SCREENING PLUS DISEASE THROUGH TELEMEDICINE

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Purpose

Retinopathy of prematurity (ROP) is a proliferative disorder of the retina, which can lead to permanent blindness in infants born prematurely. Timely screening and treatment is the most effective way of preventing this blindness. Indirect ophthalmoscopy is the gold standard for retinopathy of prematurity (ROP) screening. The availability of effective treatments for ROP such as peripheral retinal photocoagulation and intravitreal vascular endothelial growth factor inhibitors, which have to be given in a timely manner to prevent blindness, reinforces the fact that screening must be timely to identify those infants for whom these interventions could drastically alter the outcome. Very few ophthalmologists with the required expertise in examining the pediatric retina with BIO are available against a growing population of preterm infants. Moreover, training is required to become competent in using BIO in preterm infants, as this examination is a bit difficult and extensive. Many times medicolegal concerns, poor reimbursement, and time constraints discourage trained ophthalmologists to continue ROP screening. Thus, the discrepancy between an increasing incidence of ROP with the dwindling ROP workforce creates a large vacuum that is inadequately addressed by traditional bedside screening with BIO. As an alternative to this traditional method, telemedicine has been started, wherein clinical photographs are reviewed by a remote medical expert.

Methods

Prospective study with 164 eyes of 62 Premature infants undergoing routine ROP screening examinations. Screening guidelines for ROP at this institution included infants with gestational age (GA) less than or equal 32 weeks, birth weight (BW) less than or equal 1500 g, or older and heavier babies with an unstable clinical course who were believed to be at high risk for ROP by their attending neonatologist. Infants were excluded from this study if they had major ocular anomalies or media opacities.

The infant's pupils were dilated with one drop of combined Tropicamide and phenylephrine at least 30 minutes prior to examination. Topical proparacaine was applied and an eyelid blepharostat was inserted.

Indirect ophthalmoscopy with a 28-D lens and scleral depression was then performed by the study ophthalmologist. Digital images were taken with the RetCam Digital Retinal Camera by the study non-ophthalmologist, after the indirect examination. The goal of the RetCam examination was to obtain an evaluable image of the posterior pole.

ROP was graded as with plus disease or no plus. Our goal was to identify severe ROP requiring treatment.

Results

ROP screening with RetCam imaging and indirect ophthalmoscopy was performed on 124 eyes of 62 infants. Gestational age at birth mean 29 weeks (range 26-35 weeks). Birth weight mean 1079g (range 530- 1855g). Digital photography had a sensitivity of 100% and especificity of 80% in plus disease.

Conclusion

Retinal images must be of sufficient quality to allow a grader to make an accurate determination of the ROP status.

We are not advocating that RetCam imaging completely replaces indirect ophthalmoscopy. We believe that RetCam imaging is a useful screening tool to detect treatable ROP and may safely reduce the overall number of indirect ophthalmoscopy examinations required.

RetCam imaging was able to accurately detect cases of ROP with plus disease requiring indirect ophthalmoscopy.

Screening based on disease detection plus has shown promising results and further studies are needed.

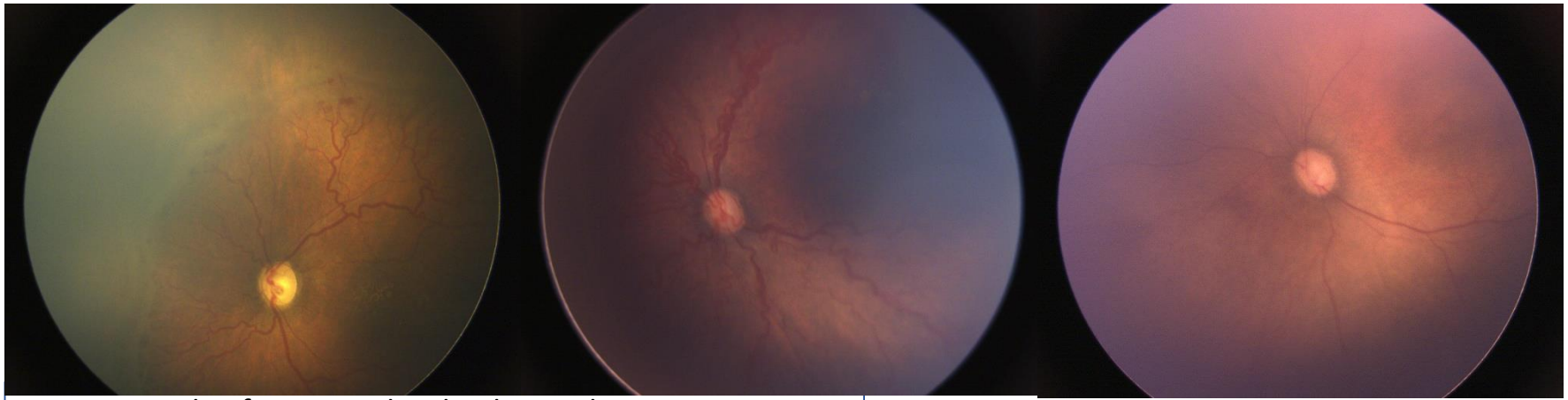

Fig.1.:Example of images taken by this study

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