmic flow and loss of optic nerve axons. We performed single cell analysis to better understand underlying mechanisms.

Methods: Single cell RNA sequencing was performed on LC cells from normal and glaucoma donors. Differential gene expression analysis was performed using Seurat. We identified hallmark pathways using GSEA. We performed motif and track enrichment analysis using i-cisTarget. We confirmed our findings using PCR, Western blot, immunohistochemistry and immunofluorescence. LC cells were treated with ISRIB.

Results: Hallmark pathways identified included hypoxia, the UPR and TGFβ signalling. Possible transcription factors identified by i-cisTarget included SRF, GCN4, AP-1, FOS and JUN, all of which have a NES >3. PCR showed an increase in glaucomatous LC cells of key ISR genes ATF4, CHOP, GRP78, GRP94 and eIF2α.This increase was confirmed on western blot. Immunofluorescence showed increased staining of ATF4 and eIF2α in glaucomatous LC cells. Immunohistochemistry demonstrated increased levels of ATF4, CHOP, GRP78 and αSMA in the prelaminar, laminar and retrolaminar optic nerve head. Treatment with ISRIB decreased levels of ATF4, CHOP, GRP78, GRP94, eIF2α, COL1A1, Fibronectin and αSMA on PCR and WB.

Discussion: We demonstrated through novel and conventional techniques that the ISR is key in LC cell pathology in glaucoma, and further showed that treatment with ISRIB decreases both ISR and extracellular matrix (ECM) gene expression and may represent a novel glaucoma treatment.

24 WITHDRAWN

POSTER ABSTRACTS

	INHERITED RETINAL DISEASE	ABSTRACTS 25–42	
25	**CDHR1-associated retinal degeneration: Clinical phenotypes, natural history and molecular genetics from an international study of 135 cases**	**Imran H. Yusuf** *University of Oxford, Oxford, UK & Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	**RF** *CR*
26	**Meta-analysis of gene therapy associated uveitis (GTAU)**	**Thomas M.W. Buckley** *Oxford University Hospitals NHS Trust, Oxford, UK.*	**RF** *CR*
27	**Ranked importance of functional measures in choroideremia**	**Amandeep Josan** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *CR*
28	**Early onset cone photoreceptor degeneration as a risk factor for high myopia in RPGR-retinal dystrophy**	**Shabnam Raji** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *CR*
29	**Characterisation of optical coherence tomography (OCT) parameters in patients with late-stage inherited retinal degeneration (IRD) for suitability of optogenetic therapies**	**Benjamin Ng** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *CR*
30	**Developing and validating a novel colour saturation threshold test**	**Alexander Sarossy** *Central Clinical School, Monash University, Clayton, Australia.*	P *CR*
31	**Dominant COL9A3 Stickler syndrome**	**Thomas Nixon** *Vitreoretinal Research Unit, John van Geest Centre for Brain Repair University of Cambridge, Cambridge, UK.*	P *CR*
32	**Low-luminance visual acuity: The impact of dark adaptation**	**Giovanni Forte** *Vision and Eye Research Institute, Anglia Ruskin University, Cambridge, UK & School of Medicine, University of Pavia, Pavia, Italy.*	P *CR*
33	**Multimodal imaging and management of Wagner syndrome - Three patients from an affected family**	**Tomasz Szeligowski** *Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	P *CR*
34	**RPGR protein structures used in current X-linked retinitis pigmentosa gene therapy clinical trials predicted by artificial intelligence**	**Maram Abdalla** *Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	P *CR*
35	Withdrawn		
36	**Functional analysis of variants of unknown clinical significance in Stickler syndrome**	**Zack Soh** *Vitreoretinal Research Unit, John van Geest Centre for Brain Repair University of Cambridge, Cambridge, UK.*	P *LR*
37	**Pathogenesis of RPGR-associated cone dystrophy and implications on gene therapy**	**Cristina Martinez-Fernandez de la Camara** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *LR*

POSTER ABSTRACTS

	INHERITED RETINAL DISEASE	ABSTRACTS 25–42	
38	**Validating human-derived organoids as a suitable model for testing optogenetic therapies**	**Hoda Shamsnajafabadi** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK.*	P *LR*
39	**Structure-guided chemical modifications to SaCas9 gRNA enhances CRISPR-Cas knockdown efficacy**	**Ruofan Connie Han** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *LR*
40	**Comparing and optimising the editing efficiency of three RNA editor families targeting a CRB1 nonsense variant**	**Julia-Sophia Bellingrath** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK.*	P *LR*
41	Withdrawn		
42	**Insights into the retinal origin of the sheen in Oguchi disease from serial retinal imaging**	**Haseeb Akhtar** *NIHR Moorfields Biomedical Research Centre, UCL Institute of Ophthalmology, London, UK & St Thomas' Hospital, London, UK.*	DP *CR*

25 CDHR1-associated retinal degeneration: Clinical phenotypes, natural history and molecular genetics from an international study of 135 cases

Imran H. Yusuf (1,2)

Richard Caswell (3), Samantha R. De Silva (1,2), Stephen H. Tsang (4), Bart P. Leroy (5), Andrew R. Webster (6), Omar A. R. Mahroo (6), Robert E. MacLaren (1,2), Peter Charbel Issa (1,2).

1) University of Oxford, Oxford, UK. 2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 3) Exeter Genomics Laboratory, Royal Devon University Healthcare NHS Foundation Trust, Exeter, UK. 4) Department of Pathology and Cell Biology and Columbia Stem Cell Initiative (CSCI), Columbia University Irving Medical Center, New York, New York, USA. 5) Department of Ophthalmology, Ghent University Hospital, Ghent, Belgium. 6) Institute of Ophthalmology, University College London, London, UK.

imran.yusuf@eye.ox.ac.uk

Rapid Fire, Clinical Research

Introduction: CDHR1-associated retinal degeneration is an underdiagnosed cause of visual loss. Pre-clinical studies show efficacy of retinal gene therapy, with clinical trials anticipated. However, its natural history has not been systematically characterised.

Methods: We undertook an international, multi-centre, retrospective cohort study to systematically describe the clinical phenotypes, natural history, molecular genetics, genotype-phenotype associations and estimated genetic prevalence of CDHR1-associated retinal degeneration.135 individuals (65 males) with retinal degeneration attributed to biallelic CDHR1 variants were included. Data relating to clinical history, symptoms and age of onset, best-corrected visual acuity, multimodal retinal imaging, and molecular genetic testing were extracted. Multimodal retinal imaging was used to classify disease phenotypes. Protein modelling predicted the effects of missense variants. Genetic prevalence was estimated by disease phenotype using the Hardy-Weinberg equilibrium and allele frequencies of disease-associated mutations.

Results: 100 individuals with cone-rod dystrophy (CRD) harboured biallelic truncating or predicted severe missense variants with symptom onset at a median of 20 years. 32 individuals had macular degeneration (MD) with at least one hypomorphic allele with symptom onset at a median of 44 years. Severe visual impairment occurred earlier in CRD (median 41 years) versus MD patients (median 71 years) (n=126; p<0.0001; 95% CI). 115 disease associated CDHR1 variants were identified; 25 were novel. Genetic prevalence estimates suggest >200,000 affected individuals worldwide, 95% of whom are expected to develop MD.

Significance: CDHR1-associated retinal degeneration is slowly progressive with a clear therapeutic window for intervention. The main disease phenotypes can be generally predicted based on the underlying genetic variants.

26 Meta-analysis of gene therapy associated uveitis (GTAU)

Thomas M.W. Buckley (1)

Robert E Maclaren (1,2), Jasmina Cehajic-Kapetanovic (1,2).

1) Oxford University Hospitals NHS Trust, Oxford, UK. 2) University of Oxford, Nuffield Laboratory of Ophthalmology, Oxford, UK.

tom.buckley2@nhs.net

Rapid Fire, Clinical Research

Introduction: Gene therapy is a therapeutic strategy for both inherited and non-inherited retinal disease. Intraocular clinical and subclinical inflammation may develop after gene therapy and limit its efficacy. However, the overall prevalence of gene-therapy associated uveitis (GTAU) in retinal gene therapies has not been established.

Methods: Cochrane CENTRAL, ClinicalTrials.gov and EUDRACT databases were queried for peer and non-peer reviewed publications (June 2023). The primary outcome was prevalence of intraocular inflammation after gene therapy. Meta-analysis of proportions was undertaken using the metafor library in R and a generalised linear mixed model (GLMM). Multiple linear regression was used to analyse administration route and vector type as independent variables and prevalence of intraocular inflammation as the dependent variable using the lm function in R.

Results: 135 clinical trials were included. 18 studies were graded P3. Sufficient data for analysis could be obtained for 1690 patients across 60 trials. Non-peer reviewed sources accounted for 45% of the included data in the meta-analysis. The overall prevalence of gene therapy related intraocular inflammation was 0.21 (0.20 to 0.23, 95% CI). The prevalence of inflammation in patients who received intravitreal treatments was 0.52 (95% CI 0.47 to 0.57); subretinal treatments, 0.24 (95% CI 0.20 to 0.28); and suprachoroidal treatments, 0.21 (95% CI 0.14 to 0.29).

Discussion: Intravitreal delivery of viral vectors was associated with greater prevalence of inflammation after gene therapy than subretinal or suprachoroidal administration.

27 Ranked importance of functional measures in choroideremia

Amandeep Josan (1,2)

Laura J. Taylor (1,2), Jasmina Cehajic-Kapetanovic (1,2), Robert E. Maclaren (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK. 2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

Amandeep.Josan@ndcn.ox.ac.uk

Poster-only, Clinical Research

Introduction: Clinical trials involving novel therapies in choroideremia are complicated by the choice of outcome measure. Best corrected visual acuity (BCVA) is mostly insensitive to changes in disease state, until late stages, and hence also to potential therapeutic gains after gene therapies at earlier stages. Ranked importance of other potential functional outcome measures remains unknown.

Methods: Retrospective analysis of twelve patients with choroideremia (mean age (SD) at baseline=37 (7.9) years) over five years was conducted. Collected data included: BCVA, low luminance visual acuity (LLVA), Pelli-Robson contrast sensitivity, Full-threshold stimulus testing, electroretinography, Cambridge contrast sensitivity function (CSF), Cambridge colour test, OCT blue autofluorescence (BAF). BAF was used as a surrogate measure of disease severity. All other variables set as predictor variables. Analysis of variable importance was performed using dominance analysis (Shapley regression).

Results: The strongest association between disease severity and all possible covariates was from microperimetry, explaining 63% of the variance and strongly ranked first as the predictor of most importance. All other predictors were significantly lower in importance. CSF was ranked third, with spatial frequency gratings of 4 and 10 cycles/degree, in particular, warranting further investigation. BCVA and LLVA were low on the rankings (7th and 10th, respectively).

Discussion: This study supports the use of microperimetry in studies of choroideremia and explicitly demonstrates the insensitivity of BCVA with a low importance ranking in this cohort of mid-stage patients. Contrast sensitivity may be a promising future outcome measure demonstrating a far higher sensitivity to early disease changes than BCVA or LLVA.

28 Early onset cone photoreceptor degeneration as a risk factor for high myopia in RPGR-retinal dystrophy

Shabnam Raji (1,2)

Amandeep S. Josan (1,2), Robert E. MacLaren (1,2), Jasmina Cehajic-Kapetanovic(1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK. 2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

shabnam.raji@ndcn.ox.ac.uk

Poster-only, Clinical Research

Introduction: High myopia is a feature of several inherited retinal dystrophies, including X-linked retinitis pigmentosa (XLRP) which is characterised by early onset, centripetal photoreceptor degeneration and rapid progression to blindness by the fourth decade. Mutations in the retinitis pigmentosa GTPase regulator (RPGR) gene cause over 70% of XLRP cases. It presents phenotypic variability, but the rod-cone phenotype predominates. This retrospective study evaluates trends in myopia in patients with RPGR-retinal dystrophy.

Methods: Data from 14 phakic male patients were collected and analysed from a single centre. This included visual acuity, refractive error, axial length, self-reported onset of spectacle use and nyctalopia, clinical phenotype and genotype.

Results: Mean ETDRS letter score was 61 and 67 for cone-rod and rod-cone phenotypes respectively. The median [interquartile range] refractive error was –10.31 DS [4.81] and –3.06 DS [4.38]. A significant negative correlation was found between spherical equivalent refractive error and axial length (p=0.031), indicating axial myopia in this cohort. High axial myopia showed preponderance in cone-rod degenerations. Median self-reported onset of nyctalopia was age 20 and 8.5 in cone-rod and rod-cone degenerations respectively, and onset of spectacle use was age 5 for both phenotypes.

Discussion: Trends within this RPGR-retinal dystrophy cohort suggest that if cone photoreceptor degeneration occurs during the critical development period, there is a predisposition to higher myopia. A novel myopigenic factor is proposed; image degradation primarily due to cone photoreceptor dysfunction may act as a stimulus to drive myopia development in early childhood.

29 Characterisation of optical coherence tomography (OCT) parameters in patients with late-stage inherited retinal degeneration (IRD) for suitability of optogenetic therapies

Benjamin Ng (1,2)

Robert E. MacLaren (1,2). Jasmina Cehajic-Kapetanovic (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK. 2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

benjamin.ng@chch.ox.ac.uk

Poster-only, Clinical Research

Introduction: Outer retinal layer atrophy with preservation of inner retinal layer is typical of most late-stage retinal degenerations. Optogenetics is a potential gene-agnostic approach for these conditions by photosensitising residual inner retinal layer cells. We aim to characterise OCT structural parameters of late-stage IRD for their suitability for this therapy.

Methods: Cross-sectional study using clinical data and OCT images (Spectralis, Heidelberg) of late-stage IRD patients (visual acuity□1.0), from Oxford Eye Hospital (UK). Eyes were divided into rod dystrophies (group 1), cone-rod/cone dystrophies (group 2), and macular dystrophies (group 3). Central subfield thickness (CST) was determined and, if possible, individual inner layer thickness was quantified. Statistical analyses were performed using SPSS V29.0 (Armonk, NY).

Results: 36 late-stage IRD patients (11,13,12 in groups 1,2,3) and 54 eyes (18 per group) with mean age of 55.9±9.8 years and mean visual acuity of 1.72±0.66 were analysed. Manual OCT segmentation was required in 50/54. Mean CST were reduced at 167.8±54.3, 153±65.3, and 152±73.2 µm in groups 1,2,3 respectively with no significant inter-group differences (p=0.334; normal≈280 µm). 25/54 eyes had well-defined inner layers for sub-segmentation and their mean CST of retinal nerve fibre layer (RNFL), ganglion cell layer (GCL), inner plexiform layer (IPL), and inner nuclear layer (INL) were 12.6±3.9, 17.3±9.9, 18.6±6.7, and 29.4±11.3 µm.

Discussion: Extensive structural changes in late-stage IRD represent a challenge to OCT assessment for optogenetics. In our cohort, 46% of degenerate retinas had preservation of RNFL, GCL, IPL and thickening of INL and may benefit from optogenetic targeting of specific inner layer cells.

30 Developing and validating a novel colour saturation threshold test

Alexander Sarossy (1)

Marc Sarossy (2), Krystina Stepnicka (3).

1) Central Clinical School, Monash University, Clayton, Australia. 2) University of Melbourne, Melbourne, Australia. 3) Monash Health, Clayton, Australia.

alexander.sarossy@monash.edu

Poster-only, Clinical Research

Introduction: Colour vision testing forms an important part of the diagnosis and monitoring of retinal and optic nerve diseases. Additionally, the symptom of subjective desaturation of colour is a well described feature of optic neuritis. Most of the readily available colour vision tests assess hue rather than saturation discrimination, are not well graded and are targeted at congenital loss of colour vision. In this study, we demonstrate a novel test – the LSS-4 – measuring the saturation threshold of perception across multiple hues.

Methods: 30 subjects were recruited with a mix of normal and abnormal ocular health. Testing was conducted with the LSS -4 test comprising a simple detection task within 11 progressively more desaturated pseudoisochromatic plates. 4 hues were tested: mauve, green, red and blue (median wavelengths 570, 616, 555 and 527nm). Each participant was tested twice on the same equipment on different days. Intraclass correlation coefficient (ICC2,1) was used to assess test-retest reliability.

Results: Mean test time was 5.2 minutes. ICC showed high reliability for all hues (mauve 0.82, red 0.86, green 0.78, blue 0.83) as well as the total score (0.88). There was no significant difference in the reliability between hues.

Discussion: The LSS-4 test is a reliable and easy to perform test that may have utility in clinical neuro-ophthalmological practice and could complement existing tests of hue discrimination for the diagnosis and monitoring of disease.

31 Dominant COL9A3 Stickler syndrome

Thomas Nixon (1)

Howard Martin (1), Arabella Poulson (2), Philip Alexander (2), Annie McNinch (1), Allan Richards (3), Martin Snead (1).

1) Vitreoretinal Research Unit, John van Geest Centre for Brain Repair University of Cambridge, Cambridge, UK.

2) Department of Ophthalmology, Cambridge University Hospitals Foundations Trust, Cambridge, UK., Cambridge, UK.

3) Department of Pathology, University of Cambridge, Cambridge, UK.

trwn2@cam.ac.uk

Poster-only, Clinical Research

Introduction: Most Stickler syndrome is caused by dominant variants in COL2A1 and COL11A1, but type IX collagen Stickler syndrome is typically caused by recessive null mutations. However, dominant negative variants in COL9A3 have been associated with a Stickler's like phenotype in two previous family case reports, and five more cases are reported here.

Methods: Clinical assessment of patients referred for possible Stickler syndrome, with ophthalmic examination and audiological testing, and genetic testing with next generation sequencing against a panel of genes for Stickler syndrome (COL2A1, COL11A1, COL9A1, COL9A2, COL9A3, BMP4, GZF1, VCAN).

Results: Four patients were identified with a Stickler-like phenotype including at least three features of myopia, abnormal vitreous, retinal detachment, familial retinal detachment, hearing loss, cleft palate and hypermobility /premature arthropathy; one patient had cleft palate and midfacial hypoplasia but no definite ocular phenotype. Three patients had heterozygous variants causing glycine substitutions, predicted to be pathogenic due to the importance of the glycine at the centre of collagen trimers, and two patients had splice site variants predicted to cause exon skipping.

Discussion: A Stickler phenotype may develop due to dominant negative COL9A3 variants. Careful analysis and interpretation of genetic testing is important in the presence of a convincing phenotype. This series highlights that presentations of conditions usually due to a recessive loss-of-function variant may instead be due to heterozygous dominant negative type variants. This may be overlooked in some genetic laboratory reporting systems. Vitreous examination is a critical part of the assessment of patients with potential hereditary vitreoretinopathy.

32 Low-luminance visual acuity: The impact of dark adaptation

Giovanni Forte (1,2)

Jasleen K Jolly (1,3), Rafee Ahmed (4), Robert E MacLaren (3,4), Laura J Taylor (3,4).

1) Vision and Eye Research Institute, Anglia Ruskin University, Cambridge, UK. 2) School of Medicine, University of Pavia, Pavia, Italy. 3) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK. 4) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

giovanni.forte01@universitadipavia.it

Poster-only, Clinical Research

Introduction: Low-luminance visual acuity (LLVA) is an outcome measure used in clinical trials for inherited retinal degenerations and AMD, detecting central visual function changes earlier than standard VA. This study explores the impact of a dark-adaptation period prior to testing LLVA and whether the left eye, which is conventionally tested second, is advantaged from additional dark-adaptation achieved while occluded.

Methods: LLVA was assessed in both right and left eyes, using the ETDRS chart presented at 4 metres, using a 2.0-log neutral density filter. Testing sequence for right and left eyes was randomised, with the testing eye order designated as "Eye One" or "Eye Two". Following three-minutes dark-adaptation, participants were prompted to read from their threshold LLVA line, to see whether additional letters could be identified.

Results: Forty-three healthy controls, aged 18-44 years, had a median LLVA of 83(IQR,80-85), 81(IQR,79-87) letters in eye one and eye two, respectively. After three-minutes dark-adaptation participants showed a statistically significant four-letter improvement in LLVA (Wilcoxon signed-rank test, $Z=-3.79$, $p<0.001$). However, there was no statistical difference in LLVA between eye one and eye two (Wilcoxon signed-rank test, $Z=-0.49$, $p=0.662$).

Discussion: Any sensitivity gained by dark-adaptation is likely nullified by instantaneous cone photoreceptor light-adaptation. In accordance with the ETDRS testing procedure, after participants have read down the chart any gained sensitivity is lost. The left eye does not appear to be advantaged from being tested second. Furthermore, LLVA testing procedure is unlikely to benefit from prior formal dark-adaptation.

33 Multimodal imaging and management of Wagner syndrome - Three patients from an affected family

Tomasz Szeligowski (1)
Jasmina Cehajic-Kapetanovic (1), Ravi Purohit (1), Hoda Amin (2), Rajnish Sekhri (2), Chetan K Patel (1), Kanmin Xue (1).
1) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) Hull University Teaching Hospitals NHS Trust, Hull, UK.
t.j.szeligowski@gmail.com

Poster-only, Clinical Research

Introduction: Wagner syndrome is an autosomal dominant vitreoretinopathy which can mimic predominantly ocular Stickler syndrome. Discovery of the causative gene, chondroitin sulphate proteoglycan 2 (CSPG2)/Versican (VCAN), enabled us to better characterise this condition. Here we describe a family with Wagner syndrome to demonstrate its clinical features including multimodal imaging and management challenges.
Methods: Retrospective case series of a family pedigree with genetically confirmed Wagner syndrome: 34-yr-old mother (P1), 12-yr-old daughter (P2), and 2-yr-old son (P3).
Results: The pedigree indicated autosomal dominant inheritance with maternally inherited VCAN exon 8 deletion. The phenotype included early-onset cataract (P1), optically empty vitreous with avascular membranes (P1,2), nasal dragging of optic nerve heads associated with foveal ectopia (all) and hypoplasia with enlarged foveal avascular zone on fluorescein angiography (P2), tractional retinoschisis on OCT (P1,2), peripheral circumferential vitreoretinal interface abnormality resembling white-without-pressure (P3) progressing to pigmented chorioretinal atrophy (P1,2). P2 developed a macula-off retinal detachment which was treated initially with encircling band+vitrectomy+gas, followed by vitrectomy + Densiron tamponade for re-detachment from new inferior breaks. Strong vitreoretinal adhesion was noted intraoperatively which prevented separation of posterior hyaloid beyond mid-periphery. Her fellow eye showed areas of significant vitreoretinal traction. ERGs from P1&2 demonstrated attenuated b- and a-waves, suggestive of generalised retinal dysfunction.
Conclusions: Three family members at different ages demonstrate the clinical spectrum of Wagner syndrome, highlighting nasal dragging with foveal disruption as a distinguishing feature from other inherited vitreoretinopathies. Foveal hypoplasia has not been reported before. Surgical outcomes demonstrate significant challenges in managing vitreoretinal traction and need for further research into strategies to prevent sight loss.

34 RPGR protein structures used in current X-linked retinitis pigmentosa gene therapy clinical trials predicted by artificial intelligence

Maram Abdalla
Cristina Martinez, Jasmina Kapetanovic.
Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.
maram.abdalla@gmail.com

Poster-only, Clinical Research

Introduction: Mutations in the retinitis pigmentosa GTPase regulator (RPGR) gene account for 10–20% of all retinitis pigmentosa cases, and for over 70% of X-linked retinitis pigmentosa -affected families. They are responsible for one of the most severe types of retinitis pigmentosa. There are currently three different subretinal RPGR gene therapy vectors being evaluated in clinical trials in subjects with X-linked retinitis pigmentosa caused by mutations in RPGRORF15.
Methods: AlphaFold 2 using ColabFold was used to predict the protein structure of RPGR ORF15. Homology modelling of the three protein sequences used in the AGTC, Nightstar/Biogen and MeiraGTx-led gene therapy clinical trials was subsequently performed using the MODELLER program. PyMOD plugin for PyMOL was used as the interface for MODELLER.
Results: The AGTC and Nightstar/Biogen RPGR proteins were predicted to be identical to the wild type RPGR ORF15 variant. In contrast, the deletion in the MeiraGTx construct led to significant change in the predicted structure of the protein.
Discussion: A large in -frame deletion in the ORF15 region of RPGR leads to significant structural change in the protein which may impair its ability to interact with other proteins as part of its normal function. Furthermore, misfolding of the protein, or reduction in glutamylation in this region, might have a detrimental effect on photoreceptors, as has been noted in the cone-dystrophy phenotype of patients with distal RPGR mutations.

35 Withdrawn

36 Functional analysis of variants of unknown clinical significance in Stickler syndrome

Zack Soh (1)

Thomas Nixon (1), Mel Maranian (1), Allan Richards (1), Howard Martin (1), Arabella Poulson (2), Philip Alexander (2), Martin Snead (1).

1) Vitreoretinal Research Group, John van Geest Centre for Brain Repair, University of Cambridge, Cambridge, UK. 2) NHS England Highly Specialised Stickler Syndrome Diagnostic Service, Department of Ophthalmology, Cambridge University Hospitals Foundations Trust, Cambridge, UK.

zgys2@cam.ac.uk

Poster-only, Laboratory Research

Introduction: Stickler syndrome is an inherited connective tissue disease associated with high-degree myopia and significant risk of retinal detachment. The diagnosis of Stickler syndrome is usually confirmed through a combination of clinical phenotyping allied with molecular genetic analysis. Under the current ACGS variant classification criteria, intronic variants and synonymous substitutions within exons are usually classified as variants of unknown significance when insufficient evidence exists to classify the variant as consistent with a genetic diagnosis of Stickler syndrome. In such instances, functional evidence of a causal association between variant and disease can enable re-classification of such variants.

Methods: 91 patients were identified from the Stickler syndrome clinic at Addenbrooke's Hospital, who have a clinical diagnosis of Stickler syndrome but in whom no definitive pathogenic variant was identified according to current best practice guidelines. Variant-containing minigenes from patients were ligated into expression vectors and transfected into MIO-M1 cells. RNA was later extracted to undergo reverse transcription-polymerase chain reaction.

Results: The minigene splicing assays showed that 48 variants cause damaging effects on the gene product through mis-splicing leading to exon skipping or intron segment retention. This includes 10 out of 40 variants previously classified as variants of unknown significance, 22 out of 38 novel variants, and 16 out of 22 previously reported variants.

Discussion: The utility of functional analysis such as minigene splicing assays is not limited to Stickler syndrome, and can provide strong evidence for re-classifying variants of unknown significance as pathogenic.

37 Pathogenesis of RPGR-associated cone dystrophy and implications on gene therapy

Cristina Martinez-Fernandez de la Camara (1,2)

Jasmina Cehajic-Kapetanovic (1,2), Robert E. MacLaren (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

cristina.martinez@eye.ox.ac.uk

Poster-only, Laboratory Research

Introduction: RPGR disease variants lead to considerable phenotypic heterogeneity, with a progressive shift from rod to cone-dominating phenotype as the mutation approaches the distal end of the gene. The molecular mechanisms behind RPGR disease are complex and the efficacy of the gene replacement therapies across the large spectrum of RPGRORF15 mutations is not known. The aim of this study was to investigate the effect of cone dystrophy-causing mutations in the RPGR gene on its function, and to compare different gene therapy vectors to predict long-term effects in patients with different RPGR phenotypes.

Methods: Function of RPGR-ORF15 was analysed by quantifying its level of glutamylation in cells transfected with RPGR-ORF15 mutant constructs. RPGR transcript and protein levels were analysed by quantitative PCR and western blot, respectively, in patient's fibroblasts. RPGR gene therapy vectors were compared in silico and in vitro.

Results: Glutamylation is significantly reduced (60-70%) in truncating RPGR-ORF15 variants responsible for cone dystrophy compared to the full-length protein. The comparison of the RPGR sequences from gene therapy vectors revealed that a deletion of one third of the ORF15 region, affecting 6 out of the 11 consensus motifs for glutamylation, reduces glutamylation significantly.

Significance: The findings of this study further the insight into the pathogenesis of cone-dominated RPGR dystrophy and shed light on the long-term risks and benefits of the gene therapy vectors currently on clinical trials, providing with valuable information to decide on which is the best therapeutic option for patients affected by different phenotypes.

38 Validating human-derived organoids as a suitable model for testing optogenetic therapies

Hoda Shamsnajafabadi (1)

Michelle E. McClements (1), Robert E MacLaren (1,2), Jasmina Cehajic-Kapetanovic (1,2)

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

hoda.shamsnajafabadi@ndcn.ox.ac.uk

Poster-only, Laboratory Research

Background: The use of optogenetic gene therapy for treating inherited retinal diseases has become a significant therapeutic option. Pre-clinical models remain limited, and development of human retinal organoids has potential to aid translational testing of optogenetic vectors. Herein, we aim to evaluate the transduction efficiency of optogenetic tools in human-derived retinal organoids and assess their impact on organoid viability.

Method: Human-derived retinal organoids treated with human rhodopsin driven by CAG promoter and packaged into AAV vectors (AAV2.2 and AAV2.5) at 2 different doses, 1E+10 (n=5) and 1E+11 (n=5). Live cell imaging was performed weekly. An adenosine triphosphate assay was performed using the Cell Viability kit.

Results: The live cell assay demonstrated a steady increase in rhodopsin expression for up to four weeks of assessment. The expression was dose-dependent with a higher AAV dose (1E+11), leading to higher levels of transduction efficiency compared to the lower dose (1E+10). The transduction efficiency also depended on the capsid, with AAV2.5 showing overall more expression compared to AAV2.2 at the same dose. According to the ATP assay, transgene expression in the organoids had no significant effect on the viability of retinal organoids (97%) compared to untreated organoids (100%) ($p=0.8699$, $n=5$).

Conclusion: The efficiency of organoid transduction varies based on the AAV capsid and vector dose. Notably, the expression of human rhodopsin in retinal organoids does not affect their viability, indicating the safety of this optogenetic tool for further translational studies.

39 Structure-guided chemical modifications to SaCas9 gRNA enhances CRISPR-Cas knockdown efficacy

Ruofan Connie Han (1,2)

Elisabeth I Sweet (1), Michelle E McClements (1), Robert E. MacLaren (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

ruofan.connie.han@gmail.com

Poster-only, Laboratory Research

Introduction: CRISPR-Cas9 is a powerful tool for genomic manipulation in the eye and beyond. Its action is directed by a guide RNA (gRNA). Chemical modification of Streptococcus Pyogenes Cas9 (SpCas9) gRNA improves its efficacy and specificity. However, excessive modification abolishes SpCas9 activity. Based on these principles, we designed modifications to Staphylococcus Aureus (SaCas9) gRNA to investigate if similar modifications are applicable to other gRNAs.

Methods: Using the crystal structure of SaCas9 bound to gRNA, we created several gRNA modified with 2'O-methylation and phosphothioated bonds: 1) "unmodified" 2) "ends modified" 3) "loops modified" 4) "heavily modified" 5) "heavily modified body" 6) "heavily modified tail" 7) a "reverse modified" sgRNA. These gRNAs were co-transfected into HEK293TdEGFP cells with a CMV-SaCas9 plasmid and processed 48 hours later.

Results: The "loops modified" gRNA performed best with 49.3% EGFP knockdown on TIDE ($p<0.0001$), followed by "ends-modified" (43.8%, $p<0.0001$), "heavily modified tail" (34.6%, $p=0.004$), "heavily modified body" (32.6%, $p<0.001$) and "unmodified" (23.5%, $p=0.01$) gRNAs, compared to a non-targeting gRNA "scram" (1.1%). The "heavily modified" (5.0%, $p>0.99$), and "reverse modified" (1.3%, $p>0.99$) gRNAs showed no editing compared to "scram".

Discussion: Improvements in Cas9 editing have numerous potential therapeutic benefits applicable to inherited eye disease. Our novel structure-guided chemical modification of SaCas9 gRNA, avoiding key interacting moieties, increases editing efficacy, but over-modification abolishes editing. Our results suggest that an overall number is as important as locations of interactions. Further research is needed to generalise these findings across other species of Cas9 sgRNA.

40 Comparing and optimising the editing efficiency of three RNA editor families targeting a CRB1 nonsense variant

Julia-Sophia Bellingrath (1)

Dorothea Stark (1), Michelle E McClements (1), Robert E. MacLaren (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

sophia.bellingrath@ndcn.ox.ac.uk

Poster-only, Laboratory Research

Introduction: Mutations in the Crumbs homologue 1 (CRB1) gene are associated with early onset inherited retinal degeneration (IRD), for which no therapy currently exists. RNA editing harnesses the Adenine Deaminase acting on DNA (ADAR) enzyme for correction of G>A mutations in the human transcriptome without the risk of creating permanent genomic off-target edits. Here, we compare and optimise the efficiency of three families of RNA editors to correct a pathogenic nonsense variant in CRB1 in-vitro.

Methods: RNA editor families differed in the intermediate protein used to link the catalytically active ADAR deaminase domain (ADARDD) to the guide RNA (gRNA). RNA editor components, including the gRNA length, A-C mismatch position and ADARDD were optimised.

Results: In the PspCas13b RNA editor, a 50 nucleotide (nt) gRNA with an AC mismatch at position 24 and carrying a hypermutated ADARDD was able to achieve 48% (±12) editing. In GluR2 RNA editors, lengthening the gRNA to 100bp and adding a second copy of the gRNA significantly improved editing efficiency up to 51% (±3) . The best editing rates of 41% (±10) were achieved when paring two copies of a short, 20bp gRNA with a hypermutated ADARDD and a nuclear export signal (NES) in the MS2 MCP RNA editors. A bystander edit hotspot was observed in all three construct 5 bp downstream from the target editing site.

Conclusion: In this in-vitro screen, all three RNA editor families showed highly significant editing rates, highlighting the translational potential of RNA editors for the treatment of CRB1-associated IRDs.

41 Withdrawn

42 **Insights into the retinal origin of the sheen in Oguchi disease from serial retinal imaging**

Haseeb Akhtar (1,2)

Luke Nicholson (1), Zoe Ockrim (1), Magella Neveu (1), Andrew Webster (1), Michel Michaelides (1), Omar Mahroo (1,2).

1) NIHR Moorfields Biomedical Research Centre, UCL Institute of Ophthalmology, London, UK. 2) Eye Department, St Thomas' Hospital, London, UK.

haseebnoor.akhtar1@nhs.net

Digital Poster-only, Clinical Research

Introduction: In Oguchi disease, a striking golden retinal sheen is apparent which disappears following prolonged dark adaptation (Mizuo-Nakamura phenomenon). Here, we report that, paradoxically, localised loss of the sheen can occur following bright short wavelength illumination.

Methods: Colour (Clarus, Zeiss, or Kowa, Canon) or pseudocolour (Optos plc.) fundus images from patients with a clinical and/or genetic diagnosis of Oguchi disease were examined, noting whether loss of the sheen was observable centrally, corresponding to the area illuminated by prior 30-degree 488 nm autofluorescence (AF) imaging (Spectralis, Heidelberg). To test this hypothesis, in one patient, AF imaging was initially performed in just one eye, followed by colour/pseudocolour imaging, with the latter then repeated following bilateral AF imaging.

Results: We observed the phenomenon in 3 patients. Prior exposure to 488 nm AF illumination led to selective loss of the sheen in the same area, observable both on colour and pseudocolour images. In the patient with uniocular AF imaging, loss of sheen occurred in the same eye (observable also clinically), and then in both eyes following bilateral AF imaging.

Discussion: In Oguchi disease, shut-off of light-activated rhodopsin is impaired. It is possible that the presence of substantial light-activated rhodopsin (unphosphorylated or uncapped by rhodopsin kinase or arrestin respectively) directly gives rise to the sheen. Our findings suggest that this also depends on the presence of large amounts of regenerated rhodopsin as the sheen disappears following significant bleaching by blue light.

POSTER ABSTRACTS

	LIDS, LACRIMAL & ORBIT	ABSTRACTS 43–45	
43	**Evaluating antibiotic prescriptions in bacterial conjunctivitis - A common self-limiting condition**	**Saran Santhosh** *Nottingham University Hospitals Trust, Nottingham, UK.*	P *CR*
44	**Adjunctive use of mitomycin C (MMC) for revision dacryocystorhinostomy (DCR): A systematic review and meta-analysis**	**Diya Baker** *Birmingham Children's Hospital, Birmingham, UK.*	P *CR*
45	**Thyroid eye disease and COVID-19: Infection rates and symptom progression**	**Hadi Mikhael Sabbagh** *Division of Oculo-facial Plastic Surgery, Department of Ophthalmology, American University of Beirut, Beirut, Lebanon.*	P *CR*

43 Evaluating antibiotic prescriptions in bacterial conjunctivitis - A common self-limiting condition

Saran Santhosh

Nottingham University Hospitals Trust, Nottingham, UK.

saransanthosh11@gmail.com

Poster-only, Clinical Research

Introduction: Bacterial conjunctivitis is a commonly encountered presentation in General Practice (Dart, 1986), (McDonnell, 1988). Although antibiotic treatments are licensed for bacterial conjunctivitis, it is often unnecessary due to the self-limiting nature of the condition. The NICE Antimicrobial Prescribing Document recommends that antibiotics should only be reserved for severe cases which have not responded to an initial trial of self-care management (National Institute for Health and Care Excellence, 2019). The aim of this audit was to evaluate if patients in a General Practice (GP) surgery were managed conservatively at the start of a bacterial conjunctivitis episode.

Methods: SystemOne records were used to identify bacterial conjunctivitis episodes and appraise management plans. The first cycle reviewed all episodes (n=41) between 4 November 2021 to 4 November 2022. Following this cycle, the findings were disseminated through a departmental meeting. A second cycle was subsequently performed and reviewed all episodes (n=58) between 19 April 2023 and 19 October 2023.

Results: In the first cycle, 51.2% of episodes (n=21) were initially treated conservatively. The remaining 48.8% of episodes (n=20) were initially treated with antibiotics. In the second cycle, only 19% of episodes (n=11) were appropriately managed. The remaining 81% of episodes (n=47) were immediately treated with antibiotics.

Discussion: Appropriate management significantly declined during the second cycle. This was perhaps due to the lack of intervention application. Another contributing factor may have been the increase in telephone appointments, which potentially hindered clinical examination. Following the implementation of poster aids in consultation rooms, a third cycle will be completed.

44 Adjunctive use of mitomycin C (MMC) for revision dacryocystorhinostomy (DCR): A systematic review and meta-analysis

Diya Baker

Birmingham Children's Hospital, Birmingham, UK.

diya.baker@nhs.net

Poster-only, Clinical Research

Purpose: To compare the outcome of adjunctive use of mitomycin C (MMC) for revision of dacryocystorhinostomy (DCR).

Methods: A systematic review and meta-analysis were performed as per the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines, and a search of electronic information was conducted to identify all comparative studies of MMC versus non-MMC in revision DCR. The primary outcome was success rate. Secondary outcome measures included complications and operative time. Fixed-effect modelling was used for the analysis.

Results: Six studies that enrolled 239 procedures were identified in the literature. There was a statistically significant difference between the MMC and non-MMC groups in success rate favouring the adjuvant use of MMC for revision external DCR (odds ratio [OR]=3.00, p=0.001). For secondary outcomes, only 2 adverse complications were reported with the use of MMC, both of which were epithelial corneal defects related to delayed wound healing.

Conclusion: The adjuvant use of MMC has a beneficial effect in preventing the reclosure of the DCR stoma after revision DCR.

45 Thyroid eye disease and COVID-19: Infection rates and symptom progression

Hadi Mikhael Sabbagh

Ramzi Alameddine, Hanadi Ibrahim, Reem Amine

Division of Oculo-facial Plastic Surgery, Department of Ophthalmology, American University of Beirut, Beirut, Lebanon.

hadimikhael.sabbagh@nhs.net

Poster-only, Clinical Research

Introduction: We aimed to investigate COVID-19 infection rates and vaccination status in a large cohort of thyroid eye disease (TED) patients during the pandemic, and assess any relation between COVID-19 and worsening TED symptoms.

Methods: This is a retrospective study of 80 adult TED patients (January 2020 to January 2022) that examined COVID-19 infection incidence and vaccination status. We recorded whether TED symptoms worsened or new symptoms appeared (TED flare-up) during the pandemic period. Specifically, a TED flare-up was defined as having two worsening symptoms with a more than 1-point increase in the clinical activity score (CAS), and more than 1 mm increase in proptosis or eyelid retraction or other clinical signs.

Results: The study involved 64 TED patients. Among COVID-19-infected subjects, 40.0% experienced TED flare-ups within 6 weeks, including a healthy patient with new-onset TED. We found statistically significant worsening in CAS, exophthalmometry, and margin to reflex distance-1 (MRD1) measurements ($p<0.001$, $p=0.031$, $p=0.020$, respectively). TED flare-up risk was 5 times higher in infected patients compared to un-infected subjects (odds ratio [OR]=5.33). In contrast, only 8.2% (4/49) of vaccinated patients experienced TED flare-ups, with no significant difference in the risk compared to unvaccinated (OR=1.24).

Conclusion: Our study indicates COVID-19-infected TED patients may experience TED flare-ups within 6 weeks of infection, however, vaccination did not significantly correlate with worsening TED symptoms. Further research is crucial to confirm COVID-19's correlation with TED progression.

POSTER ABSTRACTS

	MEDICAL RETINA (INC. UVEITIS)	ABSTRACTS 46–69	
46	**Towards automated optical coherence tomography (OCT) data analysis for a real-world diabetic macular oedema (DMO) treatment cohort**	**S. James Talks** *Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK.*	**RF** *CR*
47	**Faricimab treatment outcomes with extended dosing and potential for Q20W intervals in DMO: A post hoc analysis of the phase 3 YOSEMITE/RHINE trials**	**Maged Habib** *Sunderland Eye Infirmary, Sunderland, UK.*	**RF** *CR*
48	**Visual acuity and eligibility for sight impairment registration for those with geographic atrophy in the population of Gloucestershire**	**Esther Samuel** *Gloucestershire Hospitals NHS Foundation Trust (GHNHSFT), Gloucester, UK.*	**RF** *CR*
49	**Current evidence base for immune modulation in uveitis**	**Louis Clearkin** *Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	**RF** *CR*
50	**Prevalence and characteristics of Charles Bonnet syndrome (CBS) in patients with vitreoretinal and inherited retinal disease**	**Ariel Yuhan Ong** *Oxford Eye Hospital, Oxford University Hospitals*	**RF** *CR*
51	**Impact of faricimab vs aflibercept on hard exudates in patients with DMO: Results from the phase 3 YOSEMITE/ RHINE trials**	**Christiana Dinah** *Ophthalmology Department, London North West University Healthcare NHS Trust, Central Middlesex Hospital, London, UK & Department of Brain Sciences, Imperial College, London, UK.*	P *CR*
52 a	**Real-world treatment patterns and visual outcomes from 12 or more months of faricimab use among eyes with nAMD in the UK: Results from the FARWIDE-nAMD study**	**Samantha R. De Silva** *Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	P *CR*
52 b	**Real-world treatment patterns and visual outcomes in the first 12 months of faricimab use among eyes with DMO in the UK: Results from the FARWIDE-DMO study**	**Christine A. Kiire** *Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	P *CR*
53	**Comparing Pro-Re-Nata and Treat-and-Extend protocols for anti-VEGF injections in retinal vein occlusion – 12-month real world outcomes**	**Martin Horák** *Oxford Eye Hospital, Oxford University Hospitals*	P *CR*
54	**Tertiary centre experience of using ranibizumab biosimilar compared to aflibercept for neovascular age related macular degeneration**	**Muslim Bilal** *Cardiff University, School of Medicine, Cardiff, UK.*	P *CR*
55	**Real world outcome of switching to faricimab in patients diagnosed with neovascular age related macular degeneration**	**Kaumudi Tiwari** *Royal Victoria Infirmary, Newcastle upon Tyne, UK.*	P *CR*
56	**Switching to faricimab in the management of neovascular age related macular degeneration: a presentation of real world data**	**Youssef Helmy** *Buckinghamshire Healthcare NHS Trust, Stoke Mandeville, UK & Cairo University, Cairo, Egypt.*	P *CR*
57	**Outcomes of diabetic retinopathy screening in pregnant women in Birmingham and Solihull - Results from the largest NHS Trust in England**	**Xiaoli Chen** *University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK.*	P *CR*
58	**Real world data of the use of faricimab in the treatment of diabetic macular oedema (DMO) in a multi-ethnic population: experience of first 1000 injections**	**Ali Al-Gilgawi** *London North West University Healthcare NHS*	P *CR*

POSTER ABSTRACTS

	MEDICAL RETINA (INC. UVEITIS)	ABSTRACTS 43–69	
59	**Anatomical outcomes at six-months in patients switched to faricimab following partial response to anti-VEGF therapy for neovascular age-related macular degeneration and diabetic macular oedema**	**Grace Borchert** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *CR*
60	**Expanding the genotypic and phenotypic spectra with a novel variant in the ciliopathy gene, CFAP410**	**Grace Borchert** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK & Oxford Eye Hospital, Oxford, UK.*	P *CR*
61	Withdrawn		
62	**Ethnicity and geographic atrophy phenotypic variation and progression**	**Aina Pons** *Central Middlesex Hospital, Ophthalmology Department, London, UK.*	P *CR*
63	**Activation of immune checkpoints, PD-1 and TIGIT, suppresses development of autoimmune uveitis in mice**	**Kanmin Xue** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK.*	P *LR*
64	**The role of immune regulator IRAK-M in myeloid cell activation in light-challenged mouse retina**	**Aiman Dilnawaz** *Gloucestershire Hospitals NHS Foundation Trust, Gloucester, UK.*	P *LR*
65	Withdrawn		
66	**CRISPR base editing of the human apolipoprotein E (APOE) risk variant for age-related macular degeneration**	**Monica Hu** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK.*	P *LR*
67	**A human uveal single cell atlas reveals fibroblast heterogeneity in adult and foetal eyes**	**Ian Reekie** *Kennedy Institute of Rheumatology, University of Oxford, Oxford, UK.*	P *LR*
68	**Ocular manifestations of systemic fluoroquinolone use**	**Muhammad Yousuf Hayat** *University Hospital Southampton NHS Trust, Southampton, UK.*	DP *CR*
69	**Avacopan in the treatment of refractory scleritis secondary to granulomatosis with polyangiitis**	**Emilia Bober** *Uveitis and Scleritis Service, Moorfields Eye*	DP *CR*

46 Towards automated optical coherence tomography (OCT) data analysis for a real-world diabetic macular oedema (DMO) treatment cohort

S. James Talks (1)

Tunde Peto (2), Xiaoyong Wang (3), Anda Gershon (3), Geeta Menon (4), Faruque Ghanchi (5), Xin Chen (3), Vivian Look (3), Huanxiang Lu (3).

1) Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK. 2) Centre for Public Health, Queen's University Belfast, Belfast, UK. 3) Genentech, Inc., South San Francisco, USA. 4) Frimley Health NHS Foundation Trust, Frimley, UK. 5) Bradford Teaching Hospitals NHS Foundation Trust and Bradford Ophthalmology Research Network, Bradford, UK.

james.tallks@nhs.net

Rapid Fire, Clinical Research

Introduction: To facilitate automated and fast interpretation of large real-world datasets incorporating imaging and enabling in-depth scientific investigations, an OCT image analysis pipeline was built. This was tested on a real-world DMO cohort from the National Health Service in the UK.

Methods: An anonymised cohort of 858 patients with DMO was extracted from the Medisoft electronic health record (EHR). Corresponding DICOM format macular Heidelberg OCT volumes were auto-identified at patient/eye level, and full retinal thickness layer and fluids were segmented by an in-house automated algorithm. 80 randomly selected baseline OCT volumes were manually graded for image quality, fovea centration, internal limiting membrane (ILM), Bruch's membrane (BM), intraretinal fluid (IRF), and subretinal fluid (SRF) segmentations to confirm the robustness of the automated segmentation.

Results: Eyes (one per patient) received 59,481 scans and 11,742 visits. 9,042 eligible macular OCT volumes were segmented. 85% of volumes were graded as fair/good image quality and 91% were acceptable for fovea centration. Among images with fair/good quality, 88% of ILM and BM segmentations and 97% of IRF and SRF segmentations were graded as fair/good. With univariate Fisher's exact tests, segmentation quality of all 4 was significantly related to image quality.

Discussion: In this pilot study, automated tools including image and EHR data matching, macular volume identification, and layer and fluid segmentation, enabled a fast retrospective quantitative analysis in a large volume of real-world images that yielded fair/good quality segmentations for most images.

47 Faricimab treatment outcomes with extended dosing and potential for Q20W intervals in DMO: A post hoc analysis of the phase 3 YOSEMITE/RHINE trials

Maged Habib (1)

Jennifer I. Lim (2), Michael Singer (3), Oluwatobi Idowu (4). Lauren Hill (4), Kara Gibson (5).

1) Sunderland Eye Infirmary, Sunderland, UK. 2) University of Illinois at Chicago, Chicago, USA. 3) Medical Center Ophthalmology Associates, San Antonio, USA. 4) Genentech, Inc., South San Francisco, USA. 5) Roche Products Ltd, Welwyn Garden City, UK.

maged.habib2@nhs.net

Rapid Fire, Clinical Research

Introduction: A post hoc analysis of the YOSEMITE/RHINE (NCT03622580/NCT03622593) DMO trials to assess the efficacy of extended faricimab dosing (≥Q12W; every 12-weeks) and evaluate how many patients potentially could have extended to Q20W dosing.

Methods: Patients received faricimab 6.0 mg T&E (treat-and-extend), faricimab 6.0 mg Q8W, or aflibercept 2.0 mg Q8W through week 100 (n=1891). For T&E, treatment intervals were adjusted (Q4W–Q16W) based on prespecified CST and BCVA criteria. Efficacy outcomes were evaluated for T&E patients ending the study on Q12W and Q16W. In addition, extension criteria were applied to T&E patients on Q16W to assess if they met criteria for Q20W extension.

Results: Among patients in the T&E arm at week 96 (n=557), 62% achieved Q16W and 78% achieved ≥Q12W. Mean (SE) BCVA at week 96 for T&E patients ending the study on Q12W and Q16W was 73.6 (1.1) and 75.4 (0.6) letters, respectively, and 73.3 (0.5) letters for T&E arm overall. Mean (SE) CST at week 96 for T&E patients ending on Q12W, Q16W and for T&E arm overall was 278.1 µm (8.6), 258.3 µm (2.1) and 275.7 µm (3.3), respectively. Among T&E patients with dosing interval data up to week 48 (n=598), 56% met extension criteria and potentially could have extended to Q20W.

Significance: Patients extended to faricimab Q12W and Q16W dosing demonstrated robust and stable improvements in vision and anatomic outcomes through year 2. Among T&E patients, >50% potentially could have achieved Q20W, supporting faricimab as a novel therapeutic approach leading to durable efficacy.

48 Visual acuity and eligibility for sight impairment registration for those with geographic atrophy in the population of Gloucestershire

Esther Samuel

Ushna Javed, Rebecca Jones, Shaswati Bhowmik, Shweta Pandy, Quresh Mohamed, Peter Scanlon.

Gloucestershire Hospitals NHS Foundation Trust (GHNHSFT), Gloucester, UK.

esther.samuel1@nhs.net

Rapid Fire, Clinical Research

Introduction: We conducted a retrospective study in Gloucestershire to estimate incidence and prevalence of GA and their visual levels.

Methods: We analysed the Visual Acuity (VA) at the first recorded episode of all eyes in persons ≥55 years with a diagnosis of AMD on the Gloucestershire Medisoft electronic medical record between 01/07/18–30/06/23. Graders assessed OCT and infrared images using CAM criteria for Complete RPE and Outer Retinal Atrophy (cRORA), foveal involvement and lesion size.

Results: 526 patients had a diagnosis of GA with median age at diagnosis of 86.8 years (IQR: 81.0 to 91.7). Estimated prevalence of GA was 1.2% of the Gloucestershire population ≥55 years. Of the 526 patients, the VA in their better seeing eye was available for 486 patients: Normal (<0.3 LogMAR) = 141 (29.0%), Subnormal vision (0.30 – 0.48) = 115 (23.7%), Visual Impairment (0.5 - 1.0) = 136 (27.8%) , USA blindness or UK Sight Impaired SI (> 1.0 < 1.3) = 55 (11.3%), WHO or UK Seriously Sight Impaired SSI (>1.3) = 40 (8.2%) For the 772 eyes with GA, 43.2% had non-foveal involvement with better LogMAR visual acuity (VA) of 0.30 (IQR: 0.16 to 0.48) compared to 0.88 (IQR 0.50 to 1.3) in eyes with foveal involvement.

Discussion: Although the numbers considered to be blind by the WHO/UK or USA are small (20%), the numbers presenting with subnormal vision or visual impairment is much higher (52%) and preserving their vision at this level will be important for their long-term quality of life.

49 Current evidence base for immune modulation in uveitis

Louis Clearkin

Elizabeth Mathew, Wonyoung Moon, Thomas Buckley, Queen Pilapil, Srilakshmi Sharma.

Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

Louis.Clearkin@ouh.nhs.uk

Rapid Fire, Clinical Research

Introduction: Uveitis ranges from self-limiting to sight-threatening, and therapy is rarely curative. Currently, standard care is immune modulation which risks harm. Each and every patient needs to understand how risks and benefits trade off. We restate the evidence base of the use of immune modulation in uveitis.

Methods: Clinical trials in non-infectious uveitis on; 1) oral non-steroidal anti-inflammatory therapy (NSAID) prophylaxis in acute anterior uveitis (AAU); 2) topical steroids in anterior uveitis; and 3) biologic agents in juvenile idiopathic arthritis (JIA) uveitis were identified and reviewed. Outcomes were restated as number needed to treat (NNT) and number needed to harm (NNH) and presented as natural frequencies in a pictograph. These results are compared to other NNTs/NNHs in other conditions.

Results: For prophylaxis of AAU by oral NSAID the NNT was 1.9; NNH was 6.7, typically due to gastrointestinal disturbance. The NNT for topical steroid in AAU was 2.2 - 4.5 - depending on severity. NNH was 6.7, almost exclusively steroid response. In JIA-associated uveitis, addition of adalimumab to methotrexate resulted in an NNT of 3.0; NNH for serious adverse events was 12.7.

Discussion: Patient choice and co-decision making is supported by formal estimations facilitating clear communication of the risks and benefits of immune modulation and their differing therapeutic impacts. We identify deficiencies in the evidence base of treatment for the uveitis.

50 Prevalence and characteristics of Charles Bonnet syndrome (CBS) in patients with vitreoretinal and inherited retinal disease

Ariel Yuhan Ong (1)

Yasmin Bakr (2),Mayuresh Naik (1), Betina Ip (3), Susan Downes (1,3), Peter Charbel Issa (1,3), Sher A. Aslam (1), Jasleen K. Jolly (3,4).

1) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) Stoke Mandeville Hospital, Buckinghamshire Healthcare NHS Trust, Stoke Mandeville, UK. 3) Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK. 4) Vision and Eye Research Institute, Anglia Ruskin University, Cambridge, UK.

ariel.ong@nhs.net

Rapid Fire, Clinical Research

Introduction: To understand the prevalence and characteristics of CBS in patients with vitreoretinal (VR) and inherited retinal disease (IRD).

Methods: Single-centre prospective cohort study at the Oxford Eye Hospital. Patients attending retinal genetics and a single VR surgeon's clinic between July 2022 to May 2023 were screened for CBS symptoms. Screen-positive patients completed the QR-SCB Questionnaire to confirm the diagnosis and explore features including characteristics of hallucinations, origin, coping strategies, psychological impact and social support. Clinical data were collated from hospital records.

Results: 340 patients were screened. 7.4% (n=25/340) reported experiencing visual hallucinations. Nine (mean age 74.2±9.9 years; 67% males) had completed the QR-SCB questionnaire till date. Most (n=8/9) experienced more than one form of hallucination. 78% (n=7/9) described the images as more vivid than their normal visual perception, and 57% (n=4/7) stated that images felt real. Most (89%, n=8/9) were symptomatic for over six months. Two reported CBS symptoms prior to noticing vision problems, while the remainder developed hallucinations concurrently or afterwards. Hallucinations typically lasted seconds to minutes, with one patient describing continuous hallucinations. All reported that hallucinations developed spontaneously, typically when alone, feeling relaxed, or in a calm environment. 55.6% (n=5/9) described images as menacing or worrying and experienced them at least weekly.

Conclusions: CBS can occur regardless of age or pathology. The complexity and diversity of visual hallucinations experienced tends to increase with age. CBS may be underdiagnosed in IRD and VR patients, which can be ameliorated with a simple screening question. Opportunistic screening in clinic may help facilitate accurate diagnosis and timely support.

51 Impact of faricimab vs aflibercept on hard exudates in patients with DMO: Results from the phase 3 YOSEMITE/RHINE trials

Christiana Dinah (1,2)

Manuel Amador (3), Kara Gibson (4), Carl Glittenberg (5), Andreas Maunz (5), Olivia O'Leary (5), Ehsan Rahimy (6), Diane Uschner (5).

1) Ophthalmology Department, London North West University Healthcare NHS Trust, Central Middlesex Hospital, London, UK. 2) Department of Brain Sciences, Imperial College, London, UK. 3) Genentech, Inc., South San Francisco, USA. 4) Roche Products Ltd., Welwyn Garden City, UK. 5) F. Hoffmann-La Roche Ltd., Basel, Switzerland. 6) Palo Alto Medical Foundation, Palo Alto, USA.

christiana.dinah@nhs.net

Poster-only, Clinical Research

Introduction: A characteristic of DMO is retinal deposition of hard exudates (HE), which may be associated with worse visual outcomes. This exploratory analysis of the YOSEMITE (NCT03622580) and RHINE (NCT03622593) DMO trials evaluated if the dual Ang-2/VEGF-A inhibitor faricimab could improve HE clearance vs VEGF inhibition alone with aflibercept.

Methods: Patients with DMO were randomized 1:1:1 for IVT injections of faricimab (6.0mg every 8 weeks [Q8W] or faricimab treat-and-extend [T&E]) or aflibercept (2.0mg Q8W). Presence of HE was evaluated by a central reading centre using CFP at screening, weeks 16, 52, and 96.

Results: Patients were evaluated for HE (n=1870; faricimab Q8W, n=626; faricimab T&E, n=628; aflibercept, n=616). The proportion of patients with HE was similar across arms at baseline (80.8–81.6%). Among patients with HE at baseline, HE incidence was similar between arms at week 16, but favoured faricimab Q8W and T&E vs aflibercept at week 52 (79.0%, 75.8% and 86.2% for faricimab Q8W, T&E and aflibercept, respectively) and week 96 (52.8%, 55.9% and 64.5% for faricimab Q8W, T&E and aflibercept, respectively). Differences between arms were: –7.2% (95% CI, –12.2%, –2.2%; nominal p=0.0058) and –10.5% (–15.6%, –5.4%; nominal p<0.0001) for faricimab Q8W and T&E over aflibercept at 52 weeks, and –11.7% (–18.6%, –4.8%; nominal p=0.0013) and –8.9% (–15.7%, –2.1%; nominal p=0.0124) at 96 weeks, respectively.

Discussion: Dual Ang-2/VEGF-A inhibition with faricimab elicited numerically larger reductions in HE vs aflibercept. These findings may be due to the improved vascular stability observed with dual Ang-2/VEGF-A inhibition with faricimab.

52a Real-world treatment patterns and visual outcomes from 12 or more months of faricimab use among eyes with nAMD in the UK: Results from the FARWIDE-nAMD study

Samantha R. De Silva (1)

S. James Talks (2), Gabriella de Salvo (3), Praveen J. Patel (4), Richard P. Gale (5), Martin McKibbin (6), Deepali Varma (7), Gloria Chi (8), Natalee James (9), Alice Rothwell (9), Neil Shah (9), Amanda Downey (10), Melanie Dodds (11), Parul Dayal (8).

1) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) Newcastle Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK. 3) University Hospital Southampton NHS Foundation Trust, Southampton, UK. 4) Moorfields Eye Hospital NHS Foundation Trust, London, UK. 5) Hull York Medical School, York and Scarborough Teaching Hospitals NHS Foundation Trust, UK. 6) Leeds Teaching Hospitals NHS Foundation Trust, Leeds, UK. 7) South Tyneside and Sunderland NHS Foundation Trust, Sunderland, UK. 8) Genentech, Inc., South San Francisco, USA. 8) Genentech, Inc., South San Francisco, USA. 9) Roche Products Ltd, Welwyn Garden City, UK. 10) Hoffmann-La Roche Limited, Mississauga, Canada. 11) Medisoft Limited, Leeds, UK.

Samantha.DeSilva@ouh.nhs.uk

Poster-only, Clinical Research

Introduction: FARWIDE-nAMD is a retrospective observational real-world study of patients who initiated faricimab for neovascular AMD in the UK after June 2022. We evaluated patient characteristics, treatment patterns and visual outcomes with faricimab, the only intraocular bispecific Ang-2/VEGF-A inhibitor antibody.

Methods: 21 NHS sites contributed data using Medisoft (electronic medical record system). Outcomes are reported as mean (SD) unless stated.

Results: 5804 patients (6978 eyes) received faricimab: 1954 eyes (28%) were treatment-naïve (TN), and 5024 eyes (62%) were previously-treated (PT). 81% of naïve-eyes and 59% of PT-eyes received 4 faricimab loading-doses. 742 eyes had ≥12mo follow-up on faricimab. Among these, TN-eyes (n=178) received 4.7(0.6) injections during the first 6mo and 2.0 (1.1) injections in months 7-12. 89% (n=157) eyes received ≥6 injections. The interval between injections 5 and 6 was 11.3 (5.0) weeks. 42% of eyes were on a ≥12-week interval by injection 6. Baseline VA was 56.3 (16.2) letters; mean VA change (95%CI) was +4.6 (2.4,6.7) letters at 12mo. Prior to faricimab, PT-eyes with ≥12mo follow-up (n=564) had an anti-VEGF treatment interval of 7.1 (2.4) weeks. PT-eyes received 4.3 (1.0) injections during the first 6mo and 2.8 (1.3) in months 7-12. 87% (n=490) eyes had received ≥6 faricimab injections. The interval between injections 5 and 6 was 9.0 (3.4) weeks. Baseline VA was 64.3 (14.5) letters; mean VA change (95% CI) was -0.9 (-1.9,0.2) letters at 12mo.

Significance: TN-eyes gained almost a line of vision; vision remained stable in PT-eyes. Rapid extension in faricimab treatment intervals among naïve-eyes was observed, with improvement over prior treatment intervals in PT-eyes after switching, supporting faricimab durability in nAMD.

52b Real-world treatment patterns and visual outcomes in the first 12 months of faricimab use among eyes with DMO in the UK: Results from the FARWIDE-DMO study

Christine A. Kiire (1)

Rhianon Reynolds (2), Tunde Peto (3), Clare Bailey (4), Louise Downey (5). Sobha Sivaprasad (6), Ian Pearce (7), Gloria Chi (8), Natalee James (9), Alice Rothwell (9), Neil Shah (9), Amanda Downey (10), Melanie Dodds (11), Parul Dayal (8).

1) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) Aneurin Bevan University Health Board and Cardiff University School of Vision Science, Cardiff, UK. 3) Queen's University Belfast and Belfast Health and Social Care Trust, Belfast, UK. 4) University Hospitals Bristol NHS Foundation Trust, Bristol, UK. 5) Hull University Teaching Hospitals NHS Trust, Hull, UK. 6) Moorfields Eye Hospital NHS Foundation Trust, London, UK. 7) Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK. 8) Genentech, Inc., South San Francisco, USA. 9) Roche Products Ltd, Welwyn Garden City, UK. 10) Hoffmann-La Roche Limited, Mississauga, Canada. 11) Medisoft Limited, Leeds, UK.

Christine.Kiire@ouh.nhs.uk

Poster-only, Clinical Research

Introduction: FARWIDE-DMO is a retrospective observational real-world study of patients with DMO who initiated faricimab after June 2022. We evaluated patient characteristics, treatment patterns and visual outcomes with faricimab, the only intraocular bispecific Ang-2/VEGF-A inhibitor antibody.

Methods: 21 NHS sites contributed data using Medisoft (electronic medical record system). Outcomes are reported as mean (SD) unless stated.

Results: 1921 patients (2673 eyes) with DMO received faricimab: 962 (36%) of eyes were treatment-naïve (TN) and the remainder had been previously-treated (PT). 71% of TN-eyes and 58% of PT-eyes received a loading course of 4 doses of faricimab. 303 eyes (11%) had ≥12mo follow-up on faricimab. Among these, TN-eyes (n=101) received 4.5 (0.9) faricimab injections during the first 6mo and 1.8 (1.3) injections in months 7-12. 74% of TN-eyes had received ≥6 faricimab injections. The interval between injections 5 and 6 was 10.5 (4.0) weeks. Baseline VA was 63.9 (15.6) letters and mean VA change (95% CI) was +5.3 (2.9, 7.7) letters at 12mo. PT-eyes with ≥12mo follow-up (n=202) received 4.6 (1.1) faricimab injections during the first 6mo and 2.5 (1.4) injections in months 7-12. 82% of PT-eyes had received ≥6 faricimab injections. The interval between injections 5 and 6 was 9.0 (4.6) weeks. Baseline VA was 65.5 (15.9) letters; mean VA change (95% CI) at 12mo was +0.8 (-0.5, 2.1) letters.

Significance: TN-eyes gained >1 line of vision. Vision remained stable in PT-eyes. Rapid extension in faricimab treatment intervals after the initiation doses was observed. These data support faricimab durability in DMO.

53 Comparing Pro-Re-Nata and Treat-and-Extend protocols for anti-VEGF injections in retinal vein occlusion – 12-month real world outcomes

Martin Horák (1)

Vasil Kostin (1), Wiktoria Zamirska (1), M. Dominik Fischer (1,2), Peter Charbel Issa (1,2), Christine A. Kiire (1,2). Niamh Stone (1), Samantha R. De Silva (1,2).

1) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

horak.marty@gmail.com

Poster-only, Clinical Research

Introduction: Treat-and-Extend (T+E) and Pro-Re-Nata (PRN) protocols for delivery of intravitreal anti-vascular endothelial growth factor (anti-VEGF) injections are used for the management of macular oedema due to retinal vein occlusions (RVO). We compared effectiveness of these protocols at 12 months.

Methods: Retrospective study, Oxford Eye Hospital. Treatment-naïve eyes with 52 weeks follow-up were included.

Results: 166 eyes were included. Branch RVO (PRN n=51, T+E n=44): Visual acuity (VA) was similar at baseline (PRN 57±19 letters; T+E 60±21, p=0.57) with similar VA gains at 12 months (PRN 12±17 letters; T+E 12±18, p=0.44). CST was similar at baseline (PRN 485±167 µm; T+E 448±139 µm, p=0.25) with similar gains (PRN 191±186 µm; T+E 163±135 µm, p=0.4). PRN treatment resulted in fewer injections (6.6±2.1; T+E 8.0±1.5, p<0.01), but more hospital visits (11.2±2.4; T+E 9.5±1.6, p<0.01). Central RVO (PRN n=42, T+E n=29): VA was similar at baseline (PRN 49±18 letters; T+E 48±20, p=0.78) but improvement was greater in the T+E group (16±16 letters; PRN 8±14, p<0.05). Baseline CST was higher in the PRN group (607±236 µm; T+E 507±140 µm, p<0.05) with similar CST improvement at 12 months (PRN 212±267 µm; T+E 233±152 µm, p=0.7). Fewer injections were given in the PRN group (6.8±2; T+E 8.4±1.2, p<0.01), with a similar number of hospital visits (PRN 11.3±2.3; T+E 10.4±2.1, p=0.09).

Discussion: PRN treatment, in general, resulted in fewer injections but more hospital visits. Clinical outcomes were comparable, except for higher visual gains in CRVO eyes treated by a T+E protocol. Ongoing follow up will help inform long-term financial and workforce implications.

54 Tertiary centre experience of using ranibizumab biosimilar compared to aflibercept for neovascular age related macular degeneration

Muslim Bilal (1)

Ayad Al-Bermani (2).

1) Cardiff University, School of Medicine, Cardiff, UK. 2) Department of Ophthalmology, University Hospital Wales, Cardiff, UK.

bilalm3@cardiff.ac.uk

Poster-only, Clinical Research

Introduction: The United Kingdom was the first European country to approve the use of ranibizumab biosimilar (Ongavia), for treatment of neovascular age related macular degeneration (AMD). It was rapidly welcomed as a cheaper anti-VEGF alternative to the innovator ranibizumab (Lucentis) and the well-established aflibercept (Eylea).

This study compares the real-world efficacy of Ongavia in comparison to Eylea for patients diagnosed with treatment-naïve wet age-related macular degeneration (nAMD) at a major tertiary centre.

Method: This is a retrospective comparative study held in a single-centre tertiary hospital. We reviewed electronic and paper medical records of patients diagnosed with nAMD and received either Ongavia or Eylea intravitreal injections within a treat and extend protocol, between the period of Introduction of Ongavia in August 2022 - August 2023. We evaluated change in best corrected visual acuity, CRT, number of injections and injection intervals.

Results: A total of 69 eyes met the inclusion criteria. Patients treated with Eylea (n=36) had a greater increase in BCVA (ETDRS) (7.08±4.12 (95% CI.)) compared to those treated with Ongavia (n=33) (-0.32±4.31 (95%CI.)) (p=0.0178). Additionally, those treated with Eylea had a greater reduction in CRT (-138.11 µm ± 45.61 (95 % CI.)) compared to Ongavia (-49.91 µm ±27.213 (95%CI.)) (p=0.0022). We found no significant difference in the number of injections received, Eylea (6.75 ±0.49 (95% CI.)) and Ongavia (6.52 ±0.72 (95%CI.)) (p=0.5950).

Conclusion: Ongavia has shown to have reduced efficacy in comparison to Eylea for the treatment of nAMD at our centre. Patients who received Ongavia had worse functional and morphologic outcomes.

Ongavia has shown to have reduced efficacy in comparison to Eylea for the treatment of nAMD at our centre. Patients who received Ongavia had worse functional and morphologic outcomes.

55 Real world outcome of switching to faricimab in patients diagnosed with neovascular age related macular degeneration

Kaumudi Tiwari

Theodora Mantzari, Fernando J Huelin, Ankita Abhinandan Punit, Shaista Parveen, Lesley Brands, Iacopo Macchi, Yingdi Chen, S. James Talks.

Royal Victoria Infirmary, Newcastle upon Tyne, UK.

kaumudishu@gmail.com

Poster-only Clinical Research

Introduction: 1. Faricimab binds VEGF A and angiopoietin 2. Results from clinical trials suggest it may provide longer durability. There is currently limited data for switch patients.

Materials and Method: Anatomical and functional data in the form of OCT and Visual acuity respectively were collected for patients who were refractory to previous intravitreal injection (Eylea and Lucentis) and were switched to faricimab. Paired t-test , Wilcoxcon signed rank test and Chi square test were employed for statistical analysis.

Results: Total of 146 injections, out of which 96 were loaded and 21 were not loaded with faricimab. The mean of treatment interval prior to and post switch was 6.83 week and 8.56 week respectively ($p<0.001$). OCT showed reduction in terms of central retinal thickness (CRT), Intraretinal fluid (IRF), subretinal fluid (SRF) and pigment epithelial detachment (PED) after switching to faricimab ($p<0.05$). The mean of CRT pre switch and post switch was 325.39 and 288.39 respectively. The mean of visual acuity pre-switch was 66.21 letters and 6 months later post-switch was 64.36 letters which did not show improvement after switching ($p=0.663$). The mean number of injections in the loading and non-loading group after 6 months was 3.92 and 2.92 respectively ($p<0.01$).

Discussion: Anatomical outcomes based on OCT significantly improved after switching to faricimab and treatment interval was found to be significantly longer compared to Eylea and Lucentis. However, vision did not improve after switching to faricimab.

56 Switching to faricimab in the management of neovascular age related macular degeneration: a presentation of real world data

Youssef Helmy (1,2)

Marta Latasiewicz (1), Ambren Tunio Kalhoro (1), Filip Tarcoveanu (1), Tayaba Akhtar (1), Yasmin Bakr (1), Krupa Karia.

1) Buckinghamshire Healthcare NHS Trust, Stoke Mandeville, UK. 2) Cairo University, Cairo, Egypt.

y.helmy@nhs.net

Poster-only, Clinical Research

Introduction: Faricimab, approved in the United Kingdom for the treatment of neovascular age related macular degeneration (n-ARMD) in 2022, showed a potential to provide the same efficacy to other intravitreal anti-VEGF agents with a decreased frequency of injections. In this study we provide real-world data on the use of faricimab in the treatment of n-ARMD.

Methods: This is a retrospective review of eyes with n-ARMD that were switched to faricimab between March 2023 and January 2024 at Buckinghamshire Healthcare NHS Trust. Eyes were included if they received 6 or more injections of faricimab after switching from 4 to 5 weekly injections of any other anti-VEGF.

Results: 155 eyes were included. Aflibercept was the commonest used intravitreal drug prior to the switch (81.3 % n=126). On the day of the switch, the mean visual acuity was LogMAR 0.38±0.26 (0-1.28) and 64.5% (n=100) had active n-ARMD. On the day of the last faricimab injection (median=8) the mean visual acuity was LogMAR 0.36±0.26 (0-1.26) and 41.9% (n=65) had active n-ARMD. 31.6 % (n=49) had remained stable and inactive and 26.4 % (n=41) had become inactive. An extension of treatment interval to 6 weeks or more was achieved in 53.5% (n=83) of eyes. No complications were observed in this cohort.

Discussion: In our small sample, faricimab appears to provide an option to reduce the frequency of injections in half of the treated eyes. It does not appear to affect mean visual acuity. Larger studies are required to validate these results.

57 Outcomes of diabetic retinopathy screening in pregnant women in Birmingham and Solihull - Results from the largest NHS Trust in England

Xiaoli Chen
Sobha Joseph
University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK.
xiaolichen@nhs.net
Poster-only, Clinical Research

Introduction: Diabetic retinopathy (DR) is a leading cause of blindness in the working age population. Pregnancy is an independent risk factor, significantly increasing the short-term risk of DR progression. Global estimates of proliferative DR rate are about 6.1%. The purpose of this study is to give an overview of the diabetic eye screening attendance and compliance in Birmingham and Solihull area and understand progression of diabetic retinopathy during pregnancy in this diverse area.
Methods: Screening data between 1st September 2022 to 31st August 2023 were provided by diabetic eye screening program (DESP). Pregnant women who had pre-existing diabetes were included if they received maternity service in University Hospital Birmingham (UHB). Electronic records, OCT and Optos results were reviewed.
Results: Over the 12-month period, 149 patients received extra eye screenings due to pregnancy. The 12-week screening attendance rate was 41%, primarily attributable to patient non-attendance (23% DNA) or delayed referrals (36%). The 28-week screening attendance was 51%. By offering 118 extra appointments, 86.6% women completed screening. One case (<1%) progressed to high-risk Proliferative DR. The rate of diabetic macular oedema (DMO) was 7% (8 cases), but 13% of them (1 case) rapidly progressed to bilateral severe DMO and required steroid implants.
Discussion: Efforts are needed to improve the attendance of DESP during pregnancy, as well as timely referral from maternity service. The rate of referrable DR remains lower in Birmingham area than global estimates, but treatment can be challenging. DMO in pregnancy can progress rapidly, emphasising the need for timely intervention.

58 Real world data of the use of faricimab in the treatment of diabetic macular oedema (DMO) in a multi-ethnic population: experience of first 1000 injections

Ali Al-Gilgawi (1)
Amee Patel (2) Arthur Green (1), Arevik Ghulakhszian (1), Dhannie Ramcharan (1), Paul Basset (1), Sheena George (2), Christiana Dinah (1).
1) London North West University Healthcare NHS Trust, London, UK. 2) Hillingdon Hospitals NHS Trust, London, UK.
a.al-gilgawi@nhs.net
Poster-only, Clinical Research

Purpose: Faricimab is the first and only bi-specific agent approved for the treatment of DMO. This study presents real-world data of the first 1000 injections in a multi-ethnic population.
Methods: Prospective cohort study of treatment-naïve (TN) and treatment resistant (TR) patients treated with faricimab for DMO. Functional and structural parameters were documented at each visit for a loading regimen of 4 injections, and then every visit on a treat-and-extend regime. These included best-corrected visual acuity (BCVA), central sub-foveal thickness (CSFT), macular volume (MV), intra- and sub-retinal fluid (IRF/SRF). Comparisons were made between data at initiation of and the post-loading visit.
Results: There were no adverse events in either cohort. 122 eyes were included in the study (43% female, 86% BME, 63% TN). In the TN group, mean change in BCVA was -0.15 LogMAR (-0.21, -0.09) ($p<0.001$); mean change in CSFT was -107 µm (-139, -75) ($p<0.001$); mean change in MV was -1.1 μm^3 (-1.4, -0.8) ($p<0.001$). 20% of TN eyes had CSFT <280 µm after the first injection. In the TR group, mean change in BCVA was -0.06 LogMAR (-0.10, -0.02) ($p<0.01$); mean change in CSFT was -74 µm (-115, -32) ($p=0.001$); mean change in MV was -0.8 μm^3 (-1.2, -0.4) ($p<0.001$).
Conclusions: Our real-world experience of faricimab for DMO in a multi-ethnic cohort is encouraging. We will present time -to-dry analysis for this cohort. Longer term data is required to determine durability beyond 12-week interval and safety in this demographic.

59 Anatomical outcomes at six-months in patients switched to faricimab following partial response to anti-VEGF therapy for neovascular age-related macular degeneration and diabetic macular oedema

Grace Borchert (1,2)

Christine A. Kiire (2), Niamh M. Stone (2), Handan Akil (2), Theodora Gkika (2), M. Dominik Fischer (1,2), Kanmin Xue (1,2), Jasmina Cehajic-Kapetanovic (1,2), Robert E. MacLaren (1,2), Peter Charbel Issa (2), Susan M. Downes (1,2), Samantha R. De Silva (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

2) Oxford Eye Hospital, Oxford University NHS Foundation Trust, Oxford, UK.

grace.borchert@keble.ox.ac.uk

Poster-only, Clinical Research

Background: Recent studies characterised faricimab efficacy and safety predominantly in treatment naïve patients, but outcomes following switching from other anti-VEGF therapies are lacking. We evaluated anatomical outcomes in patients switched to faricimab who had previously shown a partial response to other anti-VEGF injections for neovascular age-related macular degeneration (nAMD) and diabetic macular oedema (DMO).

Methods: Retrospective study at the Oxford Eye Hospital. Patients switched to faricimab from January to April 2023 with 6 months follow-up.

Results: 117 patients (153 eyes) were included. In 88 patients with nAMD (107 eyes), there was no change in mean visual acuity: 62+/-17 ETDRS letters at baseline; 62+/-18 at 6 months ($p>0.05$). Central subfield thickness (CST) reduced from 294+/-73 µm at baseline to 270+/-53 µm ($p<0.05$) at 6 months. Subretinal or intraretinal fluid was present in 102 eyes (95%) at baseline and 75 eyes (70%) at follow-up ($p<0.05$). Pigment epithelial detachment height decreased from 233+/-134 µm to 188+/-147 µm ($p<0.05$). Mean treatment interval increased by 1.7 weeks ($p<0.05$) and was extended in 61 eyes (57%) at 6 months. In 28 patients with DMO (44 eyes), visual acuity remained stable: 69+/-15 letters at baseline; 70+/-15 at 6 months ($p>0.05$). CST reduced from 355+/-87 µm to 317+/-82 µm ($p<0.05$). Mean treatment interval increased by 1.4 weeks ($p<0.05$) and was extended in 21 eyes (46%) by 6 months.

Conclusions: Switching to faricimab in treatment resistant eyes led to improved anatomical response in a significant proportion of patients. Ongoing review of real-world data will inform longer-term outcomes of safety and effectiveness.

60 Expanding the genotypic and phenotypic spectra with a novel variant in the ciliopathy gene, CFAP410

Grace Borchert (1,2)

Morag Shanks (2), Jennifer Whitfield (2), Penny Clouston (2), Shabnam Raji (1,2), Sian Sperring (2), Kanmin Xue (1,2), Samantha R. De Silva (1,2), Susan M. Downes (1,2), Robert E. MacLaren (1,2), Jasmina Cehajic-Kapetanovic (1,2).

1) Nuffield Laboratory of Ophthalmology, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK.

2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.

grace.borchert@keble.ox.ac.uk

Poster-only, Clinical Research

Background: CFAP410 (Cilia and Flagella Associated Protein 410) encodes a protein that has an important role in the development and function of cilia across organ systems. In the eye, pathogenic variants in CFAP410 typically result in retinal degeneration with a retinitis pigmentosa phenotype in association with systemic manifestations such as skeletal abnormalities. Here we present a proband from a consanguineous family with a novel homozygous c.335_346del variant in exon 4 of CFAP410 with cone only dysfunction and no systemic features.

Methods: Retrospective analysis of ophthalmic history, examination, retinal imaging, electrophysiology and microperimetry. Genetic testing by Next Generation Sequencing (NGS) and Whole Genome Sequencing (WGS). In silico pathogenicity predictions (SIFT Indel, Mutation Taster, Splice AI) and a literature review were performed.

Results: A 28-year-old female of Pakistani ethnicity, consanguineous parents presented with childhood-onset poor central vision and photophobia and is systemically well. Best-corrected visual acuities were 20/63 (right) and 20/80 (left). Ishihara colour testing showed significant reduction with 6/17 plates (right) and 3/17 (left). Fundus examination was a blue autofluorescence imaging was normal. However, macular optical coherence tomography, showed subtle signs of mottling and intermittently disrupted ellipsoid zone. Microperimetry demonstrated reduced central retinal sensitivity. Electrodiagnostic testing indicated cone dysfunction. Genetic testing by NGS and additional deep sequencing of achromatopsia genes revealed no pathogenic variants. Subsequent WGS identified a homozygous in-frame deletion of 12 base pairs at c.335_346del in CFAP410.

Conclusions: The cone-specific phenotype reported expands the genotypic and phenotypic spectra of CFAP410-associated ciliopathies.

62 Ethnicity and geographic atrophy phenotypic variation and progression

Aina Pons

Ameeta Kumar, Arevik Ghulakhszian, Christiana Dinah.

Central Middlesex Hospital, Ophthalmology Department, London, UK.

a.ponstalaya@nhs.net

Poster-only, Clinical Research

Introduction: Geographic atrophy (GA) is an end-stage sight threatening complication of age-related macular degeneration responsible for at least a quarter of sight impairment registration in the UK. Other authors have characterised phenotypical variations in different ethnicities reporting differences in GA lesions, associated features, and growth rate. The objective of this study was to describe the phenotypic variability of GA in a uniquely ethnically diverse cohort and correlate this with progression rate in our cohort of patients.

Methods: We retrospectively analysed data from 69 patients with GA (131 eyes) under follow-up in our centre.

Results: In our cohort, mean age was 83 (±7.3) and 47.8% were males. Of all patients, 54.4% were Caucasian, 36.7% were South Asian, 1.7% were Far East Asian and 7.3% had other ethnic origins. Of all patients with GA, 35.8% had bilateral GA and 35.8% had wet AMD in the fellow eye. GA was multifocal in 58.6% of all patients and 49.2% of cases of GA had foveal involvement. The mean follow-up was 35.4 months (22 days – 11.5 years). We will present the phenotypic characteristics of GA and rate of progression by ethnicity and predictors of GA lesion growth rate in this diverse cohort.

Discussion/Significance: Characterisation of phenotypical differences amongst patients with GA of different ethnicities and understanding of progression of GA could have an impact in the understanding of GA's natural history and generalisability of future therapeutic options.

63 Activation of immune checkpoints, PD-1 and TIGIT, suppresses development of autoimmune uveitis in mice

Kanmin Xue (1,2)

Joel Quinn (2), Ahmed Salman (2), Christopher Paluch (3), Luke Cox (3). Jasmina Cehajic-Kapetanovic (1,2), Robert E. MacLaren (1,2), Richard J. Cornall (4), Simon J Davis (4).

1) Nuffield Laboratory of Ophthalmology, University of Oxford, Oxford UK. 2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 3) MiroBio Ltd., Gilead Sciences Inc., Oxford, UK. 4) Weatherall Institute of Molecular Medicine, University of Oxford, Oxford, UK.

kanmin.xue@eye.ox.ac.uk

Poster-only, Laboratory Research

Introduction: We have identified the immune checkpoint receptors, PD-1 (programmed cell death protein 1) and TIGIT (T cell immunoreceptor with Ig and ITIM domains), to be expressed by infiltrating retinal lymphocytes in the mouse model of autoimmune uveitis. Here we assess whether activating these checkpoints could control intraocular inflammation.

Methods: Experimental autoimmune uveitis was induced by immunising humanised hPD1/hTIGIT transgenic mice against IRBP peptide. Mice were treated with intraperitoneal injections of either a 1:1 mixture of agonistic monoclonal antibodies to human PD-1 and TIGIT (n=12) or isotype control antibody (n=12) on day 0 and 7 post-immunisation. SLO and OCT were performed on day 13 to grade the severity of uveitis in each eye. Retinas were dissociated for flow cytometric analysis of infiltrating leukocytes and receptor engagement.

Results: At day 13 (normal inflammation peak), the agonist-treated group showed significantly lower uveitis scores (median=0, IQR 0-0.25) compared with isotype control (median=0.375, IQR 0.25-0.75) (Mann-Whitney U=32, two-tailed p=0.016). Flow cytometry of dissociated retinas revealed an immune cell infiltrate comprising diverse activated T cell and myeloid subsets in the treated eyes. Checkpoint receptor engagement was inferred by reduced receptor staining on infiltrating leukocytes in agonist-treated eyes compared to controls.

Conclusions: Antibody-mediated activation of PD-1 and TIGIT provides a novel method for suppressing autoimmune uveitis in humanised mice. Future work will examine the mechanism of uveitis suppression and effective routes of administration for treating non-infectious posterior uveitis in patients.

64 The role of immune regulator IRAK-M in myeloid cell activation in light-challenged mouse retina

Aiman Dilnawaz (1)

Jian Liu (2), Andrew Dick (2,3).

1) Gloucestershire Hospitals NHS Foundation Trust, Gloucester, UK. 2) Translational Health Sciences (Ophthalmology), Bristol Medical School, University of Bristol, Bristol, UK. 3) Institute of Ophthalmology, University College London (UCL), London, UK.

aimandilnawaz@hotmail.com

Poster-only, Laboratory Research

Introduction: Oxidative stress is one of the pathogenic factors involved in the mediation of age-related macular degeneration (AMD) and is associated with the accumulation of immune cells infiltrating subretinal space and changes in the retinal pigmented epithelium, i.e. autophagy impairment. Retinal inflammation perturbs homeostatic para-inflammatory response via the release of certain cytokines and chemokines that lead to the accumulation of microglial cells and macrophages. However, excessive inflammation is dangerous for cells, therefore, pro-inflammatory mediators need to be tightly regulated. IRAK-M is recognised as one of the intracellular regulators responsible for negatively regulating inflammatory responses. Nevertheless, the role of IRAK-M in retinal pathology has yet to be understood.

Methods: Genetically altered IRAK-M knock-out (KO) mice and wild type (WT) C57BL/6J mice aged 8-10 weeks were subjected with use of fundus camera-delivered light-induction for retinal degeneration light challenge to the left eyes at an intensity of 100 klux for 20 min according to previous studies. 3-days post light induction, eyes were enucleated and cryosections were prepared for fluorescent staining of CD11b+ cells.

Results: IRAK-M KO-mice with light-induction show an increased number of CD11b+ cells in comparison to WT-mice with light-induction. In KO-mice, light-induced infiltration of CD11b+ myeloid cells were largely seen in subretinal space but not in WT-mice.

Conclusion: IRAK-M deficient mice's retina is susceptible to light-induced CD11b+ cell infiltration and particularly accumulation within the subretinal space. The data suggest a role of IRAK-M in regulating myeloid cell-mediated tissue inflammation under oxidative stress.

65 Withdrawn

66 CRISPR base editing of the human apolipoprotein E (APOE) risk variant for age-related macular degeneration

Monica Hu (1)

Joel Quinn (1), Robert E. MacLaren (1,2), Kanmin Xue (1,2).

Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK. 2) Oxford Eye Hospital, Oxford, UK.

monica.hu.011@gmail.com

Poster-only, Laboratory Research

Introduction: The apolipoprotein E allele ε2 (APOE2) is a genetic risk factor for age-related macular degeneration (AMD). Its roles in drusen formation and complement activation make it a potential therapeutic target. APOE2 differs from the common APOE3 allele by a single nucleotide polymorphism (SNP), a C>T transition at chr19:g.45412079. This is potentially amenable to an A>G edit on the opposite strand using an adenine base editor (ABE). Herein we develop an APOE2 base editing approach deliverable by virus-like nanoparticles.

Methods: One viable spacer for the NGG PAM of SpCas9 ABE was identified within APOE2. Performance between four ABE variants was compared by co-transfecting HEK293T cells with plasmids expressing APOE2, ABE and guide RNA (gRNA). After 5 days, editing rates from extracted DNA was quantified by EditR. The ABE-gRNA ribonucleoprotein (RNP) complex was packaged into engineered virus-like particles (eVLP) and tested in HEK293T cells.

Results: On-target A>G editing efficiency at the APOE2 SNP was similar between the four ABEs, ranging from 38.0% (±10.5%) for ABE8e to 43.0% (±4.2%) for ABEmax-P2A-GFP. No off-target editing of a bystander adenine base was detected. When ABE-gRNA RNP was packaged into eVLPs to transduce cells transfected with APOE2 plasmid, 1% on-target editing of APOE2 SNP and no bystander edits were detected among unsorted cells.

Discussion: CRISPR-mediated conversion of AMD-associated APOE2 to normal APOE3 is achieved using an ABE construct. Limited editing rate when delivered using non-integrating virus-like nanoparticles is likely due to a low rate of transduction (<5%), which requires optimisation prior to in vivo studies.

67 A human uveal single cell atlas reveals fibroblast heterogeneity in adult and foetal eyes

Ian Reekie (1)

Lakshanie Wickramasinghe (1), Andrew Foers (1), Tom Thomas (1), Ananya Bhalla (1), Olympia Hardy (2), Dylan Windell (1), Srilakshmi Sharma (1), Jonathan Sherlock (3), Mark Coles Kennedy (1), Christopher Buckley (1).

1) Kennedy Institute of Rheumatology, University of Oxford, Oxford, UK. 2) University of Glasgow, Glasgow, UK. 3). Janssen Research and Development, LLC, Spring House, USA.

ian.reekie@gmail.com

Poster-only, Laboratory Research

Introduction: Single-cell RNA sequencing (scRNAseq) has revealed that fibroblast populations in several tissues, once thought to be homogeneous, actually show distinct heterogeneity with functional relevance to disease states.

Methods: 3' scRNAseq profiled the transcriptome of 66,967 cells from the iris, ciliary body and choroid of adult donors (n=3), and 95,943 cells from the foetal uvea (n=8). None had any history of eye disease. Quality control, pre-processing and clustering used the Scanpy suite of bioinformatics tools. Batch correction was by Harmony. Cell annotation was manual using canonical identifiers of cell type. Over-representation analysis used GSEAPY, ligand receptor interaction analysis used CellChat. Cell type localisation was by RNA in situ hybridisation and immunofluorescence staining.

Results: Significantly differentially expressed genes are identified between fibroblasts of different uveal locations. Fibroblast subtypes are discernible within the choroid, two key populations are identified by expression of PI16 & VEGFB and ANGPT1 & CXCL12 respectively. Overrepresentation analysis of these show upregulation of pathways such as the cyclooxygenase pathway and angiogenesis related pathways respectively. The PI16+ population is specifically localised in the suprachoroid region, demonstrating a microanatomical niche within the tissue. Ligand-receptor interaction analysis shows cross talk between fibroblasts and other cell populations, particularly the RPE and melanocytes.

Conclusions: Fibroblasts are heterogenous both between different uveal tissues and within the choroid. Fibroblast subtypes have distinct roles, and cross talk with other cell types can be discerned. One choroidal fibroblast subtype may play a role in angiogenesis and is therefore of interest to the study of choroidal neovascularisation.

68 Ocular manifestations of systemic fluoroquinolone use

Muhammad Yousuf Hayat (1)

Ahmed Shah Nazari (2), Ahsan Rashid (3)

1) *University Hospital Southampton NHS Trust, Southampton, UK. 2) Northampton General Hospital NHS Trust, Northampton, UK. 3) Barking, Havering, and Redbridge University Hospitals NHS Trust, Romford, UK.*

yousuf_hayat@hotmail.co.uk

Digital Poster-only, Clinical Research

Introduction: Fluoroquinolones are amongst the most commonly prescribed antibiotics for respiratory and urinary tract infections. Despite their utility in clinical medicine, concern has grown regarding their side effect profile on multiple organ systems.

Case Details: A 22-year-old Asian male suffered musculoskeletal and ocular side effects of oral ciprofloxacin therapy for suspected Orchitis – namely photopsia and floaters as well as dry eyes too (fluorescein tear breakup time of 5 seconds bilaterally). No causes were identified on slit lamp examination nor via ocular coherence tomography for this presentation, and with time his symptoms gradually improved.

Discussion: Fluoroquinolones are known to affect connective tissues and there is a theoretical conferred risk of Rhegmatogenous Retinal Detachment. Despite this, no concrete association has been demonstrated in the literature. Fluoroquinolones have been demonstrated to induce mitochondrial dysfunction via topoisomerase inhibition hence leading to increased reactive oxygen species (ROS) production. Fluoroquinolones may also induce potential autonomic nervous system dysfunction and have been demonstrated to chelate minerals, namely magnesium and zinc which have stipulated protective effects against dry eye and retinal degenerative processes. These factors together may explain the disruption in the balance of protective mechanisms on the eye surface - ultimately leading to inflammation and worsening of dry eyes. Selective antagonism of $GABA_A$ receptors causing foci of hyperexcitability in the visual cortex may explain why this patient experienced photopsia.

Conclusion: Trainees should be reminded to adopt a risk vs benefit approach when prescribing such antibiotics and to be mindful of their effects on multiple organ systems and classes.

69 Avacopan in the treatment of refractory scleritis secondary to granulomatosis with polyangiitis

Emilia Bober (1)

Bhavana Sharma (2), Ioannis Papasavvas (1), Stephen McAdoo (3), Harry Petrushkin (1).

1) Uveitis and Scleritis Service, Moorfields Eye Hospital NHS Foundation Trust, London, UK. 2) Ophthalmology Department, Aneurin Bevan University Health Board, Newport, UK. 3) Imperial College Renal and Transplant Centre, Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, UK.

emilia.bober1@nhs.net

Digital Poster-only, Clinical Research

Introduction: We present a case of de novo scleritis in a patient with a background of retinitis pigmentosa with Argus II implant in situ. Severe scleral inflammation occurred following a suture removal from the implant site. Remission was not maintained despite orbital floor injections and high dose oral prednisolone. The diagnostic work-up revealed granulomatosis with polyangiitis (GPA) which quickly progressed to involve vital organs. In view of his systemic deterioration, he was established on a novel C5a receptor inhibitor (avacopan) which is a newly licensed treatment in the United Kingdom for severe active GPA.

Methods: Single case report from patient seen at a tertiary referral centre. Data was collected retrospectively from electronic hospital notes.

Results: We report satisfactory remission of scleritis after 7 months of treatment with avacopan. No episodes of disease reactivation were reported since avacopan was started. Systemic oral steroids were successfully tapered to 2 mg per day.

Significance: With avacopan now being licensed for treatment of severe active GPA in the United Kingdom, ophthalmologists will be increasingly more exposed to patients established on this novel agent. To the best of our knowledge, this is the first described case on initial ophthalmic outcomes in a patient with scleritis secondary to severe GPA treated with avacopan. We hope our findings will contribute towards a better understanding of how this novel agent could positively influence ophthalmic outcomes in GPA patients.

POSTER ABSTRACTS

	OCULAR ONCOLOGY AND PATHOLOGY	ABSTRACTS 70–77	
70	**Using deep learning to aid in the differentiation of uveal melanoma from a naevus**	**Max Jackson** *Department of Molecular and Clinical Cancer Medicine, University of Liverpool, Liverpool. UK.*	**RF** *LR*
71	**The impact of the tumour laterality (unilateral vs bilateral) in patients with retinoblastoma on presentation and management outcome**	**Omar AL Adawi** *Salisbury District Hospital, Salisbury, UK.*	P *CR*
72	**A comparison of high-risk pathological features between primary and secondary enucleation for retinoblastoma**	**Reham Shehada** *NHS-Highland, Inverness, UK.*	P *CR*
73	**Ultrasound guided Ru106 plaque brachytherapy for treatment of exudative retinal detachment in children with diffuse choroidal haemangioma**	**Ali Al-Gilgawi** *Royal London Hospital, London, UK.*	P *CR*
74	**Intravitreal bevacizumab for the treatment of choroidal haemangiomas**	**Helya Aghazadeh** *Department of Ocular Oncology, Moorfields Eye Hospital, London, UK.*	P *CR*
75	**Natural history of optic disc melanocytoma in 225 eyes**	**Pragya Saini** *Moorfields Eye Hospital, London, UK.*	P *CR*
76	**Unusual case of vitreous haemorrhage in a patient with history of radiation treated choroidal melanoma**	**Kumar Anshuman** *James Cook University Hospital, Middlesbrough, UK.*	DP *CR*
77	**An unusual phenotypic presentation of ocular Erdheim-Chester disease**	**Jennifer Utting** *Ophthalmology Department, Royal Hallamshire Hospital, Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK.*	DP *CR*

70 Using deep learning to aid in the differentiation of uveal melanoma from a naevus

Max Jackson (1)

Helen Kalirai (1), I. Yalin Zheng (2), Abhishek Mahajan (3), Sarah E. Coupland (1).

1) Department of Molecular and Clinical Cancer Medicine, University of Liverpool, Liverpool. UK. 2) Department of Eye and Vision Sciences, University of Liverpool, Liverpool, UK. 3) The Clatterbridge Cancer Centre NHS Foundation Trust, Liverpool, UK.

sgmjack6@liverpool.ac.uk

Rapid Fire, Laboratory Research

Introduction: Uveal melanoma (UM) is a rare primary intraocular cancer affecting around 6 individuals per million per year. Diagnosis is performed using Fundus and Optical Coherence Tomography images but for indeterminate lesions an intraocular biopsy may be taken. Benign naevi appear in the choroid and are sometimes hard to distinguish from a UM. This study tests a deep learning model, for use on fundus images, that can identify if a lesion is a naevus or UM.

Methods: A previously published deep learning model RETFound [1], developed for diabetic retinopathy, was modified for training to distinguish UM from benign naevi. This was performed on 17,316 fundus images with a 70% training (12,305), 20% test (3,439) and 10% validation (1,848) split. Images were obtained from the Liverpool University Hospital Foundation Trust according to Health Research Authority and Confidential Advisory Group approvals (REC:Ref 20/LO/1126).

Results: Overall accuracy for the model was 80% with an AUC-ROC of 84%. Of the validation set, 91% UM images were correctly classified (n=1,324) whilst only 47% of the naevus images (n=184) were correctly classified.

Discussion: We have modified a deep learning model to classify UM and naevi with good accuracy. The accuracy of this model could be improved by including more images overall and particularly of the naevi, which represented less than a quarter of all images analysed. Implementation of this tool within opticians/clinic could avoid unnecessary referrals to specialist ocular oncology centres. In addition, this could lead to the reduction of invasive biopsies.

1. https://doi.org/10.1038/s41586-023-06555-x.

71 The impact of the tumour laterality (unilateral vs bilateral) in patients with retinoblastoma on presentation and management outcome

Omar AL Adawi (1)

Mona Mohammad (2), Yacoub A. Yousef (2).

1) Salisbury District Hospital, Salisbury, UK. 2) King Hussein Cancer Center, Amman, Jordan.

adawio89@gmail.com

Poster-only, Clinical Research

Introduction: This study aims to compare the outcomes of managing retinoblastoma between patients with unilateral and bilateral presentations.

Methods: The study, conducted at the King Hussein Cancer Center in Amman, Jordan, retrospectively analysed cases of retinoblastoma treated between March 2003 and December 2019. Evaluation criteria included clinical features, disease stage, treatment methods, and overall management outcomes.

Results: The study comprised 697 eyes from 478 patients with retinoblastoma, with 52% being boys. Bilateral disease was observed in 70% of patients. The median age at diagnosis was 28 months for unilateral cases and 6 months for bilateral cases. According to the International Intraocular Retinoblastoma Classification (IIRC), 88% of unilateral cases presented with advanced disease (IIRC group D/E), compared to 46% in bilateral cases. Primary enucleation was performed in 29% of unilateral cases and 16% of bilateral cases (p value 0.0007). Eye salvage rates were 31% in unilateral cases and 68% in bilateral cases (p value <0.0001). At 120 months of follow-up, 5% of patients died from neoplasms or metastases, 81% were alive, and 14% were lost to follow-up. There was no significant difference in metastasis, secondary neoplasms, or mortality between patients with unilateral and bilateral retinoblastoma.

Significance: Tailored management and early detection are crucial in retinoblastoma care, with primary enucleation playing a vital role in treating advanced cases. Bilateral cases showed earlier detection and higher eye salvage rates than unilateral cases. Effective communication and patient education are critical for enhancing treatment adherence.

72 A comparison of high-risk pathological features between primary and secondary enucleation for retinoblastoma

Reham Shehada (1)
Mona Mohammad (2), Yacoub A. Yousef.
1) NHS-Highland, Inverness, UK. 2) King Hussein Cancer Centre, Amman, Jordan.
reham.shehada@nhs.scot

Poster-only, Clinical Research

Introduction: This study aims to compare the risk and pattern of High-Risk Pathologic Features (HRPF) in retinoblastoma between primary and secondary enucleation.
Methods: A retrospective analysis of 121 eyes from 118 patients who underwent enucleation at the King Hussein Cancer Center (KHCC) Amman, Jordan, between November 2009 and January 2020. Demographic information, tumour stage, time from diagnosis-to-enucleation, results of pathology, metastasis, and mortality were retrieved.
Results: Patients in the secondary group (49/121 eyes, 40%) were considerably younger at diagnosis (p=0.0014), had bilateral disease (p=0.0001), and had less-progressed disease at presentation (p=0.016) compared to the primary enucleation. Primarily enucleated eyes were more-likely to have massive choroidal invasion (p=0.0315) and post-laminar optic nerve invasion (p=0.027), in spite of the finding that the overall prevalence of HRPF was similar between the two groups (35.5 percent vs. 37.5 percent; p=0.585). The likelihood of anterior chamber invasion, was considerably higher in secondary enucleated eyes (p=0.013). We evaluated primary and secondary enucleation for each subgroup (D and E) of the International Intraocular Retinoblastoma Classification (IIRC) and found the prevalence of HRPF was comparable (p=0.58, 1.0, respectively).
Significance: Systemic chemotherapy has the ability to reduce the extent of tumour expansion that has been pathologically identified. Primary and secondary enucleated eyes are comparable in low metastatic risk only when strict examination and management guidelines are followed.

73 Ultrasound guided Ru106 plaque brachytherapy for treatment of exudative retinal detachment in children with diffuse choroidal haemangioma

Ali Al-Gilgawi (1)
Anusha Venkataraman (1), Ian Stoker (2), M. Ashwin Reddy (1), Mandeep S. Sagoo (1).
1) Royal London Hospital, London, UK. 2) St Bartholomew's Hospital, London, UK.
a.al-gilgawi@nhs.net

Poster-only, Clinical Research

Purpose: To evaluate the efficacy of ultrasound guided ruthenium (Ru 106) plaque brachytherapy for treatment of exudative retinal detachment in diffuse choroidal haemangioma (DCH).
Methods: Retrospective analysis of four paediatric patients treated with ultrasound guided Ru 106 plaque brachytherapy for DCH with total exudative retinal detachment directed to the thickest part of the DCH. A dose of 40 Gy to the tumour apex was delivered in all patients. The outcomes of treatment were regression of DCH, resolution of retinal detachment, development of neo-vascular glaucoma or any other radiation associated complications which were assessed clinically and with B-scan ultrasonography.
Results: The mean (median, range) pre-operative tumour thickness was 5.0 (5.12, 4.2-5.5) mm. The visual acuity ranged from 0.8-2.8 LogMAR and 3 of 4 eyes had only light perception at presentation. One eye had been treated with goniotomy for pre-existing secondary glaucoma and was on topical antihypertensive medications. At a mean follow up of 14.6 months (10.5 months, 6-30 months), all patients showed regression of the tumour. The mean tumour thickness reduced to 2.05 mm (2.44 mm, 1.1-2.6 mm) post-operatively. Also, all patients (4/4) had complete resolution of the retinal detachment. The visual acuity remained stable in all the patients with none of the patients developing neovascular glaucoma or any other radiation related complications.
Conclusion: Ultrasound guided Ru 106 plaque brachytherapy is an effective treatment strategy as a primary treatment in the absence of external beam radiotherapy, to achieve tumour regression and resolution of retinal detachment in DCH.

74 Intravitreal bevacizumab for the treatment of choroidal haemangiomas

Helya Aghazadeh (1)

Hassan Elkayal (1,2), Mandeep S. Sagoo (1), Guy S. Negretti (1).

1) Department of Ocular Oncology, Moorfields Eye Hospital, London, UK. 2) Department of Ophthalmology, Faculty of Medicine, Alexandria University, Alexandria, Egypt.

helya.aghazadeh@nhs.net

Poster-only, Clinical Research

Introduction: The purpose of this retrospective case series study is to investigate the use of intravitreal bevacizumab for the treatment of subretinal (SRF) and intraretinal fluid associated with circumscribed choroidal haemangiomas (CCH).

Methods: All patients treated with at least 3 bevacizumab injections for CCH-associated SRF between May 2020 and August 2023 were included. Outcome measures included best corrected visual acuity (BCVA) one month after last injection, change in patient reported symptoms, change in SRF over the tumour and fovea, change in intraretinal fluid, change in central subfield thickness (CSFT) and change in tumour thickness on ultrasound. Data on further management following cessation of injections was analysed.

Results: Eight patients received 3 monthly bevacizumab injections whilst 1 patient received 6 injections. Median LogMAR BCVA was 0.5 before and 0.6 after injections (p=0.41). CSFT decreased from a median of 466 µm to 447 µm (p=0.11). Two thirds of (n=6) patients did not show any reduction in foveal SRF, one third (n=3) showed a partial reduction and no patients had complete resolution of SRF. Eight patients received rescue-photodynamic therapy and one received external beam radiotherapy. LogMAR BCVA changed from a median of 1.0 to median of 0.3 after rescue treatment (p=0.63). The median CSFT decreased significantly from 470 µm to 249 µm (p=0.01).

Discussion: There was no significant improvement in vision nor a significant reduction of after treatment with bevacizumab. As a result, intravitreal bevacizumab is unlikely to be an effective treatment for exudative CCH.

75 Natural history of optic disc melanocytoma in 225 eyes

Pragya Saini (1)

Elisa D'Alessandro (2), Mandeep S. Sagoo (2,3), Neringa Jurkute (3,4,5).

1) Moorfields Eye Hospital, London, UK. 2) Ocular Oncology Service, Moorfields Eye Hospital & Barts Health NHS Trust, London, UK. 3) Institute of Ophthalmology, University College London (UCL), London, UK. 4) Neuro-ophthalmology Service, Moorfields Eye Hospital, London, UK. 5) The National Hospital for Neurology and Neurosurgery, London, UK.

drpragyasaini@gmail.com

Poster-only, Clinical Research

Introduction: Pigmented lesions of the optic disc include optic nerve melanocytoma (ONM) and melanoma. The largest analysis of ONM (115 eyes) reported subretinal fluid (14%), tumour enlargement (11% by 5 years and 32% by 10 years and malignant transformation (2%). We present a larger cohort to report the natural history of ONM.

Methods: A retrospective chart review of 225 eyes with ONM seen at Moorfields Eye Hospital between November 1999 and August 2023 (23.6 years) was performed.

Results: Of the 225 patients (65% female) with mean (median, range) age at diagnosis of 53 (58, 13-85) years. There was nearly equal incidence in white/black/Caribbean/African and Asian races. Features included: visual field defects (44% (n=43/98)), localised retinal nerve fibre layer thinning (23% (n=20/86)), intraretinal-fluid (4% (n=7/198)), subretinal-fluid (4% (n=7/198)), intraretinal exudation (3% (n=6/198)), disc oedema (1% (n= 2/198)), focal haemorrhages (1% (n=2/198)), spontaneous tumour necrosis (1% (n=2/198)), and central retinal vein occlusion (0.5% (n=1/198)). Growth occurred in 7% (n=13/198) either before referral or during follow-up (median 3 years), with 1 ONM (0.5% (n=1/198)) undergoing signs of malignant transformation at 2 years after diagnosis.

Conclusions: ONM is a benign tumour that can cause complications such as visual field loss, growth, and rarely, malignant transformation into melanoma.

76 Unusual case of vitreous haemorrhage in a patient with history of radiation treated choroidal melanoma

Kumar Anshuman

Ahmed Saad, Jayasis Bandyopadhyay.

James Cook University Hospital, Middlesbrough, UK.

anshuman.kumar@nhs.net

Digital Poster-only, Clinical Research

Background: A 75-year-old female with a history of right eye choroidal melanoma treated with proton beam radiotherapy in 2012 and amblyopia in the left eye presented with sudden blurring of vision in the right eye for 10 days.

Methods: On examination, the right eye vision was limited to hand movement and the left eye to perception of light. The anterior segments were unremarkable with normal ocular pressure. Fundus examination of the right eye revealed vitreous haemorrhage, retinal haemorrhage near the choroidal melanoma scar, and a thick vitreous strand attached to the tumour apex. The left eye fundus was unremarkable. Ultrasound showed a choroidal lesion with specific characteristics but no subretinal fluid. Differential diagnosis included radiation retinopathy, posterior vitreous detachment-induced haemorrhage, vascular pathologies, tumour necrosis, and progression.

Results: The unusual haemorrhage location and ultrasound findings did not indicate tumour necrosis or recurrence. Radiation retinopathy was considered but could not be confirmed due to limited fundus visualisation. A diagnosis of vitreous traction-induced haemorrhage was made. Management involved initial observation, with no improvement in vision or haemorrhage resolution over 7 weeks. A pars plana vitrectomy with possible anti-VEGF injection was planned.

Conclusion: This case highlights the complexity of diagnosing intraocular haemorrhage with a history of choroidal melanoma and radiation treatment. Various aetiologies, including vitreous traction and radiation retinopathy, must be considered. Ultrasound features are crucial in identifying tumour necrosis. Vitrectomy is a safe and effective option for management.

77 An unusual phenotypic presentation of ocular Erdheim-Chester disease

Jennifer Utting (1)

Hardeep Singh Mudhar (2), Hibba Quhill (2,3).

1) Ophthalmology Department, Royal Hallamshire Hospital, Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK. 2) Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK. 3) Ophthalmology Department, Rotherham General Hospital, Rotherham, UK.

utting.jennifer@gmail.com

Digital Poster-only, Clinical Research

Introduction: Erdheim-Chester disease (ECD) is a rare systemic non-Langerhans histiocytic disorder with proliferation of lipid-laden histiocytes and multi-organ involvement. Ophthalmic involvement occurs in around a quarter of patients, usually with an intraconal orbital mass. Intraocular involvement is extremely rare; we present a case with an unusual phenotype of calcified choroidal and sub-conjunctival involvement.

Methods: 64-year-old Caucasian male with stable ECD involving lung, skin and bone, managed with weekly peginterferon and filgrastim. His only ocular history was bilateral xanthelasma. He presented with incidental findings of symmetrical choroidal macular lesions, on a background of chronic low-grade alternating anterior uveitis. Orbital examination revealed subtle bilateral orange subconjunctival lesions in the fornices and bilateral amelanotic macular choroidal calcified mass lesions with no associated sub- or intra-retinal fluid. Multimodal imaging confirmed no orbital involvement. His systemic ECD was stable, thus physicians felt the ocular findings were unrelated. He underwent subconjunctival incisional biopsy as chorioretinal biopsy risked visual morbidity.

Results: Histology demonstrated bubbly histiocytic infiltrate, reminiscent of his previous lung and skin biopsies. Immunohistochemistry was positive for CD163 and negative for S100, CD1a, Langerin, confirming a malignant histiocytic disorder, consistent with ocular ECD.

Discussion: Intraocular involvement in ECD is extremely rare but can be a presenting feature. To our knowledge, this is the second case to describe calcific choroidal lesions which resemble osteoma, and the first describing these with subconjunctival disease. His adult-onset uveitis was also likely a manifestation of his ECD. Ophthalmologists need to be aware of ECD manifestations as early diagnosis can improve survival and visual prognosis.

POSTER ABSTRACTS

PAEDIATRIC, STRABISMUS & NEURO-OPHTHALMOLOGY ABSTRACTS 78–97

78	Withdrawn		
79	**Optomap derived retinal vascularisation rate predicts threshold retinopathy of prematurity (ROP)**	**Emer Chang** *Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK.*	**RF** *CR*
80	**Does single horizontal rectus muscle transposition surgery produce symptomatic torsion?**	**Sanil Shah** *Oxford Eye Hospital, Oxford University Hospitals*	P *CR*
81	**Improving the diagnostic accuracy of referrals for papilloedema (The DIPP study) - A survey of optometrists**	**Muslim Bilal** *Cardiff University School of Medicine, Cardiff, UK.*	P *CR*
82	**Retinal nerve fibre layer thinning in probable traumatic encephalopathy syndrome**	**Morgan See** *University of Wollongong Graduate School of Medicine, Wollongong, Australia.*	P *CR*
83	**Myopia progression in children with Stickler syndrome: A longitudinal cohort study**	**Nisha Nixon** *Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK.*	P *CR*
84	**Sex differences in risk of retinopathy of prematurity: A systematic review, frequentist and Bayesian meta-analysis, and meta-regression**	**Mohamad F. Almutairi** *MosaKids Children's Hospital, Maastricht University Medical Center (MUMC+), School for Oncology and Reproduction (GROW), Maastricht University, Maastricht, The Netherlands.*	P *CR*
85	**Platelet counts and risk of severe retinopathy of prematurity: A systematic review and meta-analysis**	**Mohamad F. Almutairi** *MosaKids Children's Hospital, Maastricht University Medical Center (MUMC+), School for Oncology and Reproduction (GROW), Maastricht University, Maastricht, The Netherlands.*	P *CR*
86	**Ophthalmic surgical waiting times in a tertiary children's hospital following the Covid-19 pandemic**	**Sana Rasool** *Birmingham Women's and Children's Hospital, Birmingham, UK.*	P *CR*
87	**Plication squint surgery - Is delayed adjustment feasible?**	**Haneen Jasim** *Birmingham Children's Hospital, Birmingham, UK & Oxford University Hospitals, Oxford, UK.*	P *CR*
88	**Paediatric scleral-fixated lens implantation - Long term outcomes**	**Fadi Ghazala** *Birmingham Children's Hospital, Birmingham, UK.*	P *CR*
89	**Comparing the pupillary light response using two pupillometers with cerebrovascular reactivity**	**Sierra Sparks** *Department of Engineering Science, Institute of Biomedical Engineering, University of Oxford, Oxford, UK.*	P *LR*
90	**Nutritional deficiency and heavy metal related optic neuropathy: A case report**	**Evgeniia Mustafaeva** *Hull University Teaching Hospitals NHS Trust,*	DP *CR*
91	**Child that cannot see**	**Faris Arif** *Hereford County Hospital, Wye Valley NHS Trust, Hereford, UK.*	DP *CR*

POSTER ABSTRACTS

PAEDIATRIC, STRABISMUS & NEURO-OPHTHALMOLOGY ABSTRACTS 78–97

92	**Case series of babies treated with two injections of bevacizumab for the treatment of retinopathy of prematurity (ROP)**	**Ahmed Abdelrahim** *Bedfordshire Hospitals NHS Foundation Trust, Bedford, UK.*	DP *CR*
93	**Practice patterns in reporting and documentation of Charles Bonnet syndrome: A retrospective review following COVID-19**	**Sri Harsha Dintakurti** *NIHR Biomedical Research Centre, Moorfields Eye Hospital NHS Foundation Trust, London, UK.*	DP *CR*
94	**Bilateral macular choroidal neovascularization in one of identical male twins with congenital X-linked retinoschisis – A case report and literature review**	**Alice Di Domenico** *Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	DP *CR*
95	**Myelinated retinal nerve fibres in craniosynostosis: A case series**	**Fadi Ghazala** *Birmingham Children's Hospital, Birmingham, UK.*	DP *CR*
96	**A review of the genotype-phenotype correlation of Poretti Boltsahuser syndrome (PBS)**	**Wonyoung Moon** *Oxford University Hospitals NHS Foundation Trust, Oxford, UK.*	DP *CR*
97	**Case report: An unusual anterior segment manifestation of persistent fetal vasculature**	**Pavel Sharma** *Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK.*	DP *CR*

79 Optomap derived retinal vascularisation rate predicts threshold retinopathy of prematurity (ROP)

Emer Chang (1)
Amandeep Josan (1,2), Ravi Purohit (2), Sher Aslam (2), Caroline Hartley (3), Chetan K. Patel (2,4), Kanmin Xue (1,2,4).
1) Nuffield Laboratory of Ophthalmology, Nuffield University of Oxford, NIHR Oxford Biomedical Research Centre, Oxford, UK. 2) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 3) Department of Paediatrics, University of Oxford, Oxford, UK. 4) Great Ormond Street Hospital for Children, London, UK.
emer.chang@ndcn.ox.ac.uk

Rapid Fire, Clinical Research

Introduction: Slow retinal vascularisation is a fundamental feature of retinopathy of prematurity (ROP) but its quantification is challenging using traditional screening methods. We measure retinal vascularisation rate using ultra-widefield imaging and explore its predictive power for threshold ROP.
Methods: Retrospective analysis of serial Optomap images from babies who underwent ROP screening over one year. Temporal vascularisation rate (TVR) was calculated as the change in temporal extent of retinal vascularisation across screening visits. We applied a random forest model incorporating TVR and tested its predictive power for classifying threshold ROP (defined as Group 1) versus no or subthreshold ROP (defined together as Group 0) in a separate cohort of 14 eyes (8 babies). In Group 1 eyes, TVR was compared pre- and post-bevacizumab injection.
Results: 78 babies were included with mean gestational age of 26.0 weeks (±2.0 SD) and birth weight 815g (±264). Temporal vascularisation rate was significantly faster (by 1.5X) in Group 0 (n=83) compared with Group 1 eyes (n=54) (p=0.03). Random forest model accurately predicted Group 0 (n=11) and Group 1 (n=3) eyes in the validation cohort. No significant change in TVR was detected in Group 1 eyes before and after anti-VEGF treatment (p>0.05).
Discussion/Significance: Optomap-enabled measurement of TVR provides an early predictor of threshold ROP, thus facilitating potential preventative interventions. Moreover, the unexpected finding of constancy in the rate of retinal vascularisation before and after anti-VEGF treatment has significant clinical implications on the timing of treatment and aetiology of peripheral avascular retina (PAR) in premature infants.

80 Does single horizontal rectus muscle transposition surgery produce symptomatic torsion?

Sanil Shah
Haneen Jasim, Alice Di Domenico, Manoj Parulekar.
Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK.
sanil.shah@ouh.nhs.uk

Poster-only, Clinical Research

Introduction: Vertical transposition of horizontal rectus muscles is often performed to correct pattern strabismus. There is sparse, often conflicting literature on transposition surgery complicated by subjective torsion . The purpose of the study was to investigate the incidence of symptomatic torsion in adult patients resulting from single horizontal rectus muscle transposition surgery.
Methods: Retrospective review of 638 consecutive squint procedures performed under the care of the same consultant at a single centre between March 2016 and January 2024. A total of 18 patients underwent single horizontal rectus muscle transposition as part of their surgical plan.
Results: All 18 patients underwent rectus muscle transposition to correct pattern deviation. All patients were reviewed 2 weeks and 3 months after their surgery. None of the patients had symptomatic torsion following surgery.
Discussion: Absence of symptomatic torsion in our study suggest that single horizontal muscle transposition surgery can be used effectively for pattern and incomitant deviation without any significant torsional complications. Similarly, single horizontal rectus muscle transposition is not effective in correcting torsional misalignments.

81 Improving the diagnostic accuracy of referrals for papilloedema (The DIPP study) - A survey of optometrists

Muslim Bilal (1)
Olivia Skrobot (2), Sunil Mamtora (3,4), Michael Bowen (5) Mary-Ann Sherratt (4), Alyson Huntley (2), Denize Atan (3,4), The DIPP study group.
1) Cardiff University School of Medicine, Cardiff, UK. 2) Centre for Academic Primary Care, Population Health Sciences, Bristol Medical School, University of Bristol, Bristol, UK. 3) Translational Health Sciences, Bristol Medical School, University of Bristol, Bristol, UK. 4) Bristol Eye Hospital, University Hospitals Bristol and Weston NHS Foundation Trust, Bristol, UK. 5) College of Optometrists, London, UK.
bilalm3@cardiff.ac.uk

Poster-only, Clinical Research

Introduction: Papilloedema refers to optic nerve swelling caused by raised intracranial pressure and can be the first sign of life-threatening disease, e.g., brain tumours. But it's sometimes difficult to distinguish papilloedema from benign variants of optic nerve anatomy (pseudopapilloedema) so many people are unnecessarily referred from the community to hospital services. In this project, we surveyed optometrists about what they would do when they suspect someone has papilloedema.
Methods: The College of Optometrists and Association of Optometrists disseminated our online questionnaire to optometrists in England (November 2023) based around case vignettes and colour fundal images of papilloedema and pseudopapilloedema +/- headaches.
Results: Twenty-six optometrists completed the questionnaire. Most 19/26 (73.1%) correctly identified papilloedema; 10/26 (38.5%) would discuss the case with ophthalmology on call, 6/26 (23.1%) would refer immediately and 8/26 (30.8%) urgently to hospital. However, 15/26 (57.7%) mistook pseudopapilloedema for papilloedema. When asked what they would do if unsure about papilloedema in patients with headache; 8/26 (30.8%) would discuss with ophthalmology on call, 4/26 (15.4%), would refer immediately and 8/26 (30.8%) urgently to hospital. Clinical findings that influenced referral decisions included: headache, vomiting, neurological symptoms, changes in disc appearance compared with previous imaging. Only 6/26 (23.1%) thought current referral pathways for suspected papilloedema worked well. Many felt communication and feedback between hospital and community optometrists could be better.
Significance: Our aim is to use optometrist's perspectives to help develop clinical guidelines and educational materials that will improve the diagnostic accuracy of referrals to hospital for suspected papilloedema.

82 Retinal nerve fibre layer thinning in probable traumatic encephalopathy syndrome

Morgan See (1)
Rowena Mobbs (2), Angela Schulz (3), Christopher Hodge (4), Jennifer Batchelor (2), Clare Fraser (3,4).
1) University of Wollongong Graduate School of Medicine, Wollongong, Australia. 2) Concussion and Repetitive Head Trauma Research Group, Macquarie University, Sydney, Australia. 3) Department of Ophthalmology, School of Medicine, Macquarie University, Sydney, Australia. 4). Save Sight Institute, University of Sydney, Sydney, Australia.
ms562@uowmail.edu.au

Poster-only, Clinical Research

Introduction: Traumatic encephalopathy syndrome (TES) is the clinical condition associated with chronic traumatic encephalopathy (CTE); an autopsy diagnosed tauopathy associated with repetitive head trauma (RHT). The effect of RHT on optical coherence tomography (OCT) measures such as retinal nerve fibre layer (RNFL) thickness remains poorly understood, yet progressive RNFL thinning has been found in neurodegenerative disease. We sought to investigate the presence of OCT abnormalities in patients with probable TES (pTES).
Methods: 32 patients with a history of RHT from sport or military service underwent neurological and ophthalmological assessment. Preliminary analysis of OCT measures was undertaken from five patients with features consistent with pTES. Other neurological causes of TES symptoms were reasonably excluded using clinical evaluation, neuroimaging, neuropsychological measures and follow up. The control group (n=5) was selected with comparable age and RHT exposure, with TES excluded using the same measures.
Results: Mean OCT measures were compared between the pTES and control group using an independent one-tailed t-test. The average RNFL was significantly thinner in the pTES group for both right (p=0.023) and left (p=0.033) eyes compared to control.
Significance: Preliminary analysis suggests patients with pTES may have RNFL thinning relative to non-TES patients also exposed to RHT. This implies that such findings are not merely a reflection of direct mechanical trauma to the optic nerve secondary to RHT, but may be a reflection of the underlying neurodegeneration in TES/CTE. OCT is an inexpensive, non-invasive modality that may be a suitable biomarker for TES and CTE in the future.

ABSTRACT MENU

83 Myopia progression in children with Stickler syndrome: A longitudinal cohort study

Nisha Nixon (1)
Kelly Cheng (2), Allan Richards (3), Howard Martin (3), Martin P. Snead (3), Brinda Muthusamy (1).
1) Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK. 2) University of Cambridge, Cambridge, UK. 3) Vitreoretinal Research Unit, John van Geest Centre for Brain Repair, Cambridge, UK.
nn252@cam.ac.uk

Poster-only, Clinical Research

Introduction: As the range of interventions to tackle myopia progression widens, there is increasing appreciation of the heterogeneity of clinical course of early-onset myopia dependent on aetiology. The Stickler syndromes are connective tissue disorders associated with congenital syndromic myopia, and represent the most common cause of rhegmatogenous retinal detachment in children. In this longitudinal study, we aimed to evaluate the progression of myopia in children with genetically-confirmed Stickler syndrome.
Methods: Inclusion criteria were all patients under 18 years of age with genetic diagnosis of Stickler syndrome and available refractive data, presenting to the NHS England Stickler Highly Specialised Service in Cambridge, UK. Change in spherical equivalent refraction from initial to most recent clinical visit was compared using a paired t-test.
Results: 40 children with Type 1 Stickler syndrome (COL2A1 variant) and 5 patients with Type 2 Stickler syndrome (COL11A1 variant) were included in the study (mean age at presentation 4.71±2.2 years). Mean length of follow-up was 60.2 months. The mean rate of myopia progression was -0.004±1.36 dioptres per year amongst those with Type 1 Stickler syndrome, and 0.082±0.28 dioptres per year in those with Type 2 Stickler syndrome. There was no statistically significant difference between initial and most recent refraction in either group (p=0.20 for each group, paired t-test).
Discussion: This longitudinal study, representing the largest cohort study of myopia progression in children with a genetically confirmed diagnosis of Stickler syndrome, indicates that there is minimal progression in congenital myopia associated with Stickler syndrome.

84 Sex differences in risk of retinopathy of prematurity: A systematic review, frequentist and Bayesian meta-analysis, and meta-regression

Mohamad F. Almutairi (1)
Tamara M. Hundscheid (1), Silvia Gulden (2), František Bartoš (3), Giacomo Cavallaro (2), Eduardo Villamor (1).
1) MosaKids Children's Hospital, Maastricht University Medical Center (MUMC+), School for Oncology and Reproduction (GROW), Maastricht University, Maastricht, The Netherlands. 2) Neonatal Intensive Care Unit, Department of Clinical Sciences and Community Health, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Università degli Studi di Milano, Milan, Italy. 3) Department of Psychology, University of Amsterdam, Amsterdam, The Netherlands.
mbinghayam@gmail.com
Poster-only, Clinical Research

Background: Retinopathy of prematurity (ROP) is generally considered to affect preterm boys than in preterm girls. However, it is not known whether sex differences in ROP affect all degrees of the condition and whether they are global and maintained over time.
Methods: We searched PubMed/Medline and Embase databases for studies addressing sex differences in risk of developing ROP. The random-effects male/female risk ratio (RR) and 95% confidence interval (CI) were calculated in the frequentist and a Bayesian model average (BMA) meta-analysis.
Results: We included 206 cohorts (867,037 infants). Frequentist meta-analysis showed a positive association between male and severe ROP (113 studies, RR 1.14, 95% CI 1.07 to 1.22), a negative association between male and non-severe ROP (52 studies, RR 0.92, 95% CI 0.87 to 0.97), and no association between sex and any ROP (144 studies, RR 1.00, 95% CI 0.96 to 1.03). BMA showed that the evidence in favour of H1 (i.e., infant sex is associated with ROP) was extreme for severe ROP (BF10=71,174) and weak for non-severe ROP (BF10=2.42), whereas the evidence in favour of H0 was strong for any ROP (BF10=0.05). Subgroup analysis showed marked geographic and socioeconomic differences. For example, the association between male and severe ROP was evident in countries with a high or high-middle socio-demographic Index (SDI).
Conclusions: Our study confirms the existence of a male disadvantage in severe ROP, but not in less severe forms of the disease. There are variations in sex differences in ROP depending on region and socio-demographic level of countries.

85 Platelet counts and risk of severe retinopathy of prematurity: A systematic review and meta-analysis

Mohamad Almutairi (1)

Silvia Gulden (2), Tamara M. Hundscheid (1), Giacomo Cavallaro (2), Eduardo Villamor (1).
1) MosaKids Children's Hospital, Maastricht University Medical Center (MUMC+), School for Oncology and Reproduction (GROW), Maastricht University, Maastricht, The Netherlands. 2) Neonatal Intensive Care Unit, Department of Clinical Sciences and Community Health, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Università degli Studi di Milano, Milan, Italy.
mbinghayam@gmail.com

Poster-only, Clinical Research

Background: Retinopathy of prematurity (ROP) is a multifactorial condition. In addition to prematurity and hyperoxia, numerous factors have been proposed to play a role in its pathogenesis. Several studies suggested an association between thrombocytopenia and ROP development, but this has not been studied systematically.
Methods: Prospero ID=CRD42021248183. We searched PubMed/Medline and Embase databases for studies reporting on platelet counts or thrombocytopenia and risk of developing ROP. Severe ROP was defined as prethreshold disease type 1 according to the ETROP criteria. Platelet counts were analysed in the first two weeks of life (phase 1) and around the time of ROP screening or treatment (phase 2, 4-7 weeks of life). Odds ratios (OR) and mean differences (MD) were calculated.
Results: We included 13 studies. Severe ROP had significantly lower mean platelet counts during phase 1 (6 studies, DM 28.7 x 109, 95% CI 9.9 to 47.6) and phase 2 (6 studies, DM 46.6 x 109, 95% CI 10.0 to 83.2). Infants with APROP showed also significantly lower platelet counts during phase 2 (2 studies, DM 91.5 x 109, 95% CI 50.0 to 133.0). Severe ROP was significantly associated with platelet counts<100 x 109/L during phase 1 (2 studies, OR 4.0, 95% CI 1.7 to 9.1) and phase 2 (4 studies OR 9.1, 95% CI 2.4 to 34.6).
Conclusions: Thrombocytopenia is associated with severe ROP. However, low number of platelets may be an epiphenomenon related to the maturity and clinical stability of preterm infants rather than a contributing factor in ROP pathogenesis.

86 Ophthalmic surgical waiting times in a tertiary children's hospital following the Covid-19 pandemic

Sana Rasool

Savana Shakir, Joseph Abbott, Sally Painter.
Birmingham Women's and Children's Hospital, Birmingham, UK.
sanarasool@nhs.net

Poster-only, Clinical Research

Introduction: Since the pandemic, the delivery of timely surgery across the NHS has been challenging and a topic of media attention. We measured surgical waiting times at three time points: pre-pandemic, in the early and later stages of 'recovery'.
Method: Retrospective data collection of surgical waiting times from 1st October to 31st December in 2019, 2020 and 2022, according to clinical indication: cataract <1 year-old, cataract >1-y, strabismus, glaucoma, anterior segment, oculoplastic, syringe and probe, retinal laser.
Results: The number of surgical cases in 2022 (111) is equitable to 2019 (110). Urgent glaucoma cases increased 1.5x, routine strabismus cases decreased by one third.
In 2019, days waiting for surgery were on average: 61 (glaucoma), 62 (retinal laser), 206 (oculoplastic) and 115 (squint). In 2022 days waiting were: 71 (glaucoma), 64 (retinal laser), 330 (oculoplastic) and 276 (squint). In 2022, 39% of RCS grade P1 -2 surgery was delayed by 15 days (1-40). 77% of P3 cases were delayed by 18 days (3-100).
The average age at time of strabismus surgery has increased from 7 years (2019) to 9 years (2022). No child lost binocularity whilst waiting for surgery.
Discussion: Pandemic impact varied according to the indication for surgery. Urgent cases were in fact more numerous, but waiting times remain unchanged. Routine case waiting times and activity have not yet recovered. Waiting times for non-time critical procedures (squint, oculoplastic) have increased (1.5x, 2x).
Recovery continues to be impacted by: recruitment, staffing, productivity, and balancing urgent vs routine care.

87 Plication squint surgery - Is delayed adjustment feasible?

Haneen Jasim (1,2)
Caroline Dodridge (1), Sanil Shah (1), Manoj Parulekar (1,2).
1) Birmingham Children's Hospital, Birmingham, UK. 2) Oxford University Hospitals, Oxford, UK.
h.jasim@nhs.net

Poster-only, Clinical Research

Introduction: Plication squint surgery provides an alternative technique to resection. Advantages include the preservation of anterior segment circulation, quicker recovery and no risk of slipped muscles. Inability to perform adjustment postoperatively is a potential disadvantage.
Methods: We overcame this limitation by performing delayed release of conventional plication up to 3 weeks postoperatively resulting in partial reversal, or using a new technique of double plication with releasable sutures, enabling graded reversal soon after surgery, and delayed reversal of the remainder if needed.
Results: We report the technique and retrospective data of 95 adult patients undergoing surgery by a single surgeon over 4 years. 5 patients underwent successful reversal between 3 days and 3 weeks after surgery. Early reversal (within one week) resulted in complete reversal of surgical correction Late reversal after 1 week resulted in correction up to 12 prism dioptres.
Discussion: Patients undergoing adjustable surgery may not be able to give accurate responses on the day of surgery due to general anaesthesia, altered muscle function, pain, and disruption of fusional mechanisms. Delayed adjustment enables more accurate assessment, but is not possible with resected muscles due to healing and risk of muscle slippage. Plications can be safely reversed up to 3 weeks later. Although it is not possible to titrate by reversing in mm, the delay in reversal inversely correlates with the degree of reversal. This can be further refined with double plication.

88 Paediatric scleral-fixated lens implantation - Long term outcomes

Fadi Ghazala (1)
Sally Painter (1), Ashish Chikermane (1), Martin Galea (2).
Manoj Parulekar (1).
1) Birmingham Children's Hospital, Birmingham, UK. 2) Mater Dei Hospital, Msida, Malta.
fadi.ghazala1@nhs.net

Poster-only, Clinical Research

Introduction: Scleral-fixated intraocular lens implantation is a recognised, but technically demanding procedure for children with ectopia lentis. We present a series of patients treated with scleral-fixated intraocular lens for the treatment of ectopia lentis and include outcome data.
Methods: A retrospective case series of scleral-fixated intraocular lens implantation was carried out by two consultant paediatric ophthalmologists, between 2014–2023, at a tertiary referral centre in the United Kingdom. Data was collected on age, gender, pathology, pre- and post-op vision, pre- and post-op refraction, complications and their management.
Results: This series included 25 eyes of 15 patients. Ten patients underwent bilateral surgery. Median age of surgery was 5 years (range 2-16 years). Median follow-up was 5.5 years (1-10 years). Ectopia lentis was a result of Marfan's syndrome (n=8), Homocystinuria (n=1), Traboulsi syndrome (n=1), and ADAMTSL4 gene mutation (n=1). Lens subluxation was predominantly supero-temporal/temporal (n=15) and supero-nasal (n=9). Vision improved by average of 0.44 LogMAR (pre-op 0.73 LogMAR, post-op 0.29 LogMAR). Mean post-operative refraction was +1.53 DS. Complications included prolene suture exposure (n=3), transient vitreous haemorrhage (n=2) and optic capture from floppy iris in Marfan's syndrome (n=6). Optic capture was successfully managed by McCannell technique iridoplasty.
Discussion: Scleral-fixated intraocular lens surgery for children with ectopia lentis provides stable results with excellent visual outcomes. Cases with Marfan's syndrome should be counselled about the risk of optic capture and potential need for McCannell iridoplasty

ABSTRACT MENU

89 Comparing the pupillary light response using two pupillometers with cerebrovascular reactivity

Sierra Sparks (1)
Genevieve Hayes (1), Joana Pinto (1), Joel Martin (2), Manuel Spitschan (3), Daniel Bulte (1).
1) Department of Engineering Science, Institute of Biomedical Engineering, University of Oxford, Oxford, UK. 2) Department of Psychology, University of York, York, UK. 3) TUM School of Medicine and Health, Chronobiology and Health, Technical University of Munich, Munich, Germany.
sierra.sparks@eng.ox.ac.uk

Poster-only, Laboratory Research

Introduction: Impaired pupillary light response (PLR) and decreased cerebrovascular reactivity (CVR) have been linked with neurodegenerative diseases. We compare the PLR measured using two pupillometers, with CVR measurements retrieved with transcranial Doppler ultrasound (TCD), to investigate the relationship between PLR and CVR in healthy subjects.
Methods: 11 healthy subjects (5 females; 33±9 years) were studied. PLR data were acquired with a NeurOptics PLR-3000, and PyPlr, an open-source system developed in-house (Martin et al., 2021). Subjects underwent a 2-minute dark adaptation before PLR protocols. The NeurOptics protocol involved a 1s (50μW) white flash, with a 60s interstimulus interval (ISI). The PyPlr protocol had an intensity-matched 1s white flash, with a 90s ISI. Three trials were administered for each protocol. CVR measurements were retrieved from blood flow changes in the middle cerebral artery, obtained with TCD during a 5% CO2 challenge.
Results: There were no statistically significant relationships between PLR and CVR. Constriction velocity (p=0.09) and maximum constriction velocity (p=0.07) with PyPlr showed a potential relationship with CVR, but results from this small cohort did not reach the significance threshold. Maximum constriction velocity with NeurOptics showed a non-significant relationship with CVR (p=0.21).
Significance: This is the first study investigating the relationship between PLR and CVR in healthy subjects using two pupillometers. No statistically significant relationships were identified between PLR and CVR. More research should be conducted in a larger subject group to investigate the impact of other variables and the relationship between the PLR and CVR.

90 Nutritional deficiency and heavy metal related optic neuropathy: A case report

Evgeniia Mustafaeva
Qi Xun Lim, Moheeb Youssef, Mohamed Nassr.
Hull University Teaching Hospitals NHS Trust, Hull, UK.
evgeniia.mustafaeva@nhs.net

Digital Poster-only, Clinical Research

Introduction: Optic neuropathy can be caused by various aetiologies, including nutritional deficiencies. Strachan disease is a spectrum of optic neuropathy, peripheral neuropathy and skin lesions seen in malnourished individuals with likely nutritional deficiency.
Case: A 17-year-old male presented to our ophthalmology department with significant loss of visual acuity and colour vision bilaterally over several months. There were no clinical features of raised intracranial pressure or focal neurology. Ishihara colour vision was 0 bilaterally. Examination showed xerophthalmia, fundus and optic nerve examination were unremarkable apart from optic disc drusen in the right eye. Humphrey Visual field was unreliable.
Magnetic resonance imaging (MRI) of the brain and orbits suggested possible right optic neuritis. Anti-MOG and Aquaporin-4 tests, vasculitis, infective and Leber Hereditary Optic Neuropathy (LHON) screens were negative. Further investigations demonstrated low levels of vitamin A, B12, and copper. Levels of arsenic and mercury were found to be raised. Electrodiagnostic testing (EDT) showed bilateral optic neuropathy with ganglion cell layer (GCL) loss, which was present on his Optical Coherence Tomography (OCT). On further review, he was found to have a poorly balanced diet, consisting mainly of tuna fish, which is notorious for having high levels of heavy metals.
On his 6-month review, OCT showed worsening of GCL loss, however his visual acuity improved to 6/36 on Snellen, repeated MRI brain was normal.
Conclusion: This case reminds clinicians that nutritional deficiencies and heavy metal toxicity can result in optic neuropathy and should be included in the list of differentials.

91 Child that cannot see

Faris Arif (1)
Suzanne Clarke (1), Olivia Kerr (2).
1) Hereford County Hospital, Wye Valley NHS Trust, Hereford, UK. 2) Royal National Institute of Blind People (RNIB).
faris.arif@wvt.nhs.uk

Digital Poster-only, Clinical Research

Introduction: We present 3 children with different age groups with challenging occult eye problems seen at our unit.
Method:

- *Case one:* 6-year-old girl referred by optician with poor vision, LogMar 1.00 both eyes and normal eye examination. Our clinical examination with OCT images showed bi-temporal thinning of retinal nerve fibre layer and bilateral temporal optic discs cupped and pale. Diagnosis is Autosomal Dominant Optic Atrophy.
- *Case two:* 14-year-old boy, Optician referral: poor vision in both eyes, normal eye examination, Malingering? Our examination showed: LogMar 0.76 right and left. Flecked retina with hypo-pigmented area in both maculae and OCT images showed atrophy of fovea. Diagnosis: Stargardt disease.
- *Case three:* 3-month-old boy seen at our eye casualty. Baby is not following or looking at faces or light. On examination clear ocular medica, healthy fundi with no significant refractive error. Baby referred to Birmingham for Electrophysiological tests which came as Intact visual pathways. Diagnosis: Cortical visual impairment (CVI).

Results: 3 occult cases: Autosomal Dominant Optic Atrophy is mutation in the genes OPA1 & OPA3. Stargardt disease is mutation in the ABCA4 gene. Cortical visual impairment is a neurological form of visual impairment caused by 'damage' or atypical structures in the visual pathways and/or visual processing centres of the brain.
Management: Sight impaired registration, Specialist Visual impaired teacher and low vision aid support.
Discussion: Our message: Do Simple and informative tests (RAPD, OCT/AF/Photo), ask important questions (difficulties in bright/dim light, family history of eye problem)?

92 Case series of babies treated with two injections of bevacizumab for the treatment of retinopathy of prematurity (ROP)

Ahmed Abdelrahim
Safia Hsin, Jonathan Barnes.
Bedfordshire Hospitals NHS Foundation Trust, Bedford, UK.
ahmed.abdelrahim@ldh.nhs.uk

Digital Poster-only, Clinical Research

Introduction: For over a decade, anti-VEGF treatment has been widely adopted in the management of zone 1 retinopathy of prematurity (ROP). In our level 3 neonatal unit, a total of 47 babies have benefitted from treatment with bevacizumab (dose 0.625 mg in 0.025 ml) since 2011. Only 6 babies received retreatment with bevacizumab. This case series outlines our experience and outcomes from babies receiving two injections for the treatment of ROP.
Results: All the babies tolerated the IVTs without complications. The causes for the need of retreatment with bevacizumab were reactivation of zone 1 disease, infants with a poor fundal view, infant systemically unwell and and/or parental preference. Two of the six babies who received retreatment were given the IVT as a prophylactic measure due to poor fundal view. Three babies subsequently needed laser treatment but that was to a much smaller portion of their retinae. Receiving two injections for the treatment of ROP allowed us to overcome the difficulty of ROP screening in congenital cataract in a high risk premature infant as well as providing additional time for retinal vascular development before considering diode retinal laser.
Conclusion: In conclusion, re-treatment with anti-VEGF for reactivation of ROP is safe and is indicated in certain scenarios. Given the continued success of neonatologists to support babies with extreme prematurity, the incidence of babies requiring two anti-VEGF treatments for ROP management is likely to increase in the next decade.

93 Practice patterns in reporting and documentation of Charles Bonnet syndrome: A retrospective review following COVID-19

Sri Harsha Dintakurti (1)
Dalia Abdulhussein (1), Lee Jones (2), Mariya Moosajee (1,2,3,4).
1) NIHR Biomedical Research Centre, Moorfields Eye Hospital NHS Foundation Trust, London, UK. 2) Institute of Ophthalmology, University College, London, UK. 3) Department of Ophthalmology, Great Ormond Street Hospital for Children NHS Trust, London, UK. 4) The Francis Crick Institute, London, UK.
ds.harsha@outlook.com

Digital Poster-only, Clinical Research

Introduction: Charles Bonnet syndrome (CBS) is characterised by visual hallucinations occurring in people with visual impairment. CBS can negatively impact on psychological well-being and the COVID-19 pandemic period was associated with an exacerbation of symptoms. This study's objective was to compare clinical practice patterns and reporting of CBS at a tertiary eye-care centre between an interval prior to the COVID-19 pandemic with an interval during the pandemic.
Methods: Retrospective chart review. A search of electronic medical records for all suspected CBS cases was conducted between 1st March 2019 and 29th February 2020 (prior pandemic interval) and between 1st September 2020 and 29th August 2021 (peri-pandemic interval). Data retrieved from records included patient demographics, visual acuity at the time of CBS onset, type of hallucinations, reporting healthcare professional, management strategies, and patient-reported impact of hallucinations.
Results: 223 appointments referred to CBS in 156 patients at the prior interval, while 239 appointments referred to CBS in 155 patients at the peri-pandemic interval, representing 0.07% and 0.09% of all hospital attendance respectively. Clinical subspecialty where CBS was most commonly reported was medical retina, and a greater proportion of patients at both time intervals were female. Types of hallucinations, management strategies, and patient-reported impact were seldom reported, although documentation improved at the latter interval.
Discussion: Practice patterns and patient characteristics were similar between the two intervals, however subtle difference suggests a growing awareness of CBS. Targeted interventions in high burden clinical subspecialties may encourage reporting and improve documentation of CBS.

94 Bilateral macular choroidal neovascularization in one of identical male twins with congenital X-linked retinoschisis – A case report and literature review

Alice Di Domenico (1)
Sanil Shah (1), Nervine Elmeshad (1), Kevin Falzon (2), Chetan Patel (1).
1) Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK. 2) York and Scarborough Teaching Hospitals NHS Foundation Trust, York, UK.
alice.didomenico@ouh.nhs.uk

Digital Poster-only, Clinical Research

Introduction: Vision loss in congenital X-linked retinoschisis (CXLRS) occurs chronically over the first two decades of life or acutely predominantly secondary to vitreous haemorrhage. We report a case of new onset bilateral sub-foveal choroidal neovascularization (CNV) in a twin with an infantile diagnosis of CXLRS. The objectives are to search the literature for this association and to document the response to anti-VEGF treatment guided by digital imaging.
Methods: PubMed, Cochrane, Google Scholar and Embase were searched for articles related to CXLRS and paediatric CNV. The patient's medical records were reviewed with extraction of demographic and clinical data including visual acuity (VA), retinal thickness and membrane activity using OCT-Angiography (OCT-A).
Results: The literature review yielded no prior reports of CNV in CXLRS. VA was 6/12 in 2021 which decreased to right 6/36 and left 6/60. Three bevacizumab injections (1.25mg/0.05mL) in right eye and 2 in left eye at 6-week-intervals reduced foveal thickness (Right-1287 µm to 1266 µm, Left-1161 µm to 501 µm). FFA revealed early-phase hyperfluorescence bilaterally, OCT-A showed CNV in both eyes before treatment. Post-treatment OCT-A found reduction in activity in right eye and absence in left eye. Vision remained stable with no reported complications.
Significance: This is the first report of CNV associated with CXLR. The occurrence appears sporadic, with only one twin affected. However, if the second twin develops a similar phenotype, that would suggest genetic susceptibility. Treatment reduced neovascular activity, preventing additional vision loss, yet the membrane persisted. We propose assessment for CNV in patients with CXLRS and unexplained vision loss, rather than attributing it to amblyopia.

ABSTRACT MENU

95 Myelinated retinal nerve fibres in craniosynostosis: A case series

Fadi Ghazala
Haneen Jasim, Sally Painter.
Birmingham Children's Hospital, Birmingham, UK.

fadi.ghazala1@nhs.net

Digital Poster-only, Clinical Research

Introduction: Myelination of the retinal nerve fibres (MNF) at the optic disc produce a white opacity to the retinal nerve fibre layer. In a normal population the incidence is reported as 0.4%. Whilst the majority of MNF are congenital, and slowly progress with time, acquired MNF are rare. Case reports of acquired and progressive MNF are associated with damage to the optic nerve. Cases have been reported in children with neurofibromatosis type 1 with optic glioma, after optic nerve fenestration for idiopathic intracranial hypertension, or in association with optic disc drusen or papilloedema.
Methods: A retrospective series of five children attending a tertiary craniosynostosis service who are documented to have developed myelinated nerve fibres, with progression.
Results: Three children with pansynostosis, one with bicoronal synostosis and one with Crouzon's syndrome developed MNF. One child had documented papilloedema prior to MNF onset. 3/5 children did not have documented papilloedema, but developed MNF after cranial vault surgery. 4/5 children had unilateral MNF. All children showed progression of MNF over serial examinations.
Discussion: MNF is not known to be associated with craniosynostosis. It is postulated that stress to the optic nerve secondary to raised intracranial pressure, or cranial vault surgery, enables the development of MNF.

96 A review of the genotype-phenotype correlation of Poretti Boltsahuser syndrome (PBS)

Wonyoung Moon
Samantha De Silva, Sanil Shah, Nervine Elmeshad.
Oxford University Hospitals NHS Foundation Trust, Oxford, UK.
wonyoungmoon@doctors.org.uk

Digital Poster-only, Clinical Research

Introduction: Poretti Boltsahuser syndrome (PBS) is a rare non-progressive cerebellar malformation inherited in an autosomal recessive manner, associated with pathogenic variants in the LAMA1 gene. The ocular associations of this condition are not well characterised. We present a literature review and report a novel LAMA 1 mutation presenting with severe anisometropic myopia.
Method: A literature search was conducted on Medline, Embase and Pubmed on PBS and its ocular associations. The medical records of a case of genetically-confirmed PBS were reviewed, and genotype-phenotype correlations investigated.
Results: We identified 8 papers reporting ocular manifestations of PBS with a wide range of systemic and ocular associations. Over 40 variants in LAMA1 were reported. The condition presents with developmental delay and ataxia and a wide range of ocular manifestations including retinal dystrophy, retinal neovascularisation, retinal detachment, strabismus, nystagmus, optic disc and iris hypoplasia. We also report a case of a 10-year-old child with PBS with a previously unreported genetic variant. She had right truncal ataxia and bilateral toe syndactyly with oculomotor apraxia, as well as extreme anisomyopia and myopic fundus. Whole genome sequencing identified compound heterozygous variants in LAMA1:2333C>T p. Arg782 (nonsense) from her mother and c.2062del p.Tyr988fs (frameshift) from her father. The p.Tyr988fs) variant has not been previously reported.
Discussion/Significance: PBS has a broad phenotypic spectrum and characterisation of this variability is important for making an accurate diagnosis. We report a novel frameshift variant as a cause of PBS, as well as severe anisometropia and myopia as a novel phenotype.

97 Case report: An unusual anterior segment manifestation of persistent fetal vasculature

Pavel Sharma (1)
John Somner (1). Jonathan Barnes (2), Elena Novitskaya (1).
1) Department of Ophthalmology, Addenbrooke's Hospital, Cambridge, UK. 2) Department of Ophthalmology, Luton and Dunstable Hospital, Luton, UK.
pavel.sharma2@nhs.net

Digital Poster-only, Clinical Research

Introduction: Persistent fetal vasculature (PFV) is a congenital developmental abnormality of the eye, resulting from failure of the embryological primary vitreous and hyaloid vasculature to regress. It can have a variety of manifestations including cataract.

Case: We describe an unusual presentation of anterior PFV in a healthy male infant.

- The first examination at the age of ten days revealed tear shaped inferiorly displaced pupil in the left eye, with a mild peripheral inferior corneal opacity. The baby had good visual responses, no significant refractive error and normal fundi. Differential diagnosis of coloboma and anterior segment dysgenesis anomaly (ASDA) were considered and careful monitoring commenced. Genetic testing was offered to the parents.
- At the age of five months the patient developed almost complete pupil closure. The pupil was further displaced inferiorly and could not be dilated pharmacologically. Urgent examination under anaesthetic and surgical pupilloplasty were performed. Intraoperative examination after surgical enlargement of pupil revealed a small inferior lenticular opacity with irido-lenticular adhesions, abnormal vasculature and an area of broad anterior synechia inferiorly. Examination of the other eye was normal.
- At three months follow-up the pupil size remained stable with good red reflex. The patient objected more to occlusion of unaffected eye but is tolerating patching well.

Discussion: The natural course of untreated PFV is diverse and can lead to secondary glaucoma, intraocular haemorrhage and phthisis. One case of unilateral PFV coexisting with ASDA was published in the literature. Our case reported an unusual, previously undescribed, progressive pupil change due to PFV.

96 A review of the genotype-phenotype correlation of Poretti Boltsahuser syndrome (PBS)

Wonyoung Moon
Samantha De Silva, Sanil Shah, Nervine Elmeshad.
Oxford University Hospitals NHS Foundation Trust, Oxford, UK.
wonyoungmoon@doctors.org.uk

Digital Poster-only, Clinical Research

Introduction: Poretti Boltsahuser syndrome (PBS) is a rare non-progressive cerebellar malformation inherited in an autosomal recessive manner, associated with pathogenic variants in the LAMA1 gene. The ocular associations of this condition are not well characterised. We present a literature review and report a novel LAMA1 mutation presenting with severe anisometropic myopia.

Method: A literature search was conducted on Medline, Embase and Pubmed on PBS and its ocular associations. The medical records of a case of genetically-confirmed PBS were reviewed, and genotype-phenotype correlations investigated.

Results: We identified 8 papers reporting ocular manifestations of PBS with a wide range of systemic and ocular associations. Over 40 variants in LAMA1 were reported. The condition presents with developmental delay and ataxia and a wide range of ocular manifestations including retinal dystrophy, retinal neovascularisation, retinal detachment, strabismus, nystagmus, optic disc and iris hypoplasia. We also report a case of a 10-year-old child with PBS with a previously unreported genetic variant. She had right truncal ataxia and bilateral toe syndactyly with oculomotor apraxia, as well as extreme anisomyopia and myopic fundus. Whole genome sequencing identified compound heterozygous variants in LAMA1:2333C>T p. Arg782 (nonsense) from her mother and c.2062del p. Tyr988fs (frameshift) from her father. The p. (Tyr988fs) variant has not been previously reported.

Discussion/Significance: PBS has a broad phenotypic spectrum and characterisation of this variability is important for making an accurate diagnosis. We report a novel frameshift variant as a cause of PBS, as well as severe anisometropia and myopia as a novel phenotype.

ABSTRACT MENU

POSTER ABSTRACTS

	SURGICAL RETINA	ABSTRACTS 98–107	
98	Withdrawn		
99	**Pathobiology of the crystalline lens in Stickler syndrome**	**Martin P. Snead** *Vitreoretinal Research Group, John van Geest Centre for Brain Repair, University of Cambridge, Cambridge, UK.*	P *CR*
100	**An innovative low resource model for simulating retinal LASER for new ophthalmology trainees**	**Harry Rosen** *Portsmouth Hospitals University NHS Trust, Portsmouth, UK.*	P *CR*
101	**Outcomes of pars plana vitrectomy and epiretinal membrane peel in patients with vision 6/12 or better**	**Rebecca Jones** *Cheltenham General Hospital, Cheltenham, UK.*	P *CR*
102	**Ophthalmic features of spondyloepiphyseal dysplasia congenita (SEDc)**	**Abbas F. Fahem** *NHS England Highly Specialised Stickler Syndrome Diagnostic Service, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK.*	P *CR*
103	Withdrawn		
104	**Transcriptional changes in physiological and pathological posterior vitreous detachment**	**Mel Maranian** *Vitreoretinal Research Group, John van Geest Centre for Brain Repair, University of Cambridge, Cambridge, UK.*	P *LR*
105	**Submacular haemorrhage as a complication of retinal artery macroaneurysm (RAMA) in the case of combined hypertension and type 2 diabetes mellitus**	**Iryna Blagun** *Private Practice, Kyiv, Ukraine.*	DP *CR*
106	**Bandage contact lens as an alternative to temporary keratoprosthesis for vitrectomy with concurrent corneal opacity**	**Youssef Helmy** *Buckinghamshire Healthcare NHS Trust, Aylesbury & Cairo University, Cairo, Egypt.*	DP *CR*
107	**A case report - Have patience! Let me peel on my own**	**Komalta Kumari** *Doncaster and Bassetlaw Teaching Hospital (DBTH), Doncaster, UK.*	DP *CR*

98 Withdrawn

99 **Pathobiology of the crystalline lens in Stickler syndrome**

Martin P. Snead (1)

Frank J. Lovicu (2), Allan J. Richards (1), Howard Martin (1), Thomas R. W. Nixon (1).

1) Vitreoretinal Research Group, John van Geest Centre for Brain Repair, University of Cambridge, Cambridge, UK. 2) Save Sight Institute and Molecular and Cellular Biomedicine, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.

mps34@cam.ac.uk

Poster-only, Clinical Research

Introduction: The Stickler syndromes are a group of connective tissue disorders characterised by congenital myopia, cataract, giant retinal tear and retinal detachment, cleft palate, hearing loss and premature arthropathy. Initially considered a monogenic disorder, at least 11 different phenotypic and genetic sub-groups are now recognised. Aside from the blinding and sight threatening effects of retinal detachment, patients with Stickler syndrome are also susceptible to abnormalities of the crystalline lens. This study explores aspects of both congenital and developmental abnormalities of the crystalline lens in Stickler syndrome either of which or in combination can add significantly to the risks and challenges in the surgical management.

Methods: Perspective study of 1,700 genetically confirmed Stickler syndrome patients highlighting aspects of both congenital and developmental abnormalities of the crystalline lens.

Results: Abnormalities of the crystalline lens and zonular support in Stickler syndrome are common in both type 1 and type 2 Stickler syndrome and are illustrated. The characteristic phenotypes of cataract in Stickler syndrome should be helpful to the clinician in alerting them to consider the diagnosis.

Discussion: The association between retinal detachment and cataract has long been recognised. Advances in molecular genetic analysis have provided the window of opportunity to investigate the mechanistic association using the high-risk model of Stickler syndrome - a condition strongly associated with both disorders. Recent research endorses a common pathway of TGFb/BMP super-family dysregulation in allied connective tissue disorders associated with both retinal detachment and cataract as well as the pathobiology linking retinal detachment and cataract in the population at large.

100 An innovative low resource model for simulating retinal LASER for new ophthalmology trainees

Harry Rosen
Tolga Guven
Portsmouth Hospitals University NHS Trust, Portsmouth, UK.
harrysrosen@gmail.com

Poster-only, Clinical Research

Introduction: Retinopexy is a crucial skill for on-call trainees and a daunting one for novice ophthalmologists. The RCOphth simulation strategy recognises simulation as pivotal for safe development of procedural competence and efficiency. However, access remains a major barrier, often necessitating resource-heavy supervised learning or expensive dedicated models. This project demonstrates the effectiveness of a novel, cost-effective approach, using ping-pong balls to simulate retinal examination and laser procedures with a laser indirect ophthalmoscope (LIO).
Methods: Ping-pong balls were halved, creating a simulated pupil by cutting a small hole into one half. Tegederm© strips covered the opposite half, annotated with anatomical structures such as the optic disc, arcade vessels and tears. Completion of the laser safety modules on the e-lfh platform were required. Under a vitreoretinal surgeon's supervision, laser burns were created using a LIO on the simulated fundus. After initial guidance, participants practised independently.
Results: Seven trainees (ST1-7) participated, 100% reporting increased confidence in visualising the posterior pole, identifying lesions, choosing appropriate laser settings and using the LIO for retinopexy. Positive trainee feedback on real-world applicability was noted, and trainers commended the simulation's fidelity for practising vital retinal skills without patient risk.
Conclusions: This innovative, cost-effective simulation model addresses existing training limitations by offering an accessible platform for retinal laser skill development. The ease and affordability enable repetition, subsequent unsupervised practice, an accelerated learning curve, and enhanced confidence in junior trainees. Ping-pong ball models strike a balance between realism and simplicity, facilitating widespread adoption in various training settings.

101 Outcomes of pars plana vitrectomy and epiretinal membrane peel in patients with vision 6/12 or better

Rebecca Jones
Giancarlo Dell'Aversana
Cheltenham General Hospital, Cheltenham, UK.
rljones@doctors.org.uk

Poster-only, Clinical Research

Introduction: For patients with symptomatic epiretinal membrane (ERM), pars plana vitrectomy (PPV) with ERM peel is often performed to improve their distortion. However, there is no clear consensus on visual acuity threshold for performing surgery, nor evidence of potential likelihood of risk to allow patients to make informed decisions.
Methods: A retrospective case notes review of visual outcomes and complications was performed at a single centre. All patients with symptomatic ERM and LogMAR best corrected visual acuity (BCVA) of 0.3 or better were included. Outcome measures were BCVA at 1, 3, 6, and 12 months, as well as subjective improvement in symptoms, complications and further surgery.
Results: 29 eyes of 29 patients were included in analysis. For this cohort, the mean pre-operative BCVA was 0.22, which was equivalent to the mean post-operative BCVA of 0.22. 17.2% (n=5) of patients lost 2 or more lines of VA, and 3.4% (n=1) suffered major harm with post-operative BCVA of worse than 1.0. Excluding cataract surgery, 13.8% (n=4) required further procedures as a result of complications from ERM peel. 85.7% of patients reported symptomatic improvement following surgery.
Conclusion: The majority of patients experienced an improvement in symptoms and stability or improvement in their BCVA.

102 Ophthalmic features of spondyloepiphyseal dysplasia congenita (SEDc)

Abbas F. Fahem

Lucy Li, Thomas R.W. Nixon, Annie M. McNinch, Howard Martin, Allan J. Richards, Philip Alexander, Arabella V. Poulson, Martin P. Snead.

NHS England Highly Specialised Stickler Syndrome Diagnostic Service, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK.

abbas.fahem1@nhs.net

Poster-only, Clinical Research

Introduction: Spondyloepiphyseal dysplasia congenita (SEDC, MIM 183900) is a rare skeletal dysplasia caused by pathogenic variants in the gene encoding type II collagen (COL2A1). It is characterised by disproportionate short stature, rhizomelic (proximal) limb shortening, abnormal epiphyses, flattened vertebral bodies and odontoid hypoplasia which can lead to atlantoaxial instability and barrel chest. Skeletal features are manifested at birth and evolve with time.

Ocular features are reported to include myopia, early onset cataract and retinal detachment but because of the rarity (estimated to occur in approximately 1 in 100,000 live births), there is very little information on the nature and incidence of these. We report the ophthalmic and skeletal findings in a series of patients with SEDc.

Methods: 38 patients with genetically confirmed SEDc were identified from the Vitreoretinal Service database.

Results: 20% of patients were emmetropic whilst myopia (-1.00 to –12.00) was present in 80%. Whilst 18% had normal vitreous, 45% of patients exhibited type 1 membranous vitreous anomaly also found in type 1 Stickler syndrome patients. 13% of patients had suffered retinal detachment all of which exhibited the type 1 vitreous anomaly, (median age 15 years, range 4 to 28yr). Atlantoaxial instability was present in 11% of patients whilst cleft palate and hearing impairment affected 18% of them.

Discussion: In common with other type II collagenopathies, SEDc patients are at significant risk of retinal detachment. Since such surgery might be required in an emergency setting it would be prudent for patients to undergo elective preoperative anaesthetic assessment so that their risk of spinal cord injury secondary to atlantoaxial instability is known.

103 Withdrawn

104 Transcriptional changes in physiological and pathological posterior vitreous detachment

Mel Maranian

Thomas R. W. Nixon, Howard Martin, Martin P. Snead.

Vitreoretinal Research Group, John van Geest Centre for Brain Repair, University of Cambridge, Cambridge, UK.

mjm58@medschl.cam.ac.uk

Poster-only, Laboratory Research

Introduction: The anatomical definition and pathogenesis of posterior vitreous detachment (PVD) remains controversial. Recent research challenges historical concepts that PVD is simply an inevitable consequence of age-related structural changes of the vitreous. Whilst usually uncomplicated, PVD can be a precursor to sight threatening conditions, including retinal detachment (RD), cellophane maculopathy (CM) and macular hole (MH). The factors differentiating physiological (benign) PVD from pathological PVD are poorly understood. A novel cell population (laminocytes) in the posterior hyaloid membrane (PHM), are observed at low density in physiological PVD, and at increased density in patients with pathological PVD. We investigate if differential gene expression (DGE) relates to variations in PVD pathogenesis and potential association with laminocyte proliferation.

Methods: Bulk-RNA Next Generation Sequencing (NGS) libraries from >130 vitrectomy samples of patients with physiological or pathological PVD were sequenced and DGE analysis performed. Additionally, spatial transcriptomic analysis was performed on formalin fixed paraffin embedded (FFPE) samples from patients with retinal detachment and cellophane maculopathy.

Results: Analysis revealed >8000 differentially expressed genes (DEGs) in pathological PVD vs physiological PVD. Over 60% of all DEGs are upregulated in each of the pathological groups. Comprehensive analysis is underway, examining common and unique elements within each dataset. Provisional analysis includes cell adhesion and extracellular matrix organisation pathways related to CM and MH and strong evidence for immune response-regulating signalling pathways involving the genes unique only to physiological PVD.

Discussion: This research provides a comprehensive representation of the cellular and molecular changes that influence the progression and pathogenesis of PVD.

105 Submacular haemorrhage as a complication of retinal artery macroaneurysm (RAMA) in the case of combined hypertension and type 2 diabetes mellitus

Iryna Blagun (1)

Oksana Vitovska (2).

1) Private Practice, Kyiv, Ukraine. 2) National Medical University, Kyiv, Ukraine.

iryna.blagun@gmail.com

Digital Poster-only, Clinical Research

Introduction: To report a case of early surgical treatment of a patient with submacular haemorrhage due to retinal artery macroaneurysm (RAMA) in a combined disease of hypertension and type 2 diabetes mellitus.

Methods: Case report.

Results: We reported a 68-year-old male patient with insulin-dependent type 2 diabetes mellitus and a history of hypertension. The patient complained of a sudden decrease in vision and the appearance of a dark spot in front of the right eye. On the day the dark spot appeared, the patient was hospitalised with a hypertensive crisis. An ophthalmological examination on day 9 revealed a massive subretinal haemorrhage along the superior temporal arcade. F1L2A1T2P0S1 according to the FLATCAPS classification. Optical coherence tomography (OCT) revealed the presence of hyperreflective material in the macular area. Fluorescein angiography data showed an aneurysm of the superior temporal artery of the retina. Visual acuity: 20/200.

On day 10, the patient underwent a combined vitreoretinal surgery with subretinal blood drainage and 100% sulfur hexafluoride (SF6) tamponade. The patient successfully eliminated the subretinal haemorrhage with a significant improvement in visual acuity. On the 20th day after the operation, visual acuity was 20/25 with an aperture. According to OCT, the subretinal hyperreflective material is significantly reduced.

Significance: This case shows that early surgical intervention with subretinal blood drainage and gas injection can significantly improve the patient's visual function.

106 Bandage contact lens as an alternative to temporary keratoprosthesis for vitrectomy with concurrent corneal opacity

Youssef Helmy (1,2)
Michael Adams (1), Marta Latasiewicz (1).
1) Buckinghamshire Healthcare NHS Trust, Aylesbury; 2) Cairo University, Cairo, Egypt.
y.helmy@nhs.net

Digital Poster-only, Clinical Research

Introduction: A temporary keratoprosthesis is a surgical device that allows a clear surgical view during vitreoretinal surgery for patients who have concurrent corneal opacity. We evaluate the use of a bandage contact lens (BCL) as an alternative to temporary keratoprosthesis.

Methods: We present a case of a 72-year-old male patient with history of previous penetrating keratoplasty and retinal detachment surgery in his only seeing eye. He developed a new retinal detachment following repair of traumatic globe rupture. The old corneal graft was opacified, restricting fundal view. A temporary keratoprosthesis was not available before 3 months. A BCL was used as an off-licence alternative.

Results: After removal of the patient's opaque corneal graft, A 14 mm BCL was sutured to the patient's residual corneo-scleral tissue. Pars plana vitrectomy proceeded. The BCL provided excellent visualisation. Intraoperative leak was managed by increasing infusion pressure and additional sutures to the BCL. The BCL was removed after air/oil exchange and a new corneal graft was transplanted. The patient required further procedures for epimacular proliferation and recurrent detachment. Postoperatively his visual acuity is 2/60 with corneal sutures and silicone in situ.

Discussion: BCL can be a viable alternative for temporary keratoprosthesis when corneal opacity precludes vitrectomy and a temporary keratoprosthesis cannot be sourced. It allowed repair of retinal detachment and a same day penetrating keratoplasty in the only seeing eye of a patient with history of previous corneal and retinal surgery and recent repair of globe rupture.

107 A case report - Have patience! Let me peel on my own

Komalta Kumari
Mrinal Anand, Subramanian Dinakaran, Anastosis Kostakis.
Doncaster and Bassetlaw Teaching Hospital (DBTH), Doncaster, UK.
komalta.kumari@nhs.net

Digital Poster-only, Clinical Research

Introduction: Idiopathic epiretinal membrane (ERM) are usually uncommon under the age of 50. It is usually associated with posterior vitreous detachment. ERM's can be asymptomatic but with significant wrinkling of retinal surface, patients report bothersome visual distortion. Currently, the mainstay of treatment in symptomatic ERM is vitrectomy with peeling. Spontaneous peeling has been reported but it's a rare event and observed in young subjects with favourable visual outcome.

Case: We report a case of 44 years old female who underwent uneventful left divergent squint surgery at the age of 36. At that time she had excellent visual acuities measured to 6/5 in both eyes. Anterior segment examination was unremarkable, and fundoscopy did not show any retinal pathology. After 7 years, in 2022, she was referred with left eye visual distortion and drop in the visual acuity for past 1 year due to LE ERM with pseudohole formation. As she was reporting bothersome visual distortion affecting her daily activities, she was referred to VR team for peeling but conservatively managed. Earlier this year, she was found to have spontaneously peeled ERM with significantly improved visual distortion. So in our case it took ERM nearly 2 years to peel on its own.

Conclusion: We report a case of spontaneously peeling of ERM with pseudohole. Young subjects can be counselled on the possibility of spontaneously peeling of ERM with favourable visual prognosis. The conservative approach with OCT monitoring may defer the surgery and obviate surgery related complications in such cases.

Maintaining the tradition

The ethos since 1909, that the congress is "*for the cultivation of the spirit of good fellowship and of unconventionality, the right of our youngest member to rank with his oldest colleague, and last, but assuredly not least, the frank, free and tolerant discussion of scientific matters brought before its gathering.*"

The Oxford Ophthalmological Congress is the most long standing meeting and the 2nd largest ophthalmological meeting held in the United Kingdom, attracting approximately 350 delegates each year. Historically the Annual Meeting takes place from the first Monday in July through to the following Wednesday.

A short history of the Oxford Ophthalmological Congress 1909 to present day

The origins of descriptive ophthalmology are in antiquity. Therapeutics - at least in the form of cataract couching - is also ancient. But modern scientific ophthalmic theory and practice evolved in the mid-19th century driven by the inventions of the ophthalmoscope and the biomicroscope (forerunner of the slit lamp) and by that century's enthusiasm for the ordering and classification of the natural world.

The great early German ophthalmologists - Helmholtz, von Graefe and Leber particularly - combined accurate personal history taking with detailed descriptions of diseases of the eye. They were internationalists and receptive to advances and discoveries (e.g. the control of infection) in other disciplines.

Robert Doyne died in 1916; the annual Doyne Memorial Lecture was inaugurated in 1917, making it the oldest invited named ophthalmic lecture in the UK.

Robert Doyne (1857 - 1916), the founder of the Oxford Ophthalmological Congress, shared these characteristics. A meticulous observer - see e.g. his 1899 description of "honeycomb retinal dystrophy" or the Coppock cataract - he was also known as an excellent surgeon and teacher, was hardworking and had formidable organising ability. He had a wide range of social, sporting and domestic commitments and was, for example, a founder member of the Oxford Fencing Club, a tennis player, sailor, cellist, playwright and breeder of pug dogs. He had founded the Oxford Eye Hospital in 1886. He was appointed Reader in Ophthalmology to the University of Oxford (the Margaret Ogilvie readership, the oldest senior academic ophthalmic appointment in the UK) in 1902. In 1904, Doyne was elected President of the Section Ophthalmology of the British Medical Association.

The 1904 annual meeting of the BMA was held in Oxford on July 26th to the 29th. Doyne and the Section honorary secretary, Sydney Stephenson, organised the programme, which in concept is recognisably that adopted by the Oxford Ophthalmological Congress in 1909 and still the structure on which the annual Congress meeting is based. Delegates to the BMA ophthalmic section meeting in 1904 were resident at Keble College and the lectures were given in the School of Anatomy. Doyne himself opened the meeting welcoming an international audience in English, French and German. The opening symposium was on retrobulbar neuritis with Robert Marcus Gunn (1850-1909) and Wilhelm Uhtoff (1853-1927) the principal invited speakers. There was a further symposium on cataract surgery (featuring then, as now, a lengthy dogmatic contribution on surgical technique), one on intraocular haemorrhage and systemic disease and one on accommodation and astigmatism. There was a charming contribution by a zoologist on "The Vision of Birds". Operations for cataract and glaucoma were demonstrated by international surgeons at the Oxford Eye Hospital.

Robert Doyne would recognise that the scientific programme for the present OOC Meetings are based on the blueprint of the 1909 meeting.

The meeting was the first in the UK (probably in the world) to combine these scientific and practical elements with a social programme featuring tours of colleges and evening dinners. It was a great success and Doyne was asked to organise similar events in Oxford in the following years (these meetings were not part of the BMA annual meeting). The Oxford Summer Ophthalmological Meetings held between 1905 and 1908 were of the same academic standard as the original BMA meeting and organised principally by Doyne and Stephenson. They were presided over by Robert Doyne. By the time of the fifth such annual meeting in 1909 Sydney Stephenson, in particular, recognised the undue burden that was being placed on even as energetic and enthusiastic an individual as Robert Doyne. After discussion with other parties, Stephenson proposed to Doyne that the meeting continue on an annual basis, but that the task of organisation be taken over by a Congress Council. Stephenson and Doyne drew up the constitution of the Oxford Ophthalmological Congress, which formally replaced Doyne's annual Oxford meetings after 1909.

The founding governing council of the OOC had 23 members, including 5 from Europe and the USA. Executive powers were vested in The Master, the Treasurer and the Honorary Secretary. Doyne was elected Master, a post in which he continued until 1914 to be succeeded by Sydney Stephenson, the original Honorary Secretary. Keble College continued as the Congress base until 1947. After brief associations with Hertford and Brasenose colleges, the Congress moved to Balliol in 1952, remaining there until 1996 when it transferred to St Annes. Sir William Osler, Regius Professor of Medicine at Oxford University, presided at the opening ceremony of the OOC in the Lecture Theatre of the Department of Physiology on Thursday, 21st July 1910. The programme consisted of descriptions of operations, "addresses" - (e.g. on glaucoma by Mr Priestley-Smith) - and demonstrations of instruments and clinical methods. There were also operations and demonstrations of clinical cases at the Oxford Eye Hospital. The inaugural Congress dinner took place as well as other social events such as a Smoking Concert and expedition by river to Reading.

Although the Ophthalmological Society of the United Kingdom (OSUK) - forerunner of the Royal College of Ophthalmologists - had been founded by Sir William Bowman in 1880 and met annually, the OOC quickly became established as a major UK national ophthalmic meeting. Until the expansion of the College Congress recently it was also the largest meeting. From its inception there was an international flavour with members and invited lecturers from Europe, the USA and the old Colonies.

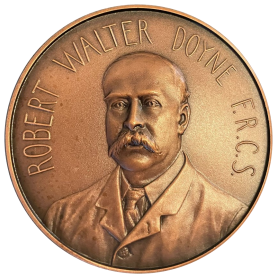
Robert Doyne died in 1916; the annual Doyne Memorial Lecture was inaugurated in 1917, making it the oldest invited named ophthalmic lecture in the UK. From the early years, Doyne lecturers have been invited from overseas as well as UK ophthalmologists, and since the mid-1970s this has been formalised on alternate years. The list of Doyne lecturers is representative of the best minds in the past century of the UK and international ophthalmology, and includes Sir Stuart Duke Elder, Professor Sir Norman Ashton and Professor Barry Jones. Non ophthalmologists, especially neurologists, have given Doyne Lectures, notably Swithin Meadows in 1969 and Professor Iain McDonald in 1983. Other important non-ophthalmic lecturers have included (from Oxford) the Chair of Anatomy, Professor W E Le Gros Clark (1942) and of Physiology, Professor Colin Blakemore (1989). The Doyne Memorial Lecture to mark the centenary, was given by Professor Sir John Bell who is, (as Sir William Osler was), a distinguished Canadian Regius Professor of Medicine at Oxford University. Sydney Stephenson had been elected Master in 1916 and remained in post until 1922, following which the tenure of the Master was reduced to 3 years and subsequently in 1959 to 2 years.

Amongst Robert Doyne's successors as Master was his son, P. G. (Geoffrey Doyne - also a notable fencer - (1942-1944). The Congress organisers have maintained the policy, established in the early years, of inviting distinguished overseas speakers to contribute to symposia. These have included Dr William Wilmer, founder of the Wilmer Institute, Baltimore (1927), Dr Harvey Cushing who spoke on the early diagnosis of intracranial tumours in 1932 and Sir Harold Gillies (1935) on plastic surgery of the eyelids.

The 1909 constitution of the OOC, notable for its brevity, has remained unchanged. The minutes of Council meetings reveal that this body and its executive have, however, always been innovative and forward thinking. The first lady member (Miss Lilias Blackett) was elected in 1917 to be followed by (among others) Ida Mann (elected 1926, Doyne lecturer 1929). The importance of the Council as distinguished ophthalmologists was recognised by the adoption of four Council members and The Master as ex officio members of the Council of British Ophthalmologists, forerunner of the Faculty of Ophthalmology of the Royal College of Surgeons (established in 1946 by Sir Stuart Duke Elder).

In 1998, space constraints at the Department of Physiology in South Parks Road led to a move to the much larger and more comfortable accommodation of the Oxford Playhouse. Optic UK who has supported the Congress for many years with a Trade Exhibition moved to the nearby Randolph Hotel and the Congress Poster exhibition to the Ashmolean Museum and, subsequently, the Taylor Institute.

Robert Doyne would recognise that the scientific programme for the present OOC Meetings are based on the blueprint of the 1909 meeting.



Read more about our heritage, view past Doyne Lecturers, Masters and Honorary Members @ www.ooc.uk.com/our-heritage

A thank you to our 2024 supporters

Please take time to visit them at the TOWN HALL in the Grand Hall, Old Library and Assembly Room.

PLATINUM LEVEL

Alimera We see more, together

TOPCON Healthcare

GOLD LEVEL

Apellis

BAUSCH+LOMB

BAYER

HAAG-STREIT UK Look closer. See further.

HEIDELBERG ENGINEERING

instinctive

mainline INSTRUMENTS

NORDIC PHARMA

Premium Medical Protection

Rayner

RETINSIGHT AI TO EYE

Roche

Santen

SenseMedical

Canon

Théa let's open our eyes

VivaQuity

SILVER LEVEL

abbvie

altomed

KESTREL OPHTHALMICS a CUTTING EDGE Company

Medicom Healthcare

M.I.S.S Ophthalmics

RECORDATI RARE DISEASES GROUP

SCOPE

Spectrum

Surgitrac Instruments

VISUfarma the eye health company

EXCLUSIVE MEDIA Partner

eyenews®

Save the date

7-9th July 2025

ooc.uk.com

Oxford Ophthalmological Congress

Founded in 1909 by Robert W Doyne

For the cultivation of the spirit of good fellowship and of unconventionality, the right of our youngest member to rank with his oldest colleague, and last, but assuredly not least, the frank, free and tolerant discussion of scientific matters brought before its gathering.

Oxford Ophthalmological Congress, Charity number: 1181776