ABSTRACTS

28th -30th September 2022

Royal Marriott Hotel

Bristol

WEDNESDAY 28th September 2022

SESSION 1 Free Papers: 9 am – 10.25 am

Feasibility and Clinical Utility of Hand-held Optical Coherence Tomography in Children with Retinoblastoma

Z Tu (L), M A Reddy (C), M S Sagoo (P), J Abbott (C), M Parulekar (C), I Gottlob (P), V Sheth (L), R Mclean (RF), M G Thomas (CL), F A Proudlock (SL)

University of Leicester

Early tumour detection is of the highest importance for the preservation of vision and reducing the risk of metastasis in Retinoblastoma (Rb). We aimed to investigate whether hand-held optical coherence tomography (HH-OCT) can improve diagnosis, treatment and outcomes in children with Rb compared to conventional investigations.

In this prospective study, eligible participants with suspected Rb were consented and recruited.

During examination under anaesthesia, HH-OCT was performed in addition to the standard clinical care and imaging (fundus photography and ultrasound). We recorded the: (1) success rates of imaging based on tumour location, (2) management plans blinded to the OCT scans and (3) change in management after analysis of OCT scans.

Fifty-six Rb eyes of 38 children (age range 6 months to 7 years) were imaged in 96 OCT sessions. The scan acquisition success rate was 90% with the tumours located in Zone M (Macular), Zone 1 (posterior pole) and Zone 2 (equatorial zone). OCT enabled new tumour detection (9%), evaluation of post-treatment scars (25%), lesions in the fovea (12%) and monitoring of vitreous seeds (13%). HH-OCT alter management in 25% of all OCT sessions.

HH-OCT provides high-resolution 3-dimensional images of the Rb, which can improve clinical judgement and monitor changes in the tumour,

vitreous seeds and scar at microscopic resolution. We highlight the feasibility of this technology in Rb diagnostic and management workflows. However, further studies with larger numbers would be

Hand-held non-mydriatic fundus photography in children: is it feasible, it is reliable?

S Khan (T), S Mamtora (T), C Smith (MS), J Ferris (C)

Cheltenham General Hospital

Introduction:

In the paediatric population, hand-held non-mydriatic fundus photography has the potential to simplify fundus examination for the non-paediatric ophthalmologist.

This is the first study to demonstrate feasibility of hand-held non-mydriatic fundus photography in the paediatric population and report on its reliability in capturing ophthalmic pathology compared to dilated fundoscopy.

Methods:

This is a prospective, observational study including a total of 43 families seen consecutively in

paediatric clinic. All study participants had undilated images taken using the handheld fundus camera (Optomed, Aurora) in a dimly illuminated room. Ease of image acquisition was measured by recording the time taken to acquire image compared to time taken to conduct dilated fundoscopy by a senior paediatric ophthalmologist. Reliability was measured through the percentage of fundus images that successfully identified retinal pathology compared to standard dilated fundus examination.

Results:

80 eyes from 40 children were successfully imaged and included in the analysis. Age ranged from 9 months to 17 years. All pathology was captured and identified on non-mydriatic fundus photography. The average time taken for non-mydriatic fundus photography was significantly less than fundoscopy at 137 seconds (95 C.I 125.1-148.9) compared to 249 seconds (95 C.I 224 -274) respectively, ($p< 0.0001$).

Conclusions:

The hand-held non-mydriatic fundus camera provides a versatile, time-efficient option for imaging the central 45 degrees in children. Training required to use the camera was limited a day and excellent image quality obtained reliably.

Multimodal characterisation of the infant response to retinopathy of prematurity screening using BIO and Optos

M D Buckle (T), A Hoskins (N), G Schmidt-Mellado (RA), K Pillay (RA), C Hartley (RA), C K Patel (C), R Slater (P)

Oxford University, Oxford

Painful clinical procedures, such as retinopathy of prematurity (ROP) screening, contribute to negative consequences for infant development. Improved measurement of infant pain is essential in evaluating the effectiveness of pain-relieving interventions. Novel methods of infant pain assessment developed by the authors include quantitative analysis of heart rate variability (HRV) and electroencephalography (EEG) recordings.

51 infants were studied during ROP screening: 44 infants underwent binocular indirect ophthalmoscopy (BIO), 7 underwent Optos photography. Oxygen saturations, heart rate, EEG,

video of facial expression, and clinical pain score were obtained for each infant. Data were analysed using R and Matlab.

HRV analysis identified BIO screening evoked significant reduction in parasympathetic nervous system (PNS) activity (non-parametric cluster analysis p-values; pNN50 p=0.008, HF p=0.032). EEG analysis identified BIO screening evoked significant, noxious-specific, increase in high-frequency brain activity (FDR corrected p-value; relative beta power p=0.044). These observations were not identified following Optos screening (paired-sample one-tailed t-test; HRV p>0.5, EEG p=0.24).

This study demonstrates the implementation of novel methods of pain assessment in infants undergoing painful clinical procedures. Cardiac reactivity analysis identified that BIO screening evokes physiological stress in infants. EEG analysis identified a shift in brain activity which may be specific to nociceptive processing. These measures

have been used further to characterise the response to an alternative screening method.

In summary, a multimodal approach to pain assessment may better characterise the infant pain response. Improved understanding of the infant pain experience will allow clinicians to better identify and treat infant pain and stress during essential clinical procedures.

Outcomes of Penetrating keratoplasty in children under 8 years of age at a tertiary referral centre

ZC Ali (T), C Hopkinson(o), S Biswas (C)

Manchester Royal Eye Hospital

Introduction

Congenital corneal opacities (CCO) occur in 6 in 100,000 new-borns. Penetrating keratoplasty (PKP) is one of the surgical options but poses numerous challenges with outcomes generally poorer than in adults. Identifying risk factors for poor outcomes can help clinicians better ascertain which patients may benefit from PKP. We present the outcomes of PKPs carried out at the Manchester Royal Eye Hospital (MREH).

Methods

A retrospective study was conducted infants and children less than 8 years of age undergoing PKP at MREH between April 2007 and August 2020. Data collected from NHSBT audit and patient records

included demographics, surgical risk factors (infection, inflammation, glaucoma, presence of vascularisation), donor endothelial cell count (ECC) and age, pre and post-operative best corrected visual acuity, intra operative and post-operative complications, rejection episodes, and graft survival or failure.

Results

34 PKPs were carried out (26 patients, 34 eyes). Median age at surgery was 7.5 months (range 2-65 months). Male to female ratio is 9:17. The most common indication for PKP was Peters anomaly/sclerocornea (16 eyes) followed by congenital corneal dystrophy (8 eyes), tectonic (5 eyes), aniridia (4 eyes) and central corneal dermoid (1 eye).

Mean donor endothelial cell count was 2986 +/- 279.1. Mean donor-host age mismatch was 34 years ±17.6. Pre-operatively all eyes bar one had visual acuity of either hand movements (HMS) or

perception of light (PL). Post operatively 16 eyes had gained vision with mean best corrected LogMAR visual acuity being 0.91 +/- 0.74 (range 0.1 – 1.64).

35.3% of grafts (12 eyes) failed. Mean time to failure was 387 +/- 204 days (range 82-725). Irreversible rejection was the most common cause of failure.

Donor ECC, indication for graft, donor-recipient age difference, glaucoma, ocular surface disease, infection or inflammation were not found to have a statistically significant effect on graft survival. However, there was statistically significant increased risk of graft failure with any host-bed vascularisation ($p<0.01$).

Discussion

Paediatric corneal transplant in infants and young children remains a significant challenge. Infants and children can exploit even modest improvements in vision to promote their overall

development, justifying transplant surgery for significant bilateral CCO's.

Significance

We demonstrate how visual improvement can be obtained in a noteworthy number of patients who undergo PKP and identify host bed vascularisation as the main risk factor for graft failure.

Gene therapy treatment for children with RPE65-mediated retinal dystrophy: the Manchester experience.

J Ashworth (C), G Black (C), S Biswas (C), G Hall (O), N Parry (O), J Gray (O), A Jalil (C), T Ivanova (C)

Manchester Royal Eye Hospital

Introduction. Inherited retinal diseases (IRD) are one of the most common causes of significant visual impairment amongst children and young adults, and are caused by mutations in any one of more than 220 different genes. Mutations in RPE65 gene lead to Leber's congenital amaurosis (type 2) and retinitis pigmentosa (type 20). There was no approved treatment for IRDs in the UK till September 2019, when NICE approved Voretigene Neparvovec (Luxturna) as a licenced treatment for RPE65-mediated disease. We present our experience in Manchester of treating children with RPE65- mediated IRD with Voretigene Neparvovec

Methods. We use a multidisciplinary approach in the selection and management of patients with RPE65- mediated IRD. The MDT consists of geneticists, paediatric ophthalmologists, genetic counsellors, clinical scientists and vitreoretinal surgeons. Patients were identified from the genetic database or referred to us and discussed at the MDT prior to surgery.

Results: Five children (8 eyes) with ages ranging from 5 to 16 years met all criteria for treatment and underwent surgery (vitrectomy and subretinal injection of Voretigene Neparvovec) between October 2020 and February 2022. Visual acuity improved in 2 eyes and was stable in 6 eyes. Several patients have had subjective improvement in vision as well as improvement of rod function elicited by better retinal sensitivity on electrodiagnostic testing, peripheral and low luminance vision.

Conclusions: Gene therapy treatment for RPE65-mediated IRD offers promise in stabilising or

improving visual function in children. Manchester is one of 3 UK centres providing this service. An MDT approach provides a comprehensive service for provision of gene therapy, and initial outcomes of surgery show the treatment to be safe. Longer term follow up is required to determine the effect on stabilisation of retinal degeneration and visual function.

Outcomes of primary IOL implantation versus aphakia in cataract surgery in the under 2 age group: a local audit.

R Rewbury (T), S Amarakoon (C), S Khan (T), A Churchill (C)

Bristol Eye Hospital, University Hospitals Bristol and Western NHS Foundation Trust

Primary intraocular lens (IOL) implantation in children under 2 years old remains controversial, with studies reporting significantly higher rates of glaucoma, complications and reoperations in pseudophakes versus aphakes. We performed a retrospective audit at Bristol Eye Hospital to evaluate these outcomes in our paediatric population undergoing surgery for congenital or developmental cataract.

The medical notes of children aged 2 years and under that underwent cataract surgery between 01/01/2012 and 01/07/2019 were scrutinised, and outcomes in the pseudophakic versus aphakic

groups were compared. Data from more than one surgeon was included. Statistical analysis was performed using the Chi-squared test with p-value <.05

35 eyes were included. 40% underwent primary IOL implantation. Primary capsulotomy was performed in 100% IOL group versus 90% aphakes. There was no statistically significant difference in the intra-operative or post-operative complication rates between primary IOL and aphakia (intra-operative complication rate 29% v 14%, X2=1.07 p=.30; post-operative complication rate 57% v 33%, X2=1.94 p=.16). There were 2 cases of glaucoma, one in each group. The reoperation rate was the same in pseudophakic and aphakic eyes (57%).

The choice of primary IOL implantation in our cohort was operator dependant. The youngest child receiving a primary IOL was 53 days old. No statistically significant differences were found with

respect to glaucoma, complications or reoperation rates.

We found primary IOL implantation to be an equally safe option to aphakia in our cohort; this might be especially relevant where contact lenses are considered contraindicated

WEDNESDAY 28th September 2022

SESSION V Rapid Fire Free Papers: 15.00 pm – 16.00 pm

A Retinal Sign Aids the Case to be Solved

K Falzon (C), G Heath (C), G Kane (T)

York and Scarborough Teaching Hospitals NHS Foundation Trust

An eight year old ,Caucasian female was referred to the paediatric ophthalmology clinic by her

paediatric neurologist with a slowly progressive history of ataxia, dystonia and poor development relating to fine motor skills. There was no evidence of visual or cognitive impairment. Her 3 year old brother also displayed similar signs – albeit to a lesser degree. Magnetic Resonance Imaging (MRI) of her neuroaxis was reported as normal. The main question asked by her neurologist was whether there were any ocular signs that may aid in providing a unifying diagnosis.

Her LogMar visual acuities were 0.0 bilaterally. The most striking feature was a markedly thickened peripapillary retinal nerve layer in both eyes resembling myelinated nerve fibres. Optical Coherence Tomography (OCT) confirmed the presence of bilateral, symmetrical retinal nerve fibre layer thickening with involvement of the posterior pole revealing foveal plana. There was no acoustic shadowing (typical of myelinated nerve fibres) . The tomographic findings of her younger brother were similar.

Her MRI was reviewed and striated, hypointense areas were noted within the pons on T2 sequences. The revised neuroradiology report in combination with the ophthalmic findings raised the possibility of a rare , genetic, neurodegenerative condition- Autosomal Recessive Spastic Ataxia of Charlevoix -Saguenay (ARSACS). Genetic testing confirmed the diagnosis in both her and her brother.

OCT is a simple, non-invasive test which is highly sensitive and specific in identifying retinal changes associated with ARSACS even when the ocular fundal findings appear normal.

Paediatric Circumpapillary Retinal Nerve Fibre Layer Development in Healthy Infants and Children UsingHand-Held Spectral-Domain Optical Coherence Tomography

Z Tu (L), S Shah (Op), V Sheth (L), S N Teli (RO), B S Edawaji (o), H Kuht (RO), M Hisaund (RO), A Patel (T), R McLean (RF), M G Thomas (CL), I Gottlob (P), F A Proudlock (SL)

University of Leicester

Our aim was to investigate the development of 3-dimensional circumpapillary retinal nerve fiber layer (cpRNFL) using handheld spectral-domain optical coherence tomography (HH-SDOCT) and also to establish normative age-adjusted values.

OCT images were collected from 584 eyes from 344 infants and children aged between birth and 18 years using a HH-SDOCT (Leica Microsystems, Envisu C2300, Wetzlar, Germany) system. The data were analyzed semi-automatically using GDx Nerve Fiber Analyzer protocol. The developmental

trajectories against post-menstrual age (logPMA) for cpRNFL thickness (at 6° from the disc center) in four quadrants, 10 segments and key ONH parameters were modelled using linear mixed models or fractional polynomials.

The thickness of superior, inferior and nasal cpRNFL quadrants did not significantly change between birth and 18 years old. In contrast, the temporal cpRNFL quadrant demonstrated a significant decrease between birth and approximately 18 months of age, and then remained relatively constant up to the age of 18 years (Q1 = 55 µm; Q2 = 61 µm; Q3 = 68 µm over 18 months of age).

We describe, for the first time, development of the full cpRNFL from birth to 18 years using 3-dimensional HH-SDOCT imaging. Interestingly the temporal cpRNFL quadrant show a different developmental trajectory to the superior and inferior cpRNFL quadrants despite all three

quadrants comprising of fibres projecting from the macular region.

Our findings also provide normative data during these critical early years of visual maturation for use in clinical diagnosis, monitoring ocular development and understanding further ocular abnormalities.

If presented elsewhere: ARVO 2022, EUNOS 2022

Incidence of Exjade-related ocular toxicity in paediatric patients at a London District General Hospital

A Seyed-Safi (T), K Jafari (T), J Raina (C)

North Middlesex University Hospital NHSFT London

Iron-chelating agents are used in patients with haemoglobinopathies to prevent toxic side effects of iron overload associated with frequent blood transfusions. Whilst the injectable agent Deferoxamine has well established ocular side effects, the incidence of ocular toxicity of the newer oral agent Exjade is unknown. North Middlesex University Hospital (NMUH) has adopted an Ophthalmology screening programme for all patients on Exjade since 2007. This study aims to determine the incidence of Exjade related ocular toxicity in the paediatric population at NMUH.

This is a retrospective case series of all paediatric patients actively on Exjade therapy between 2019-2022 for transfusional haemochromatosis who underwent ocular screening between 2007-2022. The primary outcome measures were documentation of retinopathy, decrease in visual acuity or field loss.

A total 29 paediatric patients were receiving Exjade therapy, and 186 ophthalmic screening examinations were performed. There were 0 cases of Exjade-related ocular toxicity in this cohort.

No patients were found to have retinopathy in relation to Exjade therapy. There are only two cases in the literature of reversible ocular toxicity that presented with visual symptoms such as decreased visual acuity[1], central scotomas and dyschromatopsia[2]. Given the 0% incidence of ocular toxicity in our population, the role of costly asymptomatic Exjade retinal screening programmes is limited.

Case series of consecutive paediatric keratoconus patients with and without corneal collagen cross-linking

L Lai (T), K Naderi (CRF), K Theodoraki (T), S Sansome (T), L Onrubia Garcia (F), A Jameel (CRF), J Lam (MS), D O'Brart (C), A Ritchie (C)

St Thomas' Hospital, London

Keratoconus (KC) is the commonest corneal ectasia which can lead to progressive visual loss if left untreated. Corneal Collagen Cross-linking (CXL) has been shown to halt KC progression. In children, the risk of KC progression is higher; careful monitoring is paramount to identify at risk cases. We present a series of consecutive paediatric patients with KC who presented to our unit.

Consecutive paediatric patients (1.0D, increase in back curvature >0.5D, reduced corneal thickness >16 microns, and advanced KC. Data was collected at baseline, prior to CXL, and at the most recent clinic visit.

80 eyes of 42 patients were included. Mean age was 13.9 (SD 2.5). Mean follow-up time was 18 months. 23/80 (28.8%) did not show evidence of progression. 57/80 (71.2%) met the criteria for CXL, of which 49/57 underwent CXL. 3/49 (6.1%) patients who underwent CXL showed evidence of further progression. In patients who underwent CXL, the baseline and most recent measurements were: K1 (48.8 (baseline) vs 48.7 (recent), p=0.88), K2 (53.4 vs 53.1, p=0.35), Kmax (61.1 vs 59.7, p=0.023*), BC (-8.01 vs -8.17, p=0.06), and BCVA (0.32 vs 0.27, p=0.12).

CXL is effective in halting the progression of KC in paediatric patients. 3 (6.1%) patients who underwent CXL showed evidence of further progression. Close monitoring of paediatric KC patients is essential to identify and treat progressing cases early.

Children with pseudoretinoblastoma diagnosed at London's Retinoblastoma Unit: a retrospective chart review.

H Melville (T), D Yeo (C), S Joshi (MS), V Badhwar (T), M S Sagoo (C), M A Reddy (C)

Barts Health NHS Trust

There is significant overlap in the features of retinoblastoma (RB) and alternate diagnoses (pseudoRB lesions), usually differentiated following referral to a specialist RB unit for examination under anaesthesia.

A chart review of patients referred to London's RB unit with suspected RB over an 11-year-period.

233 (63%) had confirmed RB while 139 (37%) had pseudoRB. The top differential diagnoses for children with pseudoRB were Coats' disease (34%), Persistent Foetal Vasculature (PFV) (15%) and Combined Hamartoma of Retina and Retinal Pigment Epithelium (CHR-RPE) (12%). Diagnoses

differed by age: under one year (n=50), the most likely conditions were PFV (36%) and Coats' disease (14%) and in children over five (n=30) the top diagnoses were Coats' disease (33%), RAH (Retinal Astrocytic Hamartoma) (17%) and Uveitis (10%). Seventeen symptoms were cited as presenting complaints with the top being leukocoria (28.2%), squint (20.6%) or both (6.8%). Median lag time from symptom onset to first presentation to primary healthcare professional was 6.5 weeks whereas subsequent lag time to the RB centre was 6.0 days. Patients receiving pseudoRB diagnoses were referred by paediatric ophthalmologists (62.1%), non-paediatric ophthalmologists (36.5%) and paediatricians (1.4%).

There is diversity in the presenting complaints of patients with pseudoRB, resulting in longer lag times than in RB. Nevertheless, there is overlap in their clinical features such that one third of referrals for suspected RB had alternate diagnoses.

Children with pseudoRB are seen urgently with associated healthcare expenses and anxiety to families. Work is required to identify novel means of differentiating between RB and simulating lesions.

Outcome of goniotomy for aphakic paediatric glaucoma – Case series

S. Aulakh (F), A. Connor (C)

Royal Victoria Infirmary, Newcastle upon Tyne

Aphakic paediatric glaucoma is a dreaded complication faced by paediatric ophthalmologists today. Although medical treatment is given initially, the surgeon has to resort to surgical means in those unresponsive. Goniotomy is the procedure of choice for primary congenital glaucoma, however, there are anecdotal reports employing this technique for aphakic glaucoma.

We conducted a retrospective review and report the outcome of seven eyes that underwent goniotomy as first line of treatment for aphakic glaucoma at our institute.

Of the seven eyes, six had a single goniotomy procedure. Of these six, the intra-ocular pressure was controlled at 24mmHg or less with iCare with

topical pressure lowering agents for four eyes, giving a success rate of 57.1%. These eyes were followed up for a period of 8 months. Goniotomy failed in 3 of the 7 eyes (42.9%). Two of these eyes had undergone a single goniotomy, needing further treatment within a span of 6 weeks. One of the eyes underwent two goniotomy procedures 5 months apart, and needed tube placement 1 year later.

Aphakic glaucoma is an open angle glaucoma. It can result from pre-existing angle anomalies, due to lens epithelial cells or inflammatory cells blocking trabecular outflow, or secondary to factors from the vitreous modifying angle outflow dynamics. We believe goniotomy is less invasive and technically less demanding than trabeculotomy and glaucoma drainage device surgery and targets the angle outflow.

Albeit limited in number and follow up duration, this case series shows that goniotomy can be attempted as a first line of surgical intervention for

aphakic glaucoma. This report lays down a foundation for a future prospective study for outcome of goniotomy in aphakic paediatric glaucoma.

Is it NF1? What an ophthalmologist needs to know about genetic diagnosis

N ElMeshad (CF), V Choleva (C)

Bristol Eye Hospital

Introduction

NF1 is a genetic disease with typical changes in skin pigmentation and growth of tumors along nerves in the skin, brain, bones and eyes. NF1 gene is subject to one of highest mutation rates known for human genes. Nearly 50% of the cases are considered sporadic. Genetic testing would clarify clinical uncertainty We collected our data from BEH medical records for audit purposes.

Methods

A cohort of NF1 children attending BEH for eye screening in 2018-2020. This study was designed as audit.

Results

13 children underwent genetic testing and only 5 had a detectable pathogenic NF1 mutation. 4 were negative and the other 4 did not have available results at the time of our audit. This means that 5 patients were clinically and genetically diagnosed with NF1 and 4 were clinically diagnosed but did not have a pathogenic NF1 mutation. It is interesting that one of the patients with genetically verified NF1 developed optic glioma and two patients with only clinical diagnosis developed optic gliomas.

Conclusion

Apart from clinically and genetically diagnosed NF1, there are also other entities described in literature as NF1 like syndrome, for example Legious syndrome, which is related to SPRED1's pathogenic variation with common cutaneous pigmentation changes. We need to keep in mind limitations of genetic testing; hence, it is necessary to have an annual clinical re-evaluation of NF1 patients to detect newly emerging symptoms and

to follow up patient's visual development. A close collaboration with paediatrics and genetics would reduce unnecessary examinations and improve patient's care.

If presented elsewhere: As part of an audit in Bristol Eye Hospital audit meeting

THURSDAY 29th September 2022

SESSION VII Free Papers: 9 am – 10.10 am

Acquired myelinated retinal nerve fibres (MRNF) in craniosynostosis patients with raised intracranial pressure: a case series

A Rodriguez-Martinez (CF), V Panteli (C), Oliver Marmoy (RF), D Thompson (C), R Bowman (C)

Great Ormond Street Hospital for Children NHS Foundation Trust | GOSH · Clinical and Academic Department of Ophthalmology (CADO)

Introduction: Acquired myelinated retinal nerve fibres (MRNF) is an unusual event often associated with optic nerve abnormalities. We report the first case series of progressive acquired MRNF in children with craniosynostosis and history or evidence of co-existing raised intracranial pressure (rICP).

Methods: Single-centre, retrospective chart review of patients assessed at Craniosynostosis unit at GOSH who developed myelination of the RNF between 2009 and 2022. The patient´s clinical history, visual acuity, refraction, electrophysiology, fundoscopy, fundus photographs and Optical Coherence Tomography were evaluated.

Results: Seven patients (85.7% males) developed MRNF. Mean age at presentation was 31.7 months (range 2–60 months). Mean age at last follow-up was 11 years (range 8.3–16 years). Six patients had multisutural synostosis and 1 had a single suture synostosis. All patients had a history of rICP. Four patients had time correlation with rICP diagnosis

and newly diagnosed MRNF. Mean final visual acuity on the RE 0.086 (95% CI: -0.064–0.236). LE 0.02 logMar (95%CI: -0.076–0.116). All patients showed clinical progression of MRNF on fundoscopy and serial Optos imaging.

Discussion: While the cause of acquired MRNF remains uncertain, the changes in the lamina cribrosa (LC) in a susceptible optic nerve can allow oligodendrocytes access into the eye to restart myelination. Craniosynostosis patients could be prone to myelination since they have abnormal accumulation of fibrous tissue at the LC in addition to injury to the optic nerve done by rICP.

Conclusion: MRNF could be a sign of rICP in patients with craniosynostosis.

Incidence of uveitis in proactively managed juvenile idiopathic arthritis

K Szarzanowicz (MS), B Flores-Sanchez (T), B Sharples (MS), D Hawley (C), J Choi (C)

Sheffield Children's NHS Foundation

Uveitis is the most common extra-articular manifestation of Juvenile Idiopathic Arthritis (JIA), with incidence of up to 40% reported. Early screening for JIA-related uveitis (JIA-U) aims to improve ocular outcomes. Modern management of JIA involves a multi-disciplinary approach and early use of immunosuppressants. The aim of this retrospective observational study was to determine the incidence of JIA-U within the context of proactive JIA management.

478 consecutive children with JIA underwent uveitis screening following the Royal College of Ophthalmologists recommendations, between 2011-2021, in a regional paediatric hospital offering multi-specialty uveitis service.

82 eyes of 51 (10.7%) children were diagnosed with JIA-U after median screening of 2 months (0-23). 23/51 (45.1%) children with JIA-U were identified at first screening visit; 12/82 (14.6%) eyes presented with baseline uveitis-related complications. 28/455 (6.2%) JIA-U were diagnosed at follow up, after a median of 20 months (5-39); 16/28 (57.1%) were on established immunosuppressive regimes. Systemic treatment modifications were required in 30/51 (58.8%) children after JIA-U onset (median escalation of 29 (15-64) days). 6/70 (8.6%) eyes developed uveitis-related complications during follow up. At final visit, 37/51 (72.5%) children were in drug-induced uveitis remission; 79/82 (96%) eyes had LogMar ≤0.2, and the rest 0.3-0.5.

We describe a cohort receiving prompt escalation of therapy for JIA in response to inflammation flares, in which the incidence of uveitis was low. Further studies would help confirm the impact of this approach.

This 10-year observational study, in the era of modern JIA treatment, demonstrated low likelihood of developing JIA-U and blindness.

Non-surgical Interventions for Infantile Nystagmus (IN): a systematic review with narrative synthesis

Y Xiang (MS), Elfadaly D (F), Theodorou M (C)

Moorfields Eye Hospital NHS Foundaon Trust, London, UK

IN is known to cause visual impairment, but also significantly affects quality of life. Currently IN has no cure, but its effects can be attenuated. There is no clear consensus or clinical guidelines regarding the safety and efficacy of non-surgical therapeutic interventions for IN.

We conducted a comprehensive systematic search across MEDLINE, EMBASE and clinicaltrials.gov from inception to 31 August 2021. Two reviewers independently screened and assessed the citations against prespecified inclusion and exclusion criteria. The quality of the eligible studies was evaluated with quality assessment tools developed by the National Institutes of Health.

We identified 2065 citations and retained 20 studies (379 participants) for the review. We included 6 randomised-controlled trials (RCTs), 12 controlled before-after (CBA) studies and 2 case series. The study quality was good for the RCTs and case series, and fair for the CBA studies. Of the included studies, 5 studies examined pharmacological interventions (brinzolamide, memantine, gabapentin and botulinum toxin), 6 assessed optical interventions (contact lenses[CLs] and triple prism) and 9 investigated non-pharmacological interventions(including biofeedback training, intermittent photic stimulation [IPS], and acupuncture). The most extensively studied interventions were the use of CLs (5 studies, 78 participants) and IPS (2 studies, 92 participants). Most participants could tolerate the interventions with few reported mild adverse effects.

This systematic review indicated that:(i) there is a growing body of evidence that non-surgical

treatments play a role in managing the symptoms associated with IN;(ii) non-surgical treatments are generally safe and well-tolerated; and (iii) high-quality evidence is warranted for evaluating the efficacy of these treatments.

It's how they see, not what they see: Assessing visual function in young children with ASD

T Constable, J M Woodhouse, R F Pilling (C)

Cardiff University

There is an emerging understanding of the interplay between Cerebral Visual Impairment (CVI) and Autistic Spectrum Disorder. The aim of this study was to explore visual assessment in children with ASD, comparing classification systems (VFCS ,visual function classification system) and questionnaire based approaches (ViBe8, CVI5) in order to highlight visual functional problems.

Methods: The study used prospective questionnaire-based approach supplemented by clinical evaluation. VFCS was determined by clinical observation. A 13-item questionnaire (combined ViBe 8 and CVI 5) was completed by parents and clinicians independently. Routine eye examination

testing including visual acuity, fields, eye movements and refraction was completed.

Results: 24 participants agreed to participate (age 4-11years). Most participants were classified as VFCS level 1 or 2. There no significant difference between parental reported and clinician observed scores for ViBe 8 ($z=1.331$, $p=0.183$). Parents reported some of the CVI 5 questions were not applicable to their child's educational ability. There was no relation between refractive error and visual acuity anomalies and atypical visual behaviours identified from ViBe8 and CVI5 questionnaires.

Discussion: Visual acuity and refraction assessment alone may be inadequate to evaluate visual function in young children with ASD. VFCS lacks specificity to be useful in describing the visual function of children with ASD. The ViBe 8 offers an alternative to identify CVI-related visual behaviours exhibited by children with ASD. Parents are able to accurately report CVI-related

visual behaviours using a questionnaire, facilitating hybrid tele-medicine opportunities. This may offer an opportunity for other professionals identifying children to refer for visual assessment.

Clinical Assessment, Investigation, Diagnosis, and Initial Management of Paediatric Cerebral Visual Impairment: a review of current practice

R Pilling (P), L Allen, (C), R Bowman (C), J Ravenscroft (P), K Saunders (P), C Williams (P)

University of Bradford

Cerebral Visual Impairment (CVI) is the commonest cause of visual impairment in children in UK. It is a condition which every eye health professional may expect to encounter in a paediatric ophthalmology clinic. As a complex and heterogenous condition, there is lack of clarity for clinicians on diagnostic criteria and thresholds.

We undertook a literature review and focus group work to develop a concise practice point for eye health professionals to support clinical practice.

There are three diagnostic elements for CVI (developmental anomaly/risk factor, observed/reported atypical visual function, CVI

related visual dysfunction elicited on examination). Clinical inquiry requires a flexible approach. Validated tools to facilitate the assessment of children with a range of developmental and cognitive abilities have been published and a curation of these is presented. Structured questions can be helpful in eliciting signs and symptoms of CVI and may supplement general history taking. Whilst not essential for diagnosis, they can be useful in devising an examination strategy for the individual child. Costly investigations such as neuroimaging or electrodiagnostic tests are infrequently required, but play a role where there is diagnostic uncertainty. Visuoperceptual testing does not form part of core visual assessment and the importance of involving other health professionals is highlighted where symptoms cannot be explained by standard eye clinic assessment. The key components of an effective clinic report, and useful resources and signposting which eye health

professionals may share with the family, are presented.

Whilst it is beyond the scope of this document to specify a model of care, our findings set out what might be expected from a service where CVI is identified, or suspected.

-exclusion and/or management of co-existing ocular conditions refractive error and accommodation dysfunction.

- establishing risk factors for, and symptoms of, CVI to enable proactive detection of visual dysfunction

- arranging onward referral for further assessment and support

THURSDAY 29th September 2022

SESSION X Rapid Fire Free Papers: 14.00 pm – 14.59 pm

Clinical Benefits of Adalimumab in Non-JIA Paediatric Uveitis

I Y M Yip (CL), J Gonzalez-Martin (C)

Alder Hey Children's Hospital, Liverpool, England

To describe the treatment results with adalimumab in children with non-JIA uveitis.

A retrospective case note review was carried out on children with non-JIA-uveitis who had been commenced on adalimumab with at least 6 months follow-up between May 2013 and June 2021.

Sixteen non-JIA patients were commenced on adalimumab. Six patients did not have sufficient follow-up data, therefore 10 children were

included for analysis (18 eyes). At baseline, 61% (11 eyes) had anterior uveitis and 22% (4 eyes) had intermediate uveitis. Half of the patients were established on methotrexate and 1 on mycophenolate prior to adalimumab. With the addition of adalimumab, disease inactivity was achieved in 90% of patients after a median of three months (3-9). Fourteen eyes (78%) had stable or improved best corrected visual acuity. Vision worsened in four eyes due to worsening existing visual axis opacities or difficult to control inflammation. Children using systemic steroids fell from 4 to 0. Patients using 3 or more drops of topical steroids fell from 56% to 17%. Adalimumab was continued in all children throughout follow-up with no severe side effects resulting in cessation. Relapse of uveitis occurred in 2 children and were controlled with topical steroids.

Adalimumab is effective in the treatment of non-JIA uveitis in paediatric patients by achieving disease inactivity in most patients, maintaining

vision and decreasing use of corticosteroids. Adalimumab has few side effects and is well tolerated. This work is important as studies demonstrating the efficacy of adalimumab in paediatric non-JIA uveitis are rare.

Abnormal eye movements in infancy- the importance of pattern recognition

S Goyal (FD), M Parulekar (C), R Goyal (C)

Royal Glamorgan Hospital - Cwm Taf University Health Board

A four-month infant was referred with unusual eye movements noticed by mother since age 7 weeks.

There was no birth, pregnancy, or family history of note, with age-appropriate developmental milestones. There was no abnormal head posture, and normal fixing and following. No abnormal eye movements were noted in clinic. However, a video recording of the eye movements (WILL BE DISPLAYED DURING PRESENTATION) showed very brief (1-2 second) intermittent horizontal flicking movements of both eyes without a slow phase. No dysconjugate eye movement was present. The rest of the examination was normal.

Systemic examination by paediatricians was normal.. Metabolic screen (urine organic acid, serum amino acids, serum lactate level) and urinary catecholamines were all normal. No neuroimaging was done.

A diagnosis of saccadic intrusions was made, with decision to observe. The movements resolved a few months later.

This case highlights the challenges of examining eye movements in infants. Video recording provided by parents are useful. Recognition of abnormal neonatal eye movement patterns, and red flag signs is essential to minimise investigations such as neuroimaging under anaesthesia.

A one-year audit of ROP screening using ultrawide- field scanning laser ophthalmoscopy (UwF-SLO)

R Purohit (o), K Xue, S Aslam, C K Patel (C)

Oxford Eye Hospital

Methods: A new standard of care for ROP screening was implemented. UwF-SLO using the flying baby technique with a mobile Optos platform was used with indirect ophthalmoscopy indicated for the discharge examinations, when lifting a baby was contraindicated and when there was doubt about interpreting images. All babies were dilated and imaged with lid speculums in place.

Results: Over the course of one year 323 examinations from 161 patients were carried out. 55 examinations were carried out using IDO only, 232 using UWF-SLO only and 36 using both methods. Patients had a mean birth weight of 875.14±329.79g, with a range of 440- 1930g.

Patients were born between 24- 33 weeks PMA and examined between 30- 54 weeks PMA.

During examinations, the IDO group and UWF-SLO group resulted in 1.79% and 0.43% suffering apnea, 1.79% and 0.43% with bradycardia, 5.36% and 3.90% has O2 desaturations, and 7.14% and 13.42% had tachycardia respectively.

In the UWF-SLO group Zone 1 was imaged in all eyes. In 67% of examinations a vascular front was visible, where an average of 4.89±3.28 clock hours were imaged. Examination duration averaged 173.76±107.74 seconds.

13 babies were treated with primary Avastin IVI based on UWF-SLO, of which, 2 went on to have secondary laser ablation. No babies received primary laser.

Conclusion: A mobile platform developed for UwF-SLO using the flying baby technique is able to safely detect treatment warranted ROP and reduce the reliance on indirect ophthalmoscopy

and associated disadvantages, whist allowing for the provision of telemedicine examinations.

Redesign of a tertiary centre paediatric inpatient referral pathway to paediatric ophthalmology

S Khan (T), H Jasim (T), A Dev-Borman (C)

Bristol Eye Hospital

Introduction:

The referral pathway to paediatric ophthalmology within a tertiary eye centre was fragmented lack of uniformity. Furthermore, the referrals all included different details and often missed patient identifiers, location and reason for referral. This limited the ability for the paediatric ophthalmology team to adequately triage referrals.

Aim:

To redesign, evaluate and standardise an tertiary centre referral pathway using a single modality for referral that permits dialogue between colleagues.

Methods:

The model for improvement was used to make small step-wise changes which were evaluated after each cycle. 4 PDSA cycles were constructed with the first cycle determining baseline activity including number of referrals and opinions on the current referral process. Cycle 2 reviewed the quality of referrals, cycle 3 focused on implementing a central email address and evaluation of this. Cycle 4 concentrated on guiding referrers towards the right pathway depending on the clinical condition and urgency of referral.

Results:

Over a 2-week period there were 38 referrals. The quality of the referrals was variable and satisfaction was low. Implementation of multiple small step-wise changes including guidance on referral e.g. what to include and who to refer accompanied by a direct email address was well recieved. Satisfaction increased significantly as did quality of the referrals from a average from 62.5% to 87.5%, p $p<0.01$.

Conclusions:

Re-design of the paediatric ophthalmology referral pathway has improved satisfaction from referrers with improved dialogue between colleagues without the need for further training in specific IT systems.

Assessment of an augmented reality low visual aid in children and young people with visual impairment

F Burgum (O), S Gosling (O), E Cottingham (O), L Bird (O), A Tandon (C), J Roehrig (RA), C Bartlett (o)

Sheffield Children's NHS Foundation

The Royal National Institute of Blind People (RNIB) calculate there to be 24,500 children and young people (CYP) in England with a moderate or severe visual impairment (VI). These children currently have access to traditional low vision aids such as magnifiers and binoculars. However these aids have limited functionality, as they are typically hand held or placed directly over text, making them unsuitable for activities such as learning a musical instrument or socialising with friends and family. There is a need for these children to have access to innovative low vision aids to improve

their independence, access to education and quality of life (QoL).

Aims

This study aims to assess the impact of a head-mounted augmented reality low vision aid (SightPlus) on vision and QoL in CYP aged 8-16 years with moderate or severe VI (6/18-3/60). This project follows a pilot study from 2017 and is the first in the UK to assess the functionality, usability and acceptability of SightPlus in a paediatric population.

Methods

This study has a longitudinal repeated-measures design, comprising two study visits and a four-week trial of SightPlus. The participants were asked to keep a home diary documenting their experiences of trialling SightPlus. Their clinical and functional vision was assessed both with and without the aid of the device and age appropriate

vision-related QoL questionnaires were completed at the beginning and end of the study period.

Results

Based on previous work the predictions for the study are that use of SightPlus will significantly improve clinical and functional measures of vision as well as vision-related QoL in those aged 8 – 16 years with moderate to severe VI.

Discussion

This study will provide a real insight into how children with VI wish to interact with innovative low vision aids and the effect they can have on their visual function and vision-related QoL.

Outcomes of eye screening in visually asymptomatic children with congenital hearing impairment

S Simpson (T), M Nassar (C), A Connor (C)

Royal Victoria Infirmary, Newcastle upon Tyne

Introduction

Ophthalmology review is currently recommended in every child with hearing impairment to promptly identify co-pathology. Published data suggests a high incidence of eye disorders in deaf children. Many of these children are visually symptomatic. There is, however, little data on the utility of screening visually asymptomatic children with hearing impairment.

Methods

This was a retrospective audit of all visually asymptomatic children with congenital hearing impairment referred for eye screening at the Newcastle upon Tyne Hospitals NHS Trust,

between August 2013 and February 2021. Screened children had undergone an assessment by an orthoptist and/or an ophthalmologist according to local protocols. Children who had an additional indication for screening or a clinical concern regarding the eye appearance, examination or visual development were excluded.

Results

113 children were diagnosed with congenital hearing impairment during the study period. 54 met the inclusion criteria; of which 41 attended screening. No unscreened children were re-referred at a later date.

The median age at screening was 7 months. In 37 children (90%) there were no abnormalities found. Of the 4 children with abnormalities, 3 were given glasses. Only 1 child found benefit from their glasses. 2 patients were registered as visually impaired. No other interventions were required.

Discussion

Although the published data suggests a high incidence of ocular disorders in all children with hearing impairment, the prevalence within visually asymptomatic children appears to be low. It may be suitable to reserve ophthalmology review for those children where there are specific concerns or co-pathology.

Utilising Virtual Clinics and Allied Health Care Professionals to aid COVID-19 recovery in Adult Strabismus services

J Francis (O), M Rhodes (O), J Choi (C)

Sheffield Teaching Hospitals NHS Foundation Trust

The Sheffield virtual adult strabismus service was put to real-time trial during the Covid-19 pandemic. We describe a multi-disciplinary adaptation to offer a safe and effective service delivery. We evaluate the efficacy of a virtual strabismus service during the pandemic to meet clinical demand, streamline patient care, balance care delivery and optimise medical input.

Prospective data analysis dated from January 2015. All information was captured at the first consultation of comprehensive specialist Orthoptic assessment and imaging; then reviewed by a strabismus consultant for clinical outcome. Management was discussed virtually with patients.

991 clinic-episodes occurred pre-Covid (January 2015 - March 2020), typically 16 slots monthly. 436 clinic-episodes were recorded during Covid (July 2020 - November 2021), on average 30 slots monthly. Clinical capacity increased 188% to meet demand. Records captured on single-consultant workflow were: 961/991 (97%) pre-Covid and 251/309 (81%) during Covid. Within 2 months of service re-opening, first-appointment mean waiting-time reduced below 18 weeks. Surgical listing rate after first visit increased from 0.1% to 24.7% during Covid. Face-to-face medical follow up for non-surgical cases reduced from 36.6% to 16.3%.

The pressure generated during the pandemic has propelled creative-mindset in developing an alternative care- model, with long-lasting benefit to the future NHS.

Virtual strabismus services offer flexible, safe and effective ways to meet fluctuating referral patterns and maximise limited resources.

Orthoptists are uniquely essential and highly-valued keyworkers to manage non-surgical strabismus. Utilising the skillsets of AHPs across the NHS is crucial to sustain ongoing clinical demand and patient care.

If presented elsewhere: Sheffield Medical School Research Day, 2021

Surgical Management of Limbal Epibulbar Dermoid Cysts

R Dodeja (CF), S Biswas (C)

Manchester Royal Eye Hospital

Introduction: To describe the surgical management of limbal epibulbar dermoid cysts and the outcomes of surgery.

Methods: Retrospective case note review

Results:

Lamellar corneal transplants for limbal epibulbar dermoids were performed for 7 children. The

median age was 6 years (range <1 year-8 years). The median donor age was 47 years (range 15-85 years). The graft was functional in 6 of the 7 transplants and 57% had vision of 0.1 or better.

Discussion:

In this presentation, we describe the technique for surgical management of limbal epibulbar dermoids. We report a functional graft in 85.7% of the transplants and visual outcomes of 0.1 or better in 57% of the grafts. This surgical method is effective in the management of children with this condition with good outcomes.

Significance:

We describe the successful surgical management of an uncommon condition

FRIDAY 30th September 2022

SESSION XIII Free Papers: 9 am – 10.10 am

Automated detection of plus disease in retinopathy of prematurity using deep learning

SK Wagner (T), Bart Liefers (RF), M Radia (T), G Zhang (RF), R Struyven (RF), L Faes (RF), J Than (T), S Balal (T), C Hennings (T), C Kilduff (T), P Pooprasert (FD), S Glinton (RF), M Arunakirinathan (F), J Ravelo (N), A Hinds (C), R Henderson (C), H Pate

Moorfields Eye Hospital NHS Foundation Trust, London

Retinopathy of prematurity (ROP) is typically diagnosed through interval screening by paediatric ophthalmologists yet there are concerns about the sustainability of such approaches. We therefore developed bespoke and code-free (CFDL) deep learning classifiers for detecting plus disease, a

hallmark of ROP, in an ethnically diverse population.

This study used 7414 optic disc-centred Retcam images from 1370 newborns admitted to Homerton University Hospital between 2008 and 2018. Images were graded by two junior ophthalmologists with disagreements adjudicated by a senior paediatric ophthalmologist. Multiclassification models (classes: plus, pre-plus and normal) were developed using bespoke and CFDL methods. Internal validation was on 200 images and external validation on 100 images from the US-based i-ROP study. Interrater agreement was assessed through intraclass correlation coefficient (ICC) and diagnostic accuracy through area under the curve (AUC).

Interrater ICC on internal test set was 0·977 (95% CI: 0·972-0·982) among all graders; consultant paediatric ophthalmologists demonstrated greater levels of agreement (0·961, 0·951-0·969) than trainees (0·801, 0·751-0·842). For discriminating

normal from abnormal, the bespoke and CFDL models both had an AUC of 0.992 (0.982-0.998) on internal testing. Both models generalised well to the external validation test set for the task (bespoke 1.00, 0.998-1, CFDL: 0.995, 0.981-1).

Both models conferred excellent performance for the task of discriminating normal from abnormal images and generalised well to an independent dataset outside the UK.

Our report justifies further validation of plus disease classifiers in ROP screening and supports a potential role for code-free approaches to help prevent sight impairment in vulnerable newborns.

Methadone and Opiate Exposed Infants: What are we not seeing?

J R MacKinnon (C), M Quinn (FD), E Day (O)

Raigmore Hospital, Inverness

Methadone has several adverse effects, including neonatal abstinence syndrome (NAS); and multiple visual consequences. Targeted visual screening of infants exposed to prescribed methadone and opiates of misuse was commenced in NHS Highland in 2015.

Between 2015 and 2020, targeted infants were offered visual screening at 6 months of age. Perinatal and visual outcome data was collected via electronic records.

83 infants were identified. After exclusion, 40 neonates: 19 males and 21 females. Average birth gestation was 35+6 weeks. Average birth weight was 2747g. 30 mothers were prescribed methadone during pregnancy, 2 mothers were

prescribed buprenorphine, and one was on Tramadol. 6 mothers used methadone alone. 34 mothers used multiple opiates during pregnancy plus additional substances. 16 (40%) neonates developed NAS which required treatment. Average age at first vision screening was 8 months. 2/40 (5%) had a retrospective diagnosis of presumed delayed visual maturation. 5/40 (12.5%) had horizontal nystagmus (including one with a family history) and 7/40 (17.5%) had a manifest squint. 11 infants (27.5%) were prescribed glasses within the study period. A further 7 infants with a refractive error were kept under review but not initially prescribed glasses. At least 5 infants (12.5%) received early intervention from Vision Support Services. 22/40 (55%) were fostered or in kinship care.

This real-world review concurs with previous findings of a concerning incidence of nystagmus (12.5%), squint (17.5%) and refractive error (27.5%). We recommend targeted visual screening

of infants exposed to opiates, due to the known benefit of early intervention in childhood visual impairment.

If presented elsewhere: Scottish Ophthalmology Club - Spring Meeting February 2022 - Poster

Initiation of an Orthoptic-led emergency eye care service within Eye Casualty for paediatric patients attending a tertiary referral centre.

R Bukhari (O), J William (C), R Lee (C), H Simpson (O)

UHCW NHS TRUST

Introduction

There is often no separate pathway for paediatric patients within general Eye Casualty. This new service within Eye Casualty has enabled a more streamlined, efficient and effective pathway for paediatric patients. This has had a significantly positive impact for the overall emergency eye care.

Method

All patients aged 16 and under from 12/02/20 were booked under a specific emergency paediatric code and triaged and assessed by a dedicated Orthoptic team. All findings, outcomes

and treatment plans were discussed and agreed with the senior Ophthalmologist working in Eye Casualty. Patient journey times and satisfaction levels within this new pathway were gathered and analysed pre and post change. Specific referral pathways were created for patients requiring further Paediatric Ophthalmology input.

Results

1791 paediatric patients were seen in the Orthoptic led emergency service during 12/02/20 to 26/10/21. 981 (55%) patients were discharged; 412 (23%) patients were referred to paediatric ophthalmology either routinely or semi-urgently; 133 (7%) patients were handed over to the senior ophthalmologist in Eye Casualty for urgent investigations on the day and 263 (15%) had further review in the Orthoptic-led emergency eye service.

Conclusion

Patients were assessed and treated in atimely manner by highly skilled Orthoptists used to dealing with children. 93% of the patients were directed away from general Eye Casualty thereby improving its overall efficiency. The senior Ophthalmologist working in Eye Casualty had oversight of all paediatric patients seen thus enabling a safe and workable process. With significant reduction in the patient time journey and improvement in patient satisfaction levels, the Orthoptic-led emergency eye care service for paediatric patients has had a positive impact for both patients and clinicians.

If presented elsewhere: Royal College of Ophthalmology Congress 2021

A Simplified Framework for Recording and Collecting Data on All Forms of Strabismus Surgery

S Dosanjh (MS), A Kennedy (CF), F Lengwiler (CF), S Rashid (O), N Tan (C), R Jolly (C), S Jain (C)

Royal Free London NHS Foundation Trust

Recording the outcome of strabismus surgery can provide surgeons with individual performance data whilst providing a resource for departmental audit and research. We present the framework for setting up a database on strabismus surgery with an overview of the challenges encountered and the solutions put in place.

We created a clinical database using REDCap, a secure web application. Pre-set data points were collected from patient records including age and sex of the patient, diagnosis, surgery performed, pre- and post-operative deviation and other relevant orthoptic and ophthalmic findings. These

were inputted using drop-down menus to prevent variation in data entry.

We sought ethics approval from our NHS hospital trust's research and development department to collect, analyse and publish this data with stringent confidentiality guidelines. Specific consent forms and patient information leaflets were created. A data committee was formed, responsible for the secure storage of data and any subsequent research project applications.

To date, we have collected data on over 900 strabismus operations. Several projects have already been approved by the database committee and have been completed, presented, and published or are ongoing.

The creation of a surgical strabismus database has greatly improved our department's ability to audit, analyse and publish surgical outcomes as well as giving our surgeons a tool to monitor their outcomes. The data points required to answer

specific clinical, or research questions are easily and efficiently extracted from the database.

Creating a strabismus surgical database can greatly improve a department's ability to audit results and answer research questions.

TINU in the COVID era

R Dodeja (CF), S Syed (T), S Pockar (C), V Sharma (C), J Ashworth (C)

Manchester Royal Eye Hospital

Introduction

Tubulointerstitial nephritis and uveitis (TINU) accounts for approximately 1-2% of uveitis in tertiary referral centers. (1) The syndrome is believed to have female predominance (3:1) and a median age of onset of 15 years. In most cases, TINU appears to be an idiopathic immune mediated process, but it may be precipitated by drugs or infections. The clinical criteria for the diagnosis of TINU include abnormal serum renal function, abnormal urine analysis and systemic illness lasting >2 weeks (fever, weight loss, anorexia, malaise, fatigue, rash, abdominal pain, arthralgia or myalgia with laboratory findings of anaemia, eosinophilia, abnormal liver function or ESR >40mm/hr). (2) It has been shown that in 70%

of patients with TINU, systemic corticosteroids are not sufficient in the prevention of recurrences. (3) Immunomodulators, including Methotrexate (MTX), Azathioprine (AZA) or Mycophenolate Mofetil (MMF) are used for refractory disease and recurrences. (4)

We describe a case series of children with TINU- their characteristics, management and outcomes- in a Tertiary Centre. We postulate that the incidence, recovery time and need for immunosuppression has been affected by the COVID-19 pandemic.

Results

Our series includes 6 children between the ages of 8 and 16 diagnosed with TINU between 08.2020 and 08.2021. Of these children, 3 were female and 3 were male. The onset of symptoms was with ophthalmic presentation in 2 children while the rest were identified to have uveitis on screening as requested by the Renal team. All children had

elevated creatinine levels and had renal biopsy confirmed tubulointerstitial nephritis. COVID antibody positivity was noted in 2 of these children and one of them was COVID+ at the start of their symptoms. All children were initially started on Oral Prednisolone and topical steroids. They then required systemic immunomodulatory therapy with Mycophenolate Mofetil. All children were managed jointly with the paediatric nephrology team. All children are still being monitored.

Discussion

TINU is a rare and poorly studied entity. We suspect that there is an increased incidence of TINU in the time of the COVID-19 pandemic and that the children have more active disease requiring longer term immunosuppression and monitoring.

Significance/ Conclusion

We describe an increased incidence of TINU in children during the COVID-19 pandemic. These

children require immunosuppressive therapy and long-term monitoring.

FRIDAY 30th September 2022

SESSION XV Rapid Fire Free Papers: 12.00 pm – 12.55 pm

Thyroid Eye Disease in Children

S Goyal (FD), D Rathod (C), D Morris (C), A Haridas (C), P Watts (C)

Cardiff & Vale University Health Board

Thyroid eye Disease (TED) is an immune mediated inflammatory orbitopathy associated with thyroid dysfunction. Graves Disease is rare in paediatric population and TED is typically milder and less common in children compared with TED in adults. We present 3 cases of paediatric moderate to severe TED associated with Graves disease.

Retrospective case review of notes. Data was collected on the age of presentation, gender, presenting features, treatment, follow up and outcome.

All cases were female with age range of 5-13 years at time of diagnosis. Common presenting signs in all cases were mild discomfort, redness and proptosis. One case excluded an orbital mass causing the proptosis on MRI.

All cases were treated with topical lubricants and 2 patients with oral selenium. With regards to proptosis, one case was managed conservatively, the second case required oral steroids and the third case required IV Methyl Prednisolone, bilateral orbital decompression, bilateral upper lid surgery for lid retraction and later Right eye tarsorrhaphy. She also required home schooling due to bullying.

In our case series all patients had good outcome with maintenance of visual function, though one case required multiple surgical procedures.

Literature suggests clinical manifestations of TED in children are mild and respond to conservative management, however our cases required intervention. This should raise awareness in both ophthalmologists and paediatricians regarding importance of regular follow up and need of intervention in severe cases. In addition, it is important consider how advanced proptosis can have a negative impact on schooling of children.

Disappearance of the skin crease on forced duction test as a peroperative sign of successful lower eyelid retractors recession

H Tagelden (CF), B Sim (CF), R Harrad (C)

Bristol Eye Hospital

A 22-year-old female was diagnosed with left double elevator palsy at birth. At the age of 4 months, she had 45Δ R/L. She underwent an inferior rectus recession (IRRc) of 10mm with a good outcome. Her vertical deviation gradually recurred until at aged 18 it measured 50Δ R/L and she underwent further IRRc of 10mm which improved her vertical strabismus but despite recession of the lower lid (LL) retractors left her with a noticeable left (LL) retraction of 2mm.

The LL retraction was successfully managed with retractor recession in combination with a buccal mucosal graft.

On examination there was a pronounced lower lid skin crease and a very deep lower fornix. Performing a forced duction test (FDT) to depress the globe under anaesthetic, worsened the LL retraction and deepened the LL skin crease. We found that the skin crease was no longer visible on FDT after maximal recession of the LL retractors prior to the buccal mucosa graft and this correlated with improvement in lid height. We believe that this is a useful sign for determining success during LL retractor recession.

LL retraction is a significant complication of IRRc. Successful LL retractor recession can be predicted by disappearance of the LL skin crease on forced duction. To our knowledge, this is an original observation, which we believe would be useful in approaching future cases.

Assessing the ability of paediatric contrast sensitivity tests to detect changes

A O'Connor (L), P Amores Morillo (o), A Milling (L)

University of Liverpool

Testing options for assessing contrast sensitivity (CS) in infants are limited. The Hiding Heidi test has six contrast levels so may not be sufficient to detect subtle changes in visual function but the new Double Happy test has comparable step sizes to the Pelli Robson. Therefore, this study aimed to compare contrast thresholds from Heidi Hiding and the Double Happy test to the Pelli Robson test in conditions designed to simulate a loss of visual function.

CS was measured in four conditions, bright (normal lighting), bright and defocused (with glasses to blur vision), dim lighting and dim and defocused. Tests were performed on the weaker eye with participants wearing their habitual correction. The order of the conditions was

constant (progressing from poorest vision to best) but the test order within conditions was varied.

50 adults were assessed. A significant positive correlation was found between PR and both paediatric tests, with a higher Pearson correlation for the Double Happy ($r = 0.47$) than Hiding Heidi ($r = 0.33$) which had a ceiling effect, where 94% of participants reached the maximum score. CS reduced on all tests in all conditions but the Double Happy results were more comparable to the Pelli Robson, under dim conditions the reduction was 0.21logCS for both the Pelli Robson and Double Happy but only 0.04logCS for Hiding Heidi.

These results show the Double Happy test has better agreement with Pelli Robson and is better at detecting changes in CS than Hiding Heidi.

A Systematic Review of Clinical Practice Guidelines for Strabismus

D Newsham (SL), C Murray (L)

University of Liverpool

Background: The World Health Organisation's (WHO) report on vision recommendations, included the development of a Package of Eye Care Interventions (PECI) to facilitate the integration of eye care into Universal Health Coverage. The identification of evidence-based eye care interventions from relevant clinical practice guidelines (CPGs) is a critical step in the development of the WHO's package of interventions.

Purpose: To systematically review and critically appraise CPGs and summarise the recommendations for strabismus.

Methods: CPGs published related to strabismus between 2010 and 2020 were reviewed,

evaluated, and selected using nine items from the Appraisal of Guidelines for Research and Evaluation (AGREE) II tool. CPGs with an average score for items 4, 7, 8, 12, or 22 below 3 and/or a sum of the two researchers' average score for all nine items less than 45 were excluded. Two authors independently extracted and validated the data using standardised forms.

Results: A total of 45 potential CPG's were identified following a systematic literature search. Application of the AGREE II tool excluded all but 5 CPG's due to failure to meet the required criteria and score. Valid and robust CPG's in the field of strabismus were identified in the areas of paediatric eye and vision examination, vision screening, treatment for Graves' orbitopathy and use of fibrin glue for conjunctival closure in strabismus surgery.

Conclusion: There is a lack of high quality CPG’s in the area of strabismus management with many

failing to meet basic criteria which ensures their independence and lack of bias.

If presented elsewhere: The paper will be presented at the IOA virtual congress 2022, but expect a different audience at BIPOSA

What do patients report after strabismus surgery undertaken for psychosocial reasons?

GE Arblaster (L), D Buckley (SL), H Davis (P), S Barnes (SL)

University of Sheffield

Strabismus surgery undertaken for psychosocial reasons aims to align the eyes into a straighter position and improve quality of life. This study explored patient experiences of their outcomes from strabismus surgery performed for psychosocial reasons.

A qualitative study using semi-structured interviews was conducted with adults (n=13) who had undergone surgery 4.5-20 months earlier. Patients were asked what they felt had changed (improved or worsened) or not changed for them following strabismus surgery. Interviews were recorded, transcribed and a coding framework was developed. The data were analysed thematically using the principles of grounded theory.

All patients underwent strabismus surgery for psychosocial reasons, none had diplopia or binocular single vision pre or post-operatively. Four themes emerged from the data: improvements in vision; task performance; physical symptoms and confidence. Perceived visual improvements included peripheral vision, focussing, using their eyes together or using their strabismic eye more, eye movements, greater strabismus control and needing to close their strabismic eye less. Perceived task performance improvements included driving, using screen devices, work ability, balance, reading and near activities. Patients described improvements in physical symptoms including less ocular pain or discomfort, less eye strain or tightness, fewer headaches and less ocular tiredness or need to take rest breaks.

Despite strabismus surgery being undertaken for psychosocial reasons, many adult patients perceived their vision, task performance or

physical symptoms improved following surgery. These factors were in addition to perceived improvements in confidence and self-perception, which are typically expected in this patient group.

If presented elsewhere: International Orthoptic Congress 2022

Investigating the outcomes of adult strabismus surgery undertaken for psychosocial reasons

GE Arblaster (L), H Davis (P), D Buckley (SL), S Barnes (SL)

University of Sheffield

In the absence of binocular single vision and diplopia, strabismus surgery can be undertaken for psychosocial reasons, to improve eye alignment and health related quality of life (HRQoL). This study investigated whether adults undergoing strabismus surgery for psychosocial reasons could achieve outcomes from surgery, in addition to improved eye alignment and HRQoL.

Adults with strabismus who had elected to undergo strabismus surgery for psychosocial reasons (surgery group) and adults with strabismus who were not seeking surgery (control group) were recruited prospectively. All participants underwent a range of measures of their vision, task performance, physical symptoms and

confidence and emotions, before and after surgery. Objective measures and patient reported outcome measures (PROMs) were used.

Compared to the control group (n=15), the surgery group (n=12) had objective evidence of improved vision (binocular summation at 100% contrast, coarse stereotest (CST) performance) and improved task performance (time to perform two different screen based tasks) postoperatively. Most other measures of vision and task performance were unchanged. Some worsening of task performance postoperatively was measured (bead threading and grooved pegboard). Subjective improvements were also reported in vision, task performance, physical symptoms and confidence and emotions, using PROMs.

Strabismus surgery undertaken for psychosocial reasons in adults can lead to some objective improvements in vision and task performance and subjective improvements in vision, task performance, physical symptoms and confidence

and emotions. These improvements were in addition to the expected outcomes of improved eye alignment and improved HRQoL.

If presented elsewhere: International Orthoptic Congress 2022

Effect of Bimedial Recession on Near Distance Disparity in Esotropia

A Kennedy (CF), F Lengwiler (CF), S Dosanjh (MS), R Jolly (C), S Jain (C)

Royal Free London NHS Foundation Trust, London

Esotropia may be associated with a difference in the deviation at near and distance fixation termed Near-distance disparity (NDD). Convention suggests patients with NDD may benefit more from bilateral medial rectus recessions (BMR) as opposed to a unilateral recession/resection (RR).

The aim of this study is to establish the effect of BMR for treatment of esotropia on both the near and distance deviation and NDD.

Retrospective patient records search from 2011-2021.

Inclusion criteria: comitant esotropia, first surgery, equal and normal vision with free alternation.

Exclusion criteria: incomitant, neurological or restrictive strabismus, previous surgery, clinically significant amblyopia.

49 patients met the inclusion criteria. 19 patients were female; the average age was 17 years.

Following surgery, the average near deviation reduced from 39PD base out (BO) to 11PD BO. The average distance deviation reduced from 33PD to 9PD. NDD resolved in 15 out of 18 patients with NDD (83%). The average PD gain per mm of recession was 2.7 for near and 2.2 for distance.

BMR is an effective surgical treatment for esotropia and has a greater effect on near deviation than distance. It is also effective at reducing NDD.

BMR has several advantages over RR: No tissue loss, readily reversible, the scars are easier to hide and it avoids potential motility limitations due to leash effects following resection.

BMR is an effective operation for the treatment of esotropia and reduction in NDD which is considered significant if the near deviation measures 10 prism diopters (PD) more than the distance deviation

If presented elsewhere: AAPOS 2022

EPOSTERS

Screen One

Screen number: one wed 1.20 pm - 1.30 pm

Ophthalmic signs in propionic acidemia: A systematic review of reported cases

H Hussain (FD), A Javed (T)

Queen's Medical Centre, Nottingham

Propionic acidemia is a rare metabolic disorder with an incidence of 1 in 100000 and is characterised by a deficiency in the enzyme propionyl-coA carboxylase. It is usually diagnosed in the neonatal period however complications such as coma, seizures and hypotonia can present later on in life. One of these complications is optic neuropathy, although extremely rare and not commonly reported. This systematic review aims to evaluate the literature surrounding reported

cases of optic neuropathy in propionic acidemia patients and to discuss one further case of a 12 year old male child.

The databases which were searched included; PubMed, EMBASE and Medline, including reference lists of relevant articles. No grey literature was included. Data was extracted and analysed by two authors. The search terms used were: (propionic acidemia* OR propionic aciduria) AND (Ophthalm* OR eye OR optic).

A qualitative synthesis was carried out utilising 8 published papers reporting a total of 27 cases. The age range was from 2 - 21 years old. Out of all the patients 22% were female. 24/27 cases demonstrated a degree of optic atrophy. One of the cases uniquely reported glaucomatous optic atrophy. Retinal cone dysfunction was discussed in 1 study similarly to ours. The most common fundoscopic finding was optic disc pallor in keeping with optic atrophy. It appears males are

more commonly affected than females. Vision stabilised in one of the cases.

Optic atrophy is a very disabling complication of propionic acidemias. We recommend ophthalmic assessment for all patients diagnosed with orgnanic acidemias.

Screen number: one wed 1.30 pm - 1.40 pm

Cerebral malaria: insight into pathology from optical coherence tomography

Z Tu (L), J Gormley (C), V Sheth (L), K B Seydel (P), T Taylor (P), N Beare (C), V Barrera (L), F A Proudlock (SL), C Manda (C), S Harding (P), I Gottlob (P)

University of Leicester

We aimed to investigate structural retinal changes in malarial retinopathy (MR) using hand-held optical coherence tomography (HH-OCT) to assess its diagnostic potential.

Children with MR (n = 43) underwent ophthalmoscopy, fluorescein angiography and HH-OCT during admission, 1-month (n = 31) and 1-year (n = 8) post-discharge. Controls were comatose patients without malaria (n = 6) and age/sex-matched healthy children (n = 43). OCT changes and retinal layer thicknesses were compared.

On HH-OCT, hyper-reflective areas (HRAs) were seen in the inner retina of 81% of MR patients, corresponding to ischaemic retinal whitening on fundus photography. Cotton wool spots were present in 37% and abnormal hyper-reflective dots, co-localised to capillary plexus, in 93%. Hyper-reflective vessel walls were present in 84%, and intra-retinal cysts in 9%. Vascular changes and cysts resolved within 48 h. HRAs developed into retinal thinning at 1 month ($p = 0.027$) which was more pronounced after 1 year ($p = 0.009$).

Ischaemic retinal whitening is located within inner retinal layers, distinguishing it from cotton wool spots. Vascular hyper-reflectivity may represent the sequestration of parasitised erythrocytes in vessels, a key CM feature. The mechanisms of post-ischaemic retinal atrophy and cerebral atrophy with cognitive impairment may be similar in CM survivors. HH-OCT has the potential for monitoring patients, treatment response and predicting neurological deficits.

Screen number: one wed 16.15 pm - 16.25 pm

Ocular Firework Injuries in Children during COVID-19 Pandemic

Dr EWJ Pritchard (T), Mr D Armstrong (C), Mr S Dowlut (C), Miss K Shirley (C), Miss O McNally (C), Miss S George (C), Mr M O'Gallagher (C), Miss E McLoone (C)

Royal Victoria Hospital, Belfast

Fireworks have long been reported to cause eye injury and affected patients are typically young and male, with an estimated one in six cases leading to serious visual impairment. A noticeable spike in paediatric ocular firework injuries occurred during the covid pandemic in our unit.

We performed a case note review of children presenting with ocular injuries secondary to fireworks over four years, from Jan 2018 to

Jan 2022. We collected demographic data and information on presenting clinical features, associated injuries and visual outcomes.

Ten children presented to eye casualty with firework related injuries, 5 in 2020 and 5 in 2021 compared to zero in the two preceding years. Most cases were male n=9 (90%), two bilateral and eight with unilateral involvement. The most common presenting clinical features were facial burns, corneal abrasion, hyphaema and vitreous haemorrhage. Three children required surgery, one an EUA for thorough assessment, second a retinal detachment repair and thirdly an amniotic membrane graft for persisting epithelial defect. Another child sustained a significant choroidal rupture. In the majority, visual acuity returned to near normal 0.0 to 0.2 LogMAR (6/6 to 6/9 Snellen), however, two children were left with permanent vision

loss in the affected eye with acuity of count fingers and 0.975 (6/60) respectively.

Our review shows a worrying spike in ocular injuries from fireworks during the COVID-19 pandemic with two children sustaining permanent vision loss.

We recommend renewed public safety advice and strict non-sale of fireworks to under 18-year-olds to help prevent future injuries.

Screen number: one Thursday 1.20 pm - 1.30 pm

Case series of young children with high myopia seen at Great Ormond Street Hospital: assessment and aetiology

K M Williams (T, CL), D Thompson (o), B Walters (O), L Speedwell (Op), B Gomez (o), E Hay (C), I C Lloyd (P), R Henderson (C)

Great Ormond Street Hospital

Introduction

In the infant presenting with high myopia, underlying syndromes such as Sticklers or an inherited retinal dystrophy may be present, or the child may just have a genetic predisposition to a highly myopic refractive error. The assessment of infants and young children has limitations and here we present our experience in the assessment, utility of further investigation and aetiology in such children.

Methods

We performed a retrospective review of children seen at Great Ormond Street Hospital with high myopia. Appropriate search terms were used to identify patients from medical records (EPIC Corp.). We limited our search to those 5 years of age or younger. We excluded those developing myopia following lensectomy in infancy. Presenting features, ophthalmic findings including imaging and family history were noted. Further investigations such electrodiagnostic tests and genetic testing were also reviewed.

Results

We identified 40 children with a median age of 2.3 years and a youngest age of 10 months. There was a male predominance (73% male). Mean spherical equivalent in the cohort was -13.3 D (standard deviation 4.7). In total 20 children had electrodiagnostic testing which was abnormal in 9. Reported abnormalities included cone dysfunction

and rod-cone dystrophy. Four children had myopia secondary to retinopathy of prematurity and three children had abnormalities of the anterior segment. Eleven children underwent genetic testing including two who were diagnosed with Sticklers.

Conclusion

In this case series of tertiary referrals for high myopia we identified inherited retinal disease in 25%. We will discuss considerations in the assessment of these children.

Screen number: one Thursday 16.15 pm - 16.25 pm

Paediatric Ocular Myasthenia Gravis: a Case Report and Learning Points

S Cowen (T), F Kerekes, D Burdon, J Gallichan et al 2, A Mount1, L Dujardin1

Royal Eye Infirmary, Plymouth

We present a case report of an adolescent girl with paediatric Myasthenia Gravis (MG) with isolated ocular symptoms and explore its learning points.

Introduction: Paediatric MG is a rare condition with an incidence of 1-5 cases per million person years characterised by fatigable weakness of skeletal muscles. Ocular Myasthenia Gravis (OMG) makes up to 10-35% of all paediatric MG cases, and the most common presenting symptom is ptosis (95%),

followed by strabismus (76% - most commonly an exodeviation). 0.81% of all paediatric ptosis patients have MG.

Case Report: A 13yo girl with Austistic Spectrum Disorder (ASD) presented with double vision and a sudden left eye divergence noticed by mum. She had a history of exophoria with anisometropia in childhood. She was initially diagnosed with a left exotropia in another hospital while on holiday, but then presented for follow-up to us with a right exotropia, bilateral restrictions of adduction, restriction of right eye depression and right upper lid ptosis. Upon identifying a fatigable right ptosis, the diagnosis of OMG was included in the differential. An urgent MRI head was normal and anti-acetylcholine receptor antibodies were found to be positive. 14 weeks lapsed from onset of symptoms to diagnosis. Her droopy eyelid and diplopia have

significantly improved with pyridostigmine therapy at 4 weeks review. She remains free of systemic features.

Conclusions and Learning Points: Although paediatric OMG is rare, it should be considered particularly in patients with variable or intermittent strabismus (particularly divergent) and/or non-congenital ptosis.

Screen number: one Friday 1.20 pm - 1.30 pm

Bilateral Optic Disc Swelling and Anterior Uveitis post Covid-19 Infection

R S Choudhury (T), M Chihaia (SAS), C S Marsh (C)

University Hospitals Dorset NHS Foundation Trust, Bournemouth

Seven year old child admitted to hospital after four days of fever, reduced appetite and vomiting, as well as neck stiffness and rash on cheek one month following Covid-19 infection. The child was diagnosed with Paediatric Multisystem Inflammatory Syndrome (PIMS-TS) and treated with 3 days of intravenous methylprednisolone, intravenous immunoglobulin and oral aspirin. Soon after he started to develop headaches, back pain and persistent blurring of vision in both eyes.

On examination, the child was noted to have mild bilateral anterior uveitis and bilaterally swollen optic discs. Best corrected visual acuity (pinhole)

was 6/9 in the right eye and 6/12 in the left eye. There was no relative afferent pupillary defect, and eye movements were full with no pain or diplopia. Ishihara colour vision testing also showed no abnormality.

Topical steroid (Maxidex) drops were started at four times a day in each eye. MRI brain and spine showed no significant abnormality. Lumbar puncture showed a normal opening pressure and slightly elevated CSF protein level. CSF culture and viral panel returned negative.

On review three weeks after commencing topical steroid (three days post lumbar puncture), optic discs appeared normal and the uveitis had also resolved. Best corrected visual acuity had improved to 6/7.5 in the right eye and 6/6 in the left respectively. Glasses were issued and steroid drops gradually tapered off.

Anterior uveitis and disc swelling may present in children post Covid-19 infection. Currently there is

little in the literature regarding this, although anecdotally this is not an isolated case.

Screen number: one Friday 1.30 pm - 1.40 pm

A Case Report of a Child with Harlequin Syndrome and Nance Horan Syndrome

H Breen (T), E McLoone (C), J Jackson (P)

Royal Victoria Hospital, Belfast

Harlequin Syndrome describes unilateral absence of vasomotor and sudomotor skin innervation causing episodic contralateral sympathetic hyperstimulation resulting in striking hemifacial vasodilatation and diaphoresis with an abrupt midline demarcation. Investigation of the sympathetic chain is required to exclude causative pathology. Nance Horan Syndrome is a rare X-linked genetic disorder causing congenital cataract, facial/dental anomalies and variable intellectual disability. Females typically display a less severe phenotype and can be asymptomatic carriers.

Our patient was initially referred to us in 2018 due to her maternal family history of congenital cataract. She was found to have a visually significant left cataract and a mild cataract in her right eye.

She underwent left lensectomy aged two months old and remained under review for aphakic contact lens correction, monitoring of her right lens opacity and later for the development of a small left esotropia with manifest nystagmus. Her right lens opacity required lensectomy at two years old. She developed a right esotropia and underwent successful patching to treat left amblyopia. At two years old her mother reported episodes of hemifacial flushing related to emotion or exercise. Her neuroimaging was normal and she was diagnosed with Idiopathic Harlequin Syndrome. Genetic testing confirmed Nance Horan Syndrome as the likely unifying diagnosis of her and her mother's congenital cataracts.

These two conditions are so rare that incidence and prevalence cannot be estimated from the published literature. To have two rare and, seemingly, unrelated syndromes such as these sets this young lady apart as truly one of a kind.

EPOSTERS

Screen Two

Screen number: two wed 1.20 pm - 1.30 pm

Retinopathy of Prematurity in Extreme Prematurity: a 10-Year Review

V Yeo (T), P Watts (C)

University Hospital Wales, Cardiff

INTRODUCTION: This study aims to determine the incidence, severity and treatment for ROP among extremely premature neonates (EPN)(GA<28 weeks) as a cohort over a 10-year period at a Welsh tertiary centre.

METHODS: Records of all EPNs screened from 2009-2018 were identified. Neonates were divided into two groups: GA ≤25+6 weeks (Group 1) and >25+6 weeks but less than 28 weeks (Group 2). In addition, they were divided into BW<900grams (Group A) and ≥900grams (Group B). The

incidence, severity and treatment rates were compared between the groups.

RESULTS: A total of 217 EPNs were included in this study. Group 1 consist of 86 neonates and in Group 2, 131 neonates. The incidence of ROP was 94.2%(81/86) in Group 1 compared to 73.3%(96/131) in Group 2 ($p<0.05$;OR=5.91). In terms of BW, there were 132 neonates in Group A and 85 in Group B. The incidence of ROP was 91.6%(121/132) in Group A and 65.9%(56/85) in Group B ($p<0.05$;OR=5.22). Among neonates with Stage III ROP, 70.9%(61/86) were of Group 1, whereas 38.9%(51/131) of Group 2 ($p<0.05$;OR=3.83). In terms of BW, it was 65.9%(87/132) and 29.4%(25/85) in Groups A and B respectively ($p<0.05$;OR=4.64). Treatment rate was 53%(44/86) in Group 1 compared to 21%(28/131) in Group 2 ($p<0.05$;OR=3.85), and 47.7%(63/132) and 11.8%(10/85) in Groups A and B respectively ($p<0.05$;OR=6.85).

CONCLUSION: EPNs with GA<26 weeks OR BW<900grams have a 50% risk of requiring treatment. BW is a higher risk factor for severe disease and overall treatment rate, when compared to GA.

If presented elsewhere: Welsh Ophthalmic Forum, 2019

Screen number: two wed 1.30 pm - 1.40 pm

A Case of Pontine Tegmental Cap Dysplasia: From presentation to neurotization and the unique role of the vestibulo-ocular reflex

K Curtin (T), I Flitcroft (P)

Children's Health Ireland at Temple Street, Dublin

Pontine Tegmental Cap Dysplasia (PTCD) is a recently described, rare disorder characterised by peculiar cerebellar and brainstem malformation and a constellation of clinical signs. Reports have shown variable involvement of the vestibulocochlear, trigeminal, facial and glossopharyngeal nerves. We present a novel case of PTCD including presentation, management and VOR findings.

A 3-month old baby presented to the eye emergency department with bilateral, large corneal epithelial defects. Orbicularis function was reduced and corneal sensitivity was completely

absent. Her past medical history was significant for developmental delay, hypotonia and profound bilateral sensorineural hearing loss. We suspected congenital corneal anaesthesia causing neurotrophic keratopathy and commenced treatment accordingly. Subsequent MDM discussion along with radiological evidence yielded a diagnosis of PTCD.

Her clinical course over the following two and a half years was complicated by persistent epithelial breakdown and left corneal ulceration resulting in left corneal opacity. Management included topical therapy (insulin, serum, steroid), punctual occlusion, bandage contact lenses, ETDA chelation and patching. Corneal Neurotization is pending.

She was also referred to the Cochlear Implant programme but her workup for candidacy was hindered by a radiologically absent cochlear nerve. The unique discovery of a very abnormal pattern of VOR allowed us to confirm at least some function in the 8th cranial nerve. This clinical sign,

if present, is useful as it supports cochlear implantation where controversy exists in cases of apparent cochlear nerve aplasia.

This case highlights the Ophthalmologist's pivotal role in the diagnosis, clinical decision making and prevention of visual impairment in PTCD

Screen number: two Thursday 1.20 pm - 1.30 pm

Using a curved locking forceps for rectus muscle fixation during the delivery of botulism toxin in paediatric cases

DCM Yeo (C), G Collins (o), W Jones (o)

Alder Hey Children's NHS Foundation Trust

Botulinum toxin injections are more difficult to perform in paediatric cases compared to adult cases. The options are either an open sky technique under general anaesthesia (GA), a closed sky technique under GA or one done under ketamine anaesthesia in order to maintain the electromyography(EMG) signal.

An open sky technique is generally felt to be too invasive for botulinum therapy. The closed sky technique is not standardised among surgeons and additionally, ketamine anaesthesia is known to be associated with hallucinations and nightmares. Complications include ptosis and subconjunctival

haemorrhage irrespective of EMG use. There are variable results among centres possibly due to varying techniques.

We would like to demonstrate here the use of a custom made curved locking forceps that fixates the target muscle via a transconjunctival closed sky approach. This forceps was designed specifically for paediatric botulinum injections and enables the surgeon to lock and fixate the target muscle with either hand. This allows for the needle to be safely passed while the eye is in a stable position thus minimising the risk of the drug entering the wrong space. Additionally, due to specially designed bulbous tips, there is a reduced risk of conjunctival tear or haemorrhage. This technique also allows for the omission of ketamine and EMG.

In summary, we demonstrate a novel custom made curved locking forceps that can fixate a rectus muscle via a transconjunctival closed sky approach. Standardising the surgical technique will

minimise the variation in complications and outcomes of paediatric botulinum cases.

Conflict of interest if any: the forceps being shown has been co-designed by the primary author

Screen number: two Thursday 1.30 pm - 1.40 pm

Outcomes of eye screening in NF1 children

N ElMeshad (CF), V Choleva (C)

Bristol Eye Hospital

Introduction

Assess if local eye screening of NF1 children meets national practice standards.

Methods

This is a retrospective study of NF1 children in Bristol Eye Hospital in 2018 - 2020 and it was designed as an audit. Audit criteria included that all children receive annual eye examination until the age of 7 years and undergo testing of visual acuity, pupillary reflexes, optic disc, colour vision and visual fields. We also investigated the age at

diagnosis, at first and last eye examination, MRI, family history, genetic testing, ocular findings, systemic features, number of visits. Data were collected from clinical notes.

Results

24 patients were included, 19/24 with clinical diagnosis and 5/24 with clinical and genetic diagnosis. Mean age at diagnosis was 3.5 (0-12 years), mean age at first eye examination 3.72 (10 months to 11 years) and mean age at last examination 8.9 (1-17 years). Mean length of follow up was 6.8 (0-11 years). Only 10 had family history of NF1. 13 had genetic testing and 5 had pathogenic mutation. At first eye examination 10 children were not able to perform uniocular visual testing due to young age and 2 had ocular pathway gliomas (OPG) related optic nerve abnormalities. Mean

number of examinations per patient was 11.38 (1- 41) with numerous DNAs.

Conclusion

NF1 eye screening was useful in identifying 3 cases of OPG. Comprehensive ophthalmology assessment in children at risk of NF1 is a valuable tool that can contribute to early diagnosis of OPG.

If presented elsewhere: BEH audit meeting

Screen number: two Thursday 16.15 pm - 16.25 pm

Psychological and functional outcomes of horizontal squint surgery in adults with no pre-operative diplopia using Quality-of-Life Questionnaire (AS-20) AS-20

N Meshad, H Soliman, S Amarakoon, A Ahmad, S Hunt, R Ford, R Harrad, V Choleva

Bristol Eye Hospital

Introduction

Corrective squint surgery has a significant psychological benefit, affecting both the quality of life and mental health of patients. However some CCGs in England have decided to no longer fund strabismus surgery in adults who do not suffer from diplopia. This study investigated the psychological and functional outcomes of squint surgery in adults having

horizontal strabismus with no preoperative diplopia.

Method

The study is a retrospective cohort study on patients with uncomplicated horizontal squint without diplopia who underwent squint surgery in Bristol Eye Hospital. Orthoptic assessments 'pre-operatively', and at 1 month and 3 months after surgery, as well as perioperative details were recorded. All patients completed QOL AS-20 questionnaires before, and 3 months after, surgery.

Results

28 adult patients who met the inclusion criteria were identified over a period of 1 year. The overall success of squint surgery, determined as within 10 prism dioptres of orthophoria, was 67.5%. The median QOL AS-

20 questionnaire overall score using paired Wilcoxon signed test-Rank T test improved from 28.125 to 88.75(P value<0.00001), functional subscale from 46.25 to 87.5 (P value<0.00001) and psychological subscale from 15 to 90 (P value<0.00001).

Conclusion

Squint surgery in non-diplopic adults with horizontal squint surgery is safe and effective at addressing ocular deviation. This patient-focused service evaluation demonstrates the substantial psychosocial benefits of such surgery, as evidenced through quality-of-life assessments. Strabismus surgery should be regarded as restorative of normal anatomy from a pathological state rather than a cosmetic procedure.

If presented elsewhere: Bristol Eye Hospital Governance audit meeting 2021

Screen number: two Friday 1.20 pm - 1.30 pm

Exposure keratopathy in Crisponi Syndrome

J Zhang (MS), R Sarsam (MS), H Bunting (C), V Sana (C), Y Liu ©

King's College Hospital, London

A 3-year-old boy was hospitalised for severe systemic complications due to Crisponi Syndrome.

On examination, decreased blink rate, incomplete eye closure and no proptosis were observed. The left eye presented with a crescent of severe perilimbal thinning in inferotemporal cornea with an infiltrate spanning 2.5 clock hours and a descemetocele; Seidel test was negative. The right eye presented with inferior superficial punctate epithelial erosions and old superotemporal subepithelial scars.

Empirical antibiotics were initiated: hourly preservative-free levofloxacin drops, 2-hourly cefuroxime 5% drops and twice-daily

chloramphenicol ointment for the left eye. Four-times-daily Xailin night lubricating ointment was prescribed for the right eye. A paediatrics eye shield was to be worn all the time.

On Day 2, the peripheral ulcerative area responded to treatment with less thinning. On Day 3, conjunctival swabs from the inferior fornix confirmed Pseudomonas growth sensitive to levofloxacin. The left eye showed healing microbial keratitis with smaller epithelial defects and infiltrate, decreased conjunctival injection, and improved inferotemporal thinning. On day 11, both eyes appeared white. The patient looked comfortable, not eye rubbing or squeezing. The left eye showed an inferior area of scarring and heaped epithelium, approximately three clock hours by 1mm. There was minimal infiltrate less than one clock hour and 20-30% thinning with a minimal 0.5mmx3mm epithelial defect. Seidel test was negative. The anterior chamber was deep and quiet.

We presented a case with bilateral exposure keratopathy due to dystonic orbicularis oculi muscle movements in Crisponi Syndrome. Prophylactic lubricants and ophthalmology consultations are recommended for these patients.

Screen number: two Friday 1.30 pm - 1.40 pm

Evaluating the sensitivity and specificity of picture visual acuity tests compared to letter visual acuity test for identifying reduced vision

L Jones (O), A O'Connor (SL), A Chandna (C)

Alder Hey Children's NHS Foundation Trust

It is commonly reported that children should proceed from picture visual acuity (VA) tests to letter VA tests as soon as possible due to improved accuracy. However, there is a lack of evidence to support this claim of improved accuracy, specifically in relation to sensitivity and specificity. The aim of the study is to assess VA using two commonly used picture tests and compare the results to the gold standard ETDRS.

Uniocular VA was tested using Crowded Kays, Crowded Lea Symbols and ETDRS wearing best correction. Testing order and which eye tested first was randomised. Inclusion criteria was participants

aged 5 years and older, VA better than 1.30logMAR in each eye and a patient or staff at Alder Hey Children's Hospital, sibling of a patient, or Orthoptic student at the University of Liverpool.

74 participants have been recruited. 32% (n=24) of participants had an interocular acuity difference (IAD) of ≥0.2logMAR. When comparing the IAD there were no statistically significant differences between any measures of VA (paired t-test, $p>0.5$ in all cases). The sensitivity of Kay Pictures and Lea Symbols for detecting an IAD of ≥0.2logMAR was 96% for both. Specificity was 92% for Kay pictures and 96% for Lea symbols.

Data collection is ongoing, specifically more people with reduced VA. Initial analysis does not support the claim that picture VA tests are not as accurate as letter VA tests in relation to sensitivity and specificity.

If presented elsewhere: Earlier findings of the study was presented in a local research meeting

(December 2021, Liverpool Ophthalmology and Vision Science Research Prize Meeting)

EPOSTERS

Screen Three

Screen number: three wed 1.20 pm - 1.30 pm

Paediatric Myopia Control - our experience with low concentration Atropine drops

S Jain (C), A Bazza, (Op), Z Newell (Op), C Dineen (Op), M Bux, (o)

Lancashire Teaching Hospitals NHS Foundation Trust

The incidence of Myopia worldwide is increasing, and is expected to worsen since the lockdown due to the pandemic. High myopia is associated with increased incidence of visual disability due to retinal problems and glaucoma amongst other causes. Myopia control is well recognised in children all over the world and includes environmental stimuli, optical and pharmacological methods.

We chose healthy children already attending our clinic, 6-12 years of age, with progressive myopia of more than 1 D per year. Informed consent was taken from the parents. The children underwent a detailed eye examination including a cycloplegic refraction. They were prescribed 0.01% Atropine drops every night. They were followed up every 6 months. 10 patients were prescribed the drops over a 2 year period and 9 were analysed as 1 was using additional treatment.

Every child showed a significant reduction in the rate of myopia progression.

Our numbers are small. We were not able to measure the axial length of all the children at all the visits due to time constraints. Results are extremely promising.

Screen number: three wed 1.30 pm - 1.40 pm

Systemic ciclosporin for treatment of ocular manifestations of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis

H Bhatt (T), M Ogboli (C), S Painter (C)

Birmingham Children's Hospital

Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) are on a spectrum of blistering muco-cutaneous disease resulting from type IV hypersensitivity to medications. Ocular surface inflammation, corneal breakdown, and symblepharon formation can occur. Low incidence of disease and limited published literature has led to lack of consensus on ocular treatments. Birmingham Children's Hospital introduced oral ciclosporin, at a starting dose of 2.5mg/kg, for persistent ocular inflammation, in 2020.

Notes of 3 consecutive children with ocular sequelae of SJS/TEN treated with ciclosporin were reviewed. The cause, treatment, visual and ocular surface outcomes were noted.

Children presented at 5, 6 and 14 years of age. Causes were penicillin-based antibiotic, lamotrigine, and ibuprofen. All children were in PICU and required periocular steroid and amniotic membranes for epithelial loss and symblepharon formation. Chronic management relied upon topical steroid and topical ciclosporin or tacrolimus. Oral ciclosporin was added to the treatment regime at 3, 11, and 15 months following onset of SJS/TEN, due to uncontrolled ocular inflammation, or high frequency topical steroids. It continued 11 and 15 months respectively for 2 patients. One patient had persistent inflammation and is now inflammation free on dual therapy ciclosporin

and mycophenolate. 2 of 3 patients now have excellent vision and low frequency lubricant use only. No children had side effects from ciclosporin.

We conclude that oral ciclosporin can be an effective treatment in managing ocular sequelae in SJS/TEN, and early use can enable rapid control of inflammation and withdrawal of topical steroids.

Screen number: three Wed 16.15 pm - 16.25 pm

Occult "Double Blunting" Sign on Fundus Fluorescein Angiography following Intravitreal Bevacizumab-treated Retinopathy of Prematurity

F Alreefy (MS), A Karthikeyan (T), N Kenawy (C), D Yeo (C)

Alder Hey Children's Hospital NHS Foundation Trust, Liverpool

To report a case of rare double row of blunted vessels as neovascular recurrence following anti-VEGF treated retinopathy of prematurity (ROP) unidentified by binocular indirect ophthalmoscopy (BIO) alone but detected on fundus fluorescein angiography (FFA).

Observational case report on the clinical course of a single premature neonate treated

with intravitreal bevacizumab for aggressive posterior retinopathy of prematurity (APROP).

The infant was of gestational age 26+3 weeks and 460g at birth. Bilateral intravitreal Bevacizumab was administered for APROP at 36 weeks post-menstrual age. Following initial regression, recurrence of plus disease with stage 2 in zone 2 at the superonasal quadrant was noted by BIO at 12-weeks post-treatment. FFA identified occult recurrent neovascularisation in situ of the initial ridge and a double row of blunted vessels.

ROP neovascular recurrence may not be identified clinically but only with FFA, highlighting the need of this imaging modality in monitoring post anti-VEGF treatment.

Screen number: three Thursday 1.20 pm - 1.30 pm

Acquired Diplopia Post-COVID-19 Vaccination

N McBride (O), M Hisaund (RO)

University Hospitals of Leicester NHS Trust

It is well documented that established vaccination programmes can cause rare ocular and neurological events. Following the introduction of a novel COVID-19 vaccination campaign, there are reports of the onset of ocular motility disorders. This review aims to explore if diplopia cases presenting following the national COVID-19 vaccination programme; increase the burden on our ophthalmology department, require additional investigation, differ in their natural history and recovery progression, or result in a change in clinical practice.

Individuals with new-onset diplopia occurring within 30 days post-COVID-19 vaccination (first/second dose) were identified over five

months in 2021. Cases underwent retrospective review and monitoring for data collection.

Thirteen patients, representative of the population of Leicestershire, were identified, with one excluded due to confounding factors. The average onset of diplopia was 13 days post-vaccination, and the median number of ophthalmology clinic appointments required was three. There were 11 neurological palsies and one decompensated heterophoria. The average recovery time was three months, and the most common management was monitoring and Fresnel prisms.

In the following 10–12 months, one patient required a Botulinum Toxin injection, and one underwent strabismus surgery. Two interesting cases were identified; a progressive unilateral to bilateral sixth nerve palsy and a recurrent third nerve palsy in a patient with previous post-viral infection oculomotor palsy.

This review showed no significant increase in demand for ophthalmology services, and no changes to clinical practice would be recommended. In the event of a future novel mass vaccination programme, a review of this nature should be revisited.

Screen number: three Thursday 1.30 pm - 1.40 pm

Acute Acquired Concomitant Esotropia in Older Children during COVID-19 Lockdown

A Agrawal (SAS), L Roberts (O), S Rickett (O), A Awadghanem (F), V Geh (C)

Southend University NHS Foundation Trust

The range of public health measures including school closure, undertaken to slow the spread of COVID -19 and ease the burden on health care systems could have negative effects on children's physical and mental health. We observed an increase in incidence of acute acquired concomitant esotropia (AACE) in older children in the setting of COVID-19 national lockdown in United Kingdom.

The authors describe a retrospective case series of 6 cases who presented to the Paediatric Ophthalmology and Strabismus services of a tertiary care hospital from April 2020 to March

2021 during the COVID-19 pandemic, with acute-onset diplopia due to AACE.

In all cases, neurological imaging was unremarkable and no precipitating factor was identified other than sustained near work. All cases had good potential for binocular single vision. Three of the cases have been operated or waiting to be operated. Of the remaining, one is using prisms and the other two have had improvement in their symptoms.

The lifestyle behaviour changes induced by home confinement including a significant increase in screen time may have increased the risk of inducement of AACE. Reducing the number of total hours of screen time and the number of consecutive minutes/hours without visual breaks should be recommended to prevent acute acquired concomitant esotropia. We recommend use of widescreen images displayed on a television at a distance rather than handheld devices for the allowed reduced screen time.

Screen number: three Friday 1.20 pm - 1.40 pm

Top tips for converting to small incision fornix based squint surgery

V Geh(C), A Awadghanem(F), M Moledina(T), A Agrawal(SAS)

Southend University NHS Foundation Trust

Fornix based small incision squint surgery has been shown to improve post operative discomfort and hasten recovery. It is also associated with less complications such as conjunctival scarring, granuloma formation or corneal dellen.

The authors share their top tips for converting to this surgical approach using two 6mm fornix based incision. Specifically, the use of Moody Fixation Forceps to improve exposure and the novel technique of conjunctival closure using cautery alone.

These techniques will be demonstrated by several short video presentations

The authors feel that whilst there is a learning curve, most surgeons will be able to convert to this surgical approach without needing to alter their surgical algorithms.

Screen number: three Friday 1.20 pm - 1.40 pm

Anterior Segment Ischaemia following Modified Nischida Procedure

V Geh(C), A Awadghanem(F) M Moledina(T), A Agrawal(SAS)

Southend University Hospital NHS Trust

Anterior Segment Ischaemia following Modified Nishida Procedure

A 68 year old lady underwent right Modified Nischida Procedure(MNP) and ipsilateral medial rectus recession for a traumatic 6th nerve palsy. She had a history of high myopia of -8.00 OD and -6.00 OS.

One day post op, she complained of severe pain and reduced vision. Anterior segment ischaemia (ASI) was diagnosed clinically. She underwent prompt reversal of the procedure.

At 24 hours her symptoms begun to improve. At 6 months follow up, her vision has recovered but her pupil remains dilated. Her eye remains in an esotropic position. Cosmetically this is improved by regular botulinum toxin injections to her medial rectus, but she has no abduction past the midline. She has declined further treatment.

Following thorough review of the operating video and patients records we postulate the possible causes of ASI. Patient factors include age, hypertension and diabetes. Surgical factors include ligation of temporal ciliary vessels with the fixation sutures and overstretching of the vertical recti during the transposition causing compression of the ciliary vessels and compromising blood flow. The overstretching may have been due to the large myopic globe.

We believe that care to avoid ligating the ciliary vessels and avoidance of overstretching the vertical recti during transposition could reduce the risk of ASI in vulnerable individuals. Furthermore,

we have demonstrated that ASI can be reversed by prompt release of the transposition sutures in MNP. We believe this is the first reported case of ASI following MNP.

EPOSTERS

Screen Four

Screen number: four wed 1.20 pm - 1.30 pm

Long-term refractive changes in a large data set of hyperopic children and adolescents

G Lingham (RO), I Flitcroft (P), M Moore (Op), M Biba (Op), J Loughman (P)

University of Dublin

Introduction

Hyperopic anisometropia is common and can lead to strabismus and amblyopia. We examined the long-term refractive outcomes of hyperopic anisometropia in children using electronic health record data.

Methods

Spectacle prescription data from 41 Irish optometry practices were restricted to patients aged ≤18 years, who had baseline spherical equivalent (SE) ≥+2.00 dioptres (D) and <+10 D in both eyes and who attended multiple visits. Hyperopia was defined as low (SE 2.00-3.99 D), moderate (SE 4.00-5.99 D) or high (SE ≥+6.00 D). Based on absolute interocular difference in SE (SE-IOD), participants were categorised as isometropia (SE-IOD ≤1 D), or low (SE-IOD >1 to ≤2 D) or high anisometropia (SE-IOD >2 D). Linear mixed models with random intercept terms of eye nested within participant were used to assess changes in SE with age.

Results

Of 75,566 patients aged ≤18 years, 9098 (12.04%) were hyperopic and 5,573 (7.38%) were included. At baseline, the median age of participants was 5.1 years (interquartile range [IQR]: 3.4 to 7.1),

median follow-up time was 4.1 years (IQR: 2.03 to 4.94; maximum 17.0) and median SE was +3.75 D (IQR: 2.75 to 5.00 D).

There was a negative shift in SE with increasing age that was faster in the moderate (-0.069 D/year, $p<0.001$) and high hyperopia (-0.12 D/year, $p<0.001$) groups, compared to the low hyperopia group (-0.050 D/year). Among anisometropes, SE-IOD decreased with increasing age in both the low anisometropia (-0.03 D/year, $p<0.001$) and high anisometropia groups (-0.06 D/year, $p<0.001$), compared to the isometropia group (0.02 D/year).

Discussion + Significance/conclusion

Parents anxious about their child's expected refractive outcomes can be reassured their refractive error is likely to improve. Improvement was greatest in eyes with the most refractive error, indicating an active emmetropisation process among young hyperopic and anisometropic children.

Screen number: four wed 1.30 pm - 1.40 pm

Myasthenia gravis in a toddler

Anastasia Pilat (C), Elizaveta Bayramova (O)

Dept. of Neuroscience, Psychology and Behaviour, Ulverscroft Eye Unit, University of Leicester

Purpose: Myasthenia gravis (MG) is extremely rare in childhood. There are three forms currently described, including transient neonatal myasthenia, congenital myasthenic syndromes, and juvenile myasthenia gravis. We present a rare case of a four-year-old child with MG.

Subjects: Caucasian girl was referred for investigation with possible nystagmus.

Methods: Full orthoptic and clinical assessments, video recording of eye

movements, Optical Coherence Tomography (Hand-Held OCT, Leica Envisu) and electrodiagnostic testing were performed as a baseline test for nystagmus assessment.

Results: On initial clinical assessment, no motility pathology or nystagmus were observed. Child showed very mild symmetrical ptosis which was considered to be congenital. After testing (in 40 minutes) it was noted that the clinical picture had changed. Child showed more obvious bilateral ptosis with lid apertures of about 4 mm, chin up head posture and bilateral gaze evoked nystagmus. No swallowing/breathing difficulties or other neurological deficits were found on the day of examination. Suspected diagnosis of MG was confirmed by paediatric team with detection of serum acetylcholine receptor antibodies, single fibre myography and chest scan.

Conclusions: In children presenting with ptosis in paediatric clinic, diagnosis of MG should be considered. Video recording of eye movements could help to improve the possibility of diagnosis and provide timely assessment and treatment.

Screen number: four Thursday 1.20 pm - 1.30 pm

Incidence of missing red reflex and pupil examination in referrals of pre-school children to the hospital eye service.

L Ramm (O), R Wells (O), J Abbott (C)

Birmingham Women's and Children's Hospital NHS Foundation Trust

Red reflex is often not reported on when a GP refers a child to the hospital eye service.

The absence of essential clinical information means referrals cannot be triaged optimally, and it is difficult to identify and prioritise potentially sight- or life-threatening disease.

We aim to identify how frequently the necessary information was provided for safe triage in a series of referrals, and patient outcomes.

Retrospective examination of case notes of 107 consecutive patients entering an orthoptic- led

routine pathway, over a 3-month period, occurred. We analysed referral information included, and patient outcomes. All sequential pre-school-age referrals were included.

79% of referrals did not contain any information on red reflex assessment.

87% did not contain any information on pupil assessment.

No patient had a sight-threatening or life-threatening condition.

Patient demographics: mean age 1.6 years (range 4 weeks – 3.5 years). 93 % were referred from GP, 89% for squint/vision assessment, with a range of eye diagnoses.

94% of referrals were triaged as 'routine' given limited information provided.

The incidence of red reflex and pupil assessment was low in this cohort, meaning triage was mostly

based on inadequate information, with an associated risk.

No child came to harm though infrequent serious presentations such as retinoblastoma (RB) or cataract would likely not be detected in the majority of referrals. We cite a case when RB was inappropriately seen non-urgently because of incomplete primary care assessment prompting this audit.

There is a need for GP engagement and education on a local, and national level promoting the universal practice of red reflex examination in young children.

If presented elsewhere: Was accepted at RCOphth meeting Birmingham May 2020 - but conference cancelled due to pandemic. Successful poster presentation at Royal College of GP National Conference July 2021, but never presented to an ophthalmic audience

Screen number: four Thursday 1.30 pm - 1.40 pm

Persistent trigeminal artery causing abducens nerve palsy: A Case report

A Lloyd (T), S Jain (C), S Chatterjee (C)

Lancashire Teaching Hospitals NHS Trust

Here, the authors present a case of a 50-year-old female who was diagnosed with an isolated right abducens nerve palsy and on MRI was found to have a persistent trigeminal artery (PTA).

The trigeminal artery is the most common persistent embryological carotid-vertebrobasilar anastomosis. A PTA can be picked up as an incidental finding on Magnetic Resonance Imaging (MRI), angiograms or Computerised Topography (CT) scans. It has been reported that PTA can be found in 0.1 to 0.6% of all cerebral angiograms. PTA has been linked to several rare abnormalities such as vascular aneurysms and nerve compression.

The patient presented in 2019 with intermittent diplopia on right gaze, and during flare-ups had diplopia in primary position. HESS chart showed restricted right eye lateral rectus motility and left eye medial rectus overaction. MRI with contrast found right sided PTA indenting on the ventral surface of the pons.

This is the first reported case of non-aneurysmal PTA leading to abducens nerve palsy in over 10 years and the first case to follow a patient over a three-year period. This interesting case investigates highlights that neurovascular compression from a PTA indenting on the ventral surface of the pons could be the cause of an isolated abducens nerve palsy.

We would recommend MRI for all patents with isolated abducens nerve palsy in which the presence or absence of a PTA should be documented by the reporting radiologist. Further research is required to investigate if surgical

intervention for non-aneurysmal PTA would be beneficial for patients.

Screen number: four Thursday 16.15 pm - 16.25 pm

Ophthalmic manifestations following treatment of intracranial tumours: a tertiary centre experience

S Khan (T), P Choleva (C)

Bristol Eye Hospital

The impact of intracranial tumours on the visual system within a paediatric population is unreported in the literature. Examination of the visual system pre and post-treatment ensures adequate provision of visual support services and certificate of visual impairment (CVI) registration. No publications report on input by visual support teams and other support services in this cohort.

Aims:

To describe a cohort of children with intracranial tumours referred between 2016-2018 with ophthalmic manifestations pre- and post- treatment and input received from support services.

Methods:

Individual case review was conducted for 33 patients. Data was collected using a pro-forma comprised of: type of intracranial tumour, location of tumour, treatment, frequency of follow-up, visual outcome, visual sequelae, vision support input, CVI registration.

Results:

33 patients were referred to the ophthalmology service. 31/33 patients had neurosurgical procedures, 10 of which were VP shunt or biopsy surgery, 21 intracranial resections. Glioma was the most frequent

intracranial tumour. The posterior fossa was the most common region affected. Headaches (30%), vomiting (27%) and referral for papilloedema (24%) were the three most common presenting features. All individuals had visual assessment and were offered appropriate treatment for ophthalmic manifestations including referral to visual support services. Distance travelled for appointments ranged from 1.6 km to over 150 km.

Conclusions:

Success in our unit is underpinned by strong collaborative links between multi-disciplinary teams including visual support services. We encourage early visual support input and CVI registration to optimise reintegration to normal life.

Screen number: four Friday 1.20 pm - 1.40 pm

Impact of Amblyopia Treatment During a Period of COVID-19

J Oladipo (O), R Schelle (O), K Burton (O), L Gnanaraj (C)

Sunderland Eye Infirmary

COVID-19 pandemic presented an opportunity to investigate the impact of delay in treatment and follow-up time on visual outcome for children undergoing active amblyopia therapy.

We undertook an audit of 77 healthy children (mean age 4.7 years) undergoing amblyopia management who were advised face-to-face consultation. Visual outcome was measured in LogMAR.

The average delay in follow-up recorded at 5.7 months (range 1-9). 95% of children demonstrated a change in the visual acuity (VA) of the amblyopic eye (44% improvement, 51% reduction) and 5%

showed no change. The overall reduction in VA of the amblyopic eye was -0.025 LogMAR in children whose treatment follow-up time was delayed when compared to the average pre COVID VA. Ages 7-8 years showed the greatest reduction in VA of the amblyopic eye (0.200 LogMAR). A follow up delay of 9+ months showed the greatest reduction in VA (0.080 LogMAR). No difference in visual outcome was identified for children whose review was delayed by up to 2 months.

This audit suggests that the older children (7-8 years) are at a risk of poorer visual outcome if the follow up was delayed. There was also a suggestion we can safely increase the follow up by up to 2 months without impacting visual outcome. Though this audit has limitations, this prospective audit can help us shape the follow up pathway for amblyopia management for different age groups, especially during this recovery phase.

Screen number: four Friday 1.20 pm - 1.40 pm

Did Covid 19 increase presentation of cranial nerve palsies in a tertiary eye hospital?

J. Oladipo (O), R. Schelle (O), L. Gnanaraj (C)

Sunderland Eye Infirmary

We present the results of a retrospective audit of patient characteristics attending the Orthoptic department at Sunderland Eye Infirmary, with new onset nerve palsies (3rd, 4th, 6th) during a 6-month period in 2020 and compare it to same period in 2019.

The total number of new cases increased by 24% in 2020 (55 vs 42). The mean age was 61.2 years (16 -86) with a male preponderance. Associated co-morbidity (diabetes, hypertension) were identified in 56% (2020) vs 62% in 2019. Sixth nerve palsy was most common (58%) followed by 4th (33%) and 3rd (9%) nerve palsy in 2020. Right side was affected more frequently (65%).

Sixth nerve palsies increased by 23% in 2020 (33 vs 17) and 3rd nerve reduced by 19%. Diabetes was more common (27% vs 6%) than hypertension (33% vs 41%) in 2020. There were no one positive for COVID-19 in this group at presentation.

This increase in new cases and proportion of 6th nerve palsy patients presenting with the known vascular risk factors in the 2020 group may have been due to reduced regular monitoring and deferment of planned elective interventions due to the pandemic. Additionally, changes in lifestyle factors like diet and lack of exercise may have also contributed to this.

Whilst there is no direct link to Covid-19 and the increase in nerve palsies, it stresses the importance of managing chronic medical conditions better even during a pandemic.

Legend

(C) = Consultant, (O) = Orthoptist, (T) = Trainee, (CF) = Clinical Fellow, (CL) = Clinical Lecturer, (CRF) = Clinical Research Fellow, (F) = Fellow, (FD) = Foundation Doctor, (L) = Lecturer, (MS) = Medical Student, (N) = Nurse, (Op) = Optometrist, (P) = Professor, (RA) = Research Associate, (RF) = Research Fellow, (RO) = Research Orthoptist, (SAS) = Specialty Doctor, (SL) = Senior Lecturer, (o) = other