Is it time for an individualized screening approach for retinopathy of prematurity?

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Description

In this study, we summarize the findings of a recent large retrospective, consecutive series of patients screened for Retinopathy of Prematurity (ROP). ROP represents as a significant cause of childhood blindness on a global scale. The condition's prevalence has amplified due to the increased survival of low-birth-weight neonates, a result of advancements in neonatal care, predominantly in high-income nations. Different ROP screening guidelines exist among countries due to resource variations and distinct characteristics of preterm infants across high, middle, and low-income nations. The considerable differences in the populations at risk for ROP and the quality of care available between these countries make it unfeasible to establish uniform international guidelines for ROP screening. In the USA, as per the existing guidelines established by the American Academy of Pediatrics, screening is recommended for patients weighing less than 1500 g at birth or born before 30 weeks of gestation, or as advised by the neonatologist. Screening for ROP with high sensitivity is critical to prevent the necessity for treatments involving anti-VEGF and laser procedures, which help mitigate vision-threatening complications.

However, a growing concern has emerged with a decline in the ROP workforce, largely attributed to reduced reimbursements for pediatric ophthalmologists. This decline in workforce calls for a reassessment of the screening criteria to ensure both effectiveness and efficiency. Presently, the guidelines uniformly apply to all qualifying patients, despite the varying risk levels within this cohort.

In a recent study conducted by our group, a modern cohort of patients was evaluated to explore the possibility of less frequent screenings for those meeting none or only one of the current criteria. This particular group exhibited a notably low rate of ROP (less than 4%), primarily at stage 1, with no patients requiring treatment. Considering these findings, one might raise the question about the necessity of ongoing intensive inpatient surveillance for these low-risk cohorts. The proposed strategy suggested that patients meeting just one of the current screening criteria could undergo a single exam at 40 weeks, whether in an inpatient or outpatient setting, as opposed to multiple inpatient evaluations. This alteration could potentially reduce the screening burden by 12%, a seemingly modest yet statistically significant percentage.

However, it's crucial to acknowledge that the proposed algorithm, known as TWO-ROP, necessitates validation through external datasets. This algorithm might find its most suitable application in specialized centers with extensive experience in managing neonates under stringent oxygen protocols and the capability to review their own data. It's important to recognize that the generalizability of this approach might not extend to lower-resource centers, both nationally and internationally.

The innovative concept challenges the conventional belief that all patients must undergo the same screening regimen or none at all. In various medical disciplines, the paradigm of personalized medicine is gaining traction, aiming to provide tailored care to individuals. In the realm of ROP, adopting this personalized approach could potentially alleviate the burden and costs associated with screening while ensuring safety and effectiveness. The introduction of the TWO-ROP algorithm represents a shift from the conventional one-size-fits-all approach to a more tailored and individualized screening strategy. By potentially reducing the frequency of screenings for a specific subset of patients, this proposal could significantly alleviate the strain on the healthcare system while maintaining a high standard of care. This novel approach might open the door to future adaptations and improvements in ROP screening, guiding the way toward more efficient and personalized medical interventions in this field.

Retinopathy of Prematurity (ROP) is one of the leading causes of childhood blindness worldwide. There is an increasing incidence of surviving low birth weight neonates, due to the advances in neonatal care, particularly in high income countries [1,2]. Screening with high sensitivity is crucial in preventing the need for treatment with anti-VEGF [3,4] and laser as well as vision threatening complications such as macular dragging, vitreous hemorrhage, and retinal detachment. The current guidelines from the American Academic of Pediatrics include screening patients that are <1500 g in birth weight or <30 weeks in gestational age, or at the discretion of the neonatologist. Unfortunately, there has been a decline in the ROP workforce attributed to a decline in relative reimbursements for pediatric ophthalmologists [5]. Therefore, we must make sure the screening criteria are revaluated to ensure they are also efficient. Currently, the guidelines apply equally to all patients meeting the screening criteria, although the risk across this cohort is variable. In our recent study we assessed a modern group of patients to determine if patients meeting zero or only one of the current criteria could be screened less frequently. This group had a low rate of ROP (<4%), which was primarily stage 1, and most importantly, no

patients required treatment [6]. Our proposal was that patients meeting one of the current screening criteria could be screened with a single exam at 40 weeks, either inpatient or outpatient, rather than with multiple inpatient evaluations. This would decrease the screening burden by 12%, a small but significant percentage.

The proposed algorithm (TWO-ROP) will need to be validated in external datasets. It may be most applicable to tertiary centers with a long history of managing neonates with tight oxygen protocols who are able to review their own data. It is likely possible that this would not be generalizable to low resources centers, both nationally and internationally. Our novel idea challenges the notion that all patients need to be screened the same way or not at all. In other fields of medicine, personalized medicine is becoming more widely adopted to give the best individualized care. In ROP, this approach could decrease the screening burden and cost, while maintaining safety.

Acknowledgement

Conflict of Interest

None

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