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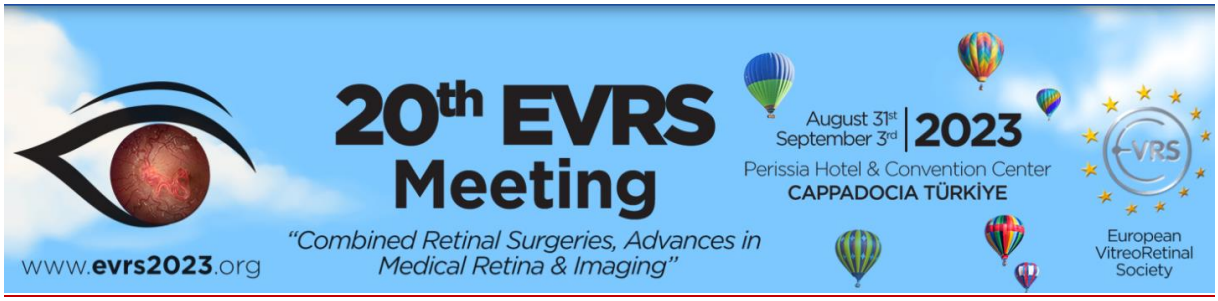

ESSION: ROP
DATE: September 2, 2023
HALL: HALL 1
TIME: 08.00-09.00
Moderators: Michael Blair, Anna Ells

Smartphone application links severity of retinopathy of prematurity to early motor behavior in a cohort of high-risk preterm infants

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Purpose
To evaluate the General Movement Assessment (GMA) with the Motor Optimality Score-Revised (MOS-R) as a neurodevelopmental marker in infants with retinopathy of prematurity (ROP).
Methods
Infants screened prospectively for ROP were evaluated at 3 months' post-term age using a smartphone application to complete the GMA and MOS-R. Results were analyzed by ROP severity.
Results
Of 105 enrolled infants, 83 completed the study. Of these, 54 (65%) had any ROP, 32 (39%) had severe ROP, and 13 (16%) had type 1 ROP. The proportion with aberrant GMA was significantly higher in infants with severe ROP (14/32 [44%]) compared with infants who had milder ROP (8/51 [16%]; P = 0.006). Of those with severe ROP, there was no significant difference comparing infants with type 1 ROP treated with bevacizumab (7/13 [54%]) to infants with type 2 ROP without treatment (7/19 [37%]; P = 0.47). Although the presence of any ROP, stage of ROP, and severe ROP each predicted lower MOS-R scores on univariate analyses, only severe bronchopulmonary dysplasia and markers of brain injury remained significant in the multivariate analysis.
Conclusions
The GMA was a convenient, short-term method of data collection with low attrition. Although severe ROP initially appeared linked to poor early motor scores, this

association is likely confounded by neurological and respiratory complications, which frequently accompany severe ROP.

Keywords: ROP, neurodevelopment, General Movement Assessment

Refractive evaluation of prophylactic laser treatment for persistent avascular retina in eyes treated with primary intravitreal bevacizumab

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Purpose: With the widespread use of anti-vascular endothelial growth factor (anti-VEGF) treatment for retinopathy of prematurity in recent years, the treatment choice for persistent avascular retina (PAR) is challenging, and the refractive effect of laser treatment is not well known. Primary aim was to investigate the refractive outcomes of laser treatment on the peripheral avascular retina after the 60th week of postmenstrual age (PMA) in eyes with premature retinopathy treated with intravitreal bevacizumab (IVB).
Methods: Inclusion criteria in the study consisted of several parameters: 1) Being treated primarily with IVB, 2) Laser applied to peripheral avascular retina after 60th PMA between February 2018 and December 2019, and 3) Pre- and post-laser refraction measurements after cycloplegia were recorded in the patient chart. Forty-six eyes of 26 infants fulfilled the inclusion criteria.
Results: Forty-five eyes underwent fundus fluorescein angiography before the laser. Persistent avascular retina was accompanied by Hyperflourescein leakage in 14 eyes. Pre-laser retinal vascularization was in zone 2 posterior in 44 eyes. The mean number of laser spots was 641.54 ± 377.28. The mean pre-laser refraction age, laser age and post-laser refraction age were 23.50 ± 13.80, 27.39 ± 14.42, and 44.58 ± 17.03, months, respectively. The spherical equivalent before and after laser was 1.21 ± 2.64 (D) and 0.58 ± 2.41 Diopter (D), respectively ($p = 0.006$).
Conclusion: In eyes treated with IVB as primary treatment, 0.63 ± 1.01 D myopic change was detected at a mean follow-up of 17.19 months. Although the myopic shift in refraction after laser is statistically significant, the physiological emmetropization of childhood may have contributed to this difference. Further studies are needed to understand whether the myopic change was due to laser or to physiological emmetropization in childhood.

Keywords: Bevacizumab, Laser, Retinopathy of prematurity

ROP stage 5 different strategies

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The argument is that the anatomic and visual outcomes are often so poor in stage 5 ROP, such interventions are not “worth it.” Admittedly, stage 5 ROP is daunting. The surgical learning curve is long and steep. It is zero-error tolerance surgery, as a single iatrogenic retinal break may mean failure. Complete retinal attachment and restoration of near-normal posterior pole anatomy are uncommon. Neurologic comorbidity may limit vision even when surgery is successful. However, poor visual outcome is not invariable, and good visual outcomes are not unheard of. In fact, children having even limited vision can use their vision remarkably well.
Traction along the retinal surface and contraction of the posterior hyaloid face contribute to distortion of the poste- rior pole architecture. The configuration of the retinal detachment in ROP depends primarily on the location of the ridge and the orientation of vectors of vitreoreti- nal traction.

in this case series different approaches are illustrated to reach the successfull outcome,by using bimanual forceps and scissor with or without biom system by anterior or posterior approaches or by forceps and serrated instrument.

successful approaches are illustrated by retcam and optos camera.

The surgical goal for stage 5 ROP is to reattach as much of the retina as possible.Form vision can be preserved following vitrectomy for stage 5 ROP.

Maximal recovery of vision following the insult of macula-off retinal detachment and interruption of visual development in infants may take years.

Conclusion: different approaches for stage 5 ROP can lead to successful results as soon as the intervention is early as posiible.

key words: ROP, stage 5 rop,ROP related retinal detachment.

Keywords: ROP, Surgical approaches to stage 5 ROP

The emergence of AROP in Bangladesh: A report on the prevalence, treatment and visual outcome of ROP from January 2021- September 2022 in a tertiary hospital in Bangladesh

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The report was prepared by collecting data on babies attending the ROP clinic between January 2021 and September 2022 in the busiest tertiary hospital in Dhaka, Bangladesh's capital. ROP is considered globally one of the leading causes of irreversible blindness. To report the high incidence of Aggressive Retinopathy of Prematurity (AROP) in Bangladesh in premature (less than 37 GA) infants born with low birth weight (less than 2,500 grams) which possibly can be avoided. AROP is the severe form of ROP with rapid progression to an advanced stage along with signs of neovascularization and 'plus' disease. In middle-income countries like Bangladesh, high-quality neonatal services are expanding with better equipment leading to an increase in neonatal survival. Ispahani Islamia Eye Institute and Hospital (IIEI&H) is considered the most preferred referral centre by the NICUs/SCANUs to screen ROP. The study was conducted between January 2021 and September 2022 to report an overview of rapidly increasing numbers of AROP in Bangladesh. In IIEI&H the total number of babies screened was 2,330. The total number of ROP was 1072 (46%). Among the ROP babies, the total number of AROP was 214 (20%).GA was in between 26-35 weeks. Birth weight was between 900-2400 grams. The diagnosis was made between 20-54 days of the age of the babies. All the babies were treated with Injection AntiVEGF and +/- LASER IO followed by visual stimulation therapy with an illumination box. The babies have a good ‘fix and follow’ vision and can see non-illuminating/ illuminating toys at a 2-meter distance. The study showed timely detection of ROP and its proper management can save the baby from going blind and thus mitigate the socio-economic burden of the community. At the same time, the country needs to develop manpower and more centers to screen and treat ROP.

Keywords: AROP, AntiVEGF, LASER IO

ROP surgery in older children: Can you help ??

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Purpose: Stage 5 ROP is a real challenge to pediatric retina surgeons. Challenges in dissection of epiretinal membranes render the success dismal.
Materials-Methods: In 10 patients with 5b and 5c ROP and a mean age of 3 years (range 1-6 years), careful examination of the ciliary body region using the Retcam is carried out to identify a gap between the retrolenticular membrane and the CB. Identification of a clear zone warranted careful membrane dissection from the periphery to the center. using deep scleral indentation. Otherwise, the membrane was dealt with centripetally. Results: in presence of a clear peripheral zone at CB, dissection could successfully remove the membrane in 6 out of 6 cases. In one case a CB detachment occurred with minimal traction on CB. In 4 out of 4 cases, the centripetal dissection was successful in removing the membranes, however a peripheral skirt could not be totally removed in 2 cases due to opacities present in the corneal periphery (stage 5c), and a peripheral break occurred in one case as well. Retina was found to be retracted away from the peripheral tractional membrane in 6 cases, allowing successful membrane dissection. Complete retinal flattening could be achieved in 4 cases, and partial retinal repositioning in one more case. Ambulatory vision could be appreciates in these 5 cases. Conclusion: Careful observation of the nature of the retrolenticular membrane is important to identify and optimally manage such complicated cases. The retcam has a definite role in examining the very periphery of the retina. We can help.

Keywords: ROP elderly children

Pulmonary function in school-age children following intravitreal injection of bevacizumab for retinopathy of prematurity

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The effect of anti-vascular endothelial growth factor on neonatal lung development was inconclusive. To evaluate pulmonary function in school-age children who have received intravitreal bevacizumab (IVB) for retinopathy of prematurity (ROP), our study separated 118 school-aged children into three groups: full-term control children (group 1), preterm children who had not received IVB treatment (group 2) and preterm children with ROP who had received IVB treatment (group 3). Pulmonary function was measured by spirometry and impulse oscillometry. Pulmonary function was significantly better in group 1 than in groups 2 and 3 (all $p < 0.05$ in forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), forced expiratory flow between 25% and 75% of FVC (FEF25-75), resistance of the respiratory system at 5 Hz and difference between R5 and R20 (R5-R20). There were no statistically significant differences between group 2 and group 3 in FVC, FEV1, ratio of FEV1 to FVC, FEF25-75, resistance of the respiratory system at 20 Hz, reactance of the respiratory system at 5 Hz or R5-R20. Our study revealed that preterm infants receiving IVB for ROP had comparable pulmonary function to their preterm peers who had not received IVB treatment by school age.

Keywords: Impulse oscillometry; intravitreal bevacizumab; Pulmonary function; Retinopathy of prematurity; Spirometry; Vascular endothelial growth factor

The war on retinopathy of prematurity: where are we now?

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[2]Taparia Eye care, Biratnagar

Purpose: To estimate the burden of retinopathy of prematurity (ROP) in Nepal using the data (demographic, incidence and treatment data) from a ROP program in India and to calculate the yearly burden of preventable blindness due to ROP. Also to assess the facilities of ROP screening and treatment in Nepal via an online survey.
Methods: An impact assessment in Nepal was constructed using ROP screening model of tele-ROP service in India. The number of potential blind babies were listed, the burden of blindness prevented in blind-per-years (BPYs), and the increase in load due to increase in survival and institutional deliveries calculated. An online survey was done amongst the Ophthalmologists of Nepal to assess the ROP screening and treatment facilities in Nepal.
Results: Population of Nepal is 29.6 million. Number of babies eligible for ROP screening annually is 82,880. Number of babies admitted to NICU is 53,872 out of which 39,261 babies are likely to survive and need ROP screening. Extrapolating data from KIDROP study, 8990 babies would develop some stage of ROP and 1401 babies would require treatment in Nepal yearly. The burden of preventable blindness in BPY that can be saved is 130.83 million USD/ year. As per the responses from the online survey, only around 3500 babies were screened for ROP per year leading to a gap of 35761 babies missing the screening and 1276 babies likely to miss treatment.
Conclusion: The burden of ROP is high in Nepal. A tele-ROP service can be used as a cost effective model in Nepal to decrease the burden of preventable blindness and the financial burden caused by it.

Keywords: Retinopathy of prematurity, preventable blindness, Nepal

Five year follow-up results of retinopathy of prematurity cases treated by laser or injection

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Purpose: To report the long term results of retinopathy of prematurity cases treated by laser or anti-VEGF injection
Setting: Suleyman Demirel University, Department of Ophthalmology
Methods: 74 eyes of 37 premature cases were enrolled. The treatment method was laser in 23 cases and anti-VEGF injection (0,05 mg ranibizumab) in 12 cases and combined laser and anti-VEGF injection in 2 cases. The success of treatment method, best corrected visual acuity (BCVA) by Snellen Chart, cyloplegic refraction as spheric equivalents (SE) and strabismus was evaluated.
Results: The mean gestational age was 27,27±2,2 weeks (min 24-max 33 weeks). The mean birth weight was 1018,71±308 grams (min 570-max 1849 grams). The mean follow up time was 5,0 ±2,17 years (min 1- max 9 years). One eye of one of the cases treated by laser detoriated and deemed inoperable retinal detacment. Except for one case all cases improved either by laser or injection or both (98%). The mean BCVA was 0,65±0,31 in verbal children. The SE was between 0 to +3,00 D in 45,9% of cases and was greater than -5,00 in 23% of cases. The SE was more myopic in children treated by laser. There was no strabismus in 70 % of cases, 19% esotropia and 11% exotropia and both esotropia and exotropia was higher in laser group.
Conclusions: Both Laser and Anti-VEGF was succesfull in treatment of ROP. Laser seems to have higher myopic refraction and strabismus rates compared with anti-VEGF treatment.

Keywords: Retinopathy of prematurity, Laser, Anti-VEGF

ROP behind the scene imaging !

Sara Ahmed Tawfik
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Oral presentation demonstrating different modalities in neonatal imaging in retinopathy of prematurity with available affordable devices and techniques including smart phone, VR headset and indirect ophthalmoscope recording

Keywords: ROP imaging