Response to comments on: Evaluation of clinical profile and screening guidelines of retinopathy of prematurity in an urban level III neonatal intensive care unit

Dear Editor,

We thank the authors for showing interest in our article, which highlighted decreasing incidence of retinopathy of prematurity (ROP) in infants managed in an urban Level III neonatal intensive care unit (NICU). In their comparatively large cohort of 1541 infants from rural and semiurban NICUs, they have highlighted treatable ROP in heavier preterm infants and aggressive posterior retinopathy of prematurity (APROP) or hybrid APROP being a major chunk of treatable ROP. To recap, in our study, majority of treatments were done for infants <1100 g birth weight. Only one (7.69%) of 13 infants requiring treatment was >1250 g birth weight, while in the present study, 60 (44.44%) of 135 infants with severe ROP were >1250 grams birth weight. APROP contributed 23.07% (3/13) of infants requiring treatment in our study vs. 88.14% (119/135) in the present cohort. These differences are staggering and show a contrasting profile of ROP for infants managed in urban Level III NICU versus a semiurban or rural setting. A recent study from a center catering to predominantly rural NICUs also reports a similar trend of ROP in heavier preterm infants and a high incidence of APROP. These trends are likely due to suboptimal neonatal care and especially the use of unmonitored supplemental oxygen. Shah et al. reported that relatively heavier and older preterm infants (otherwise at low risk for ROP) can lose their previously vascularized retina when exposed to 100% oxygen. They demonstrated large geographic areas of vaso-obliteration on fundus fluorescein angiography in these eyes, which subsequently develop APROP. Such a rapidly progressing disease may extend even beyond the posterior retina well into the anterior zones. In fact, the recent ICROP-3 classification of ROP has replaced the term APROP with A-ROP (aggressive retinopathy of prematurity) to take the focus away from the posterior location of the disease to the tempo of development of rapidly progressing ROP. Such a disease is classically described in infants managed in low-resource settings and exposed to excess unmonitored oxygen.

Multiple interventions aimed at reducing the incidence of ROP in our NICU include regular use of antenatal steroids, delayed cord clamping, transport incubators in delivery room, minimizing oxygen exposure by use of blended oxygen, monitoring SPO2, and targeting oxygen saturation between...
90 and 95%. Others policies include preferential use of noninvasive modes of ventilation, discouraging unnecessary use of blood products, and a well-defined and implemented infection control policy. These procedures undergo continuous quality controls and sensitization of nursing staff to ROP and saturation targets. Using similar neonatal care interventions in rural NICUs in South India over a 4-year period, Vinekar et al. reported a statistically significant reduction in the incidence of any stage ROP from 26.8 to 22.4%. The incidence of treatment-requiring ROP reduced from 20.7 to 16%, and of the treated disease, APROP reduced from 20.8 to 13.1%. A recent large study of 13,987 very low birth weight infants from the NEOCOSUR neonatal network in developing countries of South America reported a significant decrease in incidence of ROP from 21.3 to 13.8% \( (p < 0.001) \) over a 16-year period from 2001 to 2016. During this period, administration of antenatal corticosteroids significantly increased from 70.2 to 82.3% \( (p < 0.001) \), and use of continuous positive airway pressure increased from 41.3 to 64.5% \( (p < 0.001) \). Furthermore, use of conventional mechanical ventilation decreased from 67.7 to 63.9% \( (p < 0.001) \), incidence of early onset sepsis decreased from 6.3 to 2.8% \( (p < 0.001) \), and late onset sepsis from 21.1 to 19.5% \( (p = 0.002) \). Similar policy shifts in neonatal care are required in India. A recent study aimed at quality improvement to prevent severe ROP in special care neonatal units in central India identified health system challenges not only due to lack of infrastructure (e.g., lack of adequate number of pulse oximeters) but also lack of point-of-care policies in both well-equipped and limited resource settings (e.g., identifying neonates needing oxygen therapy). There is a considerable scope for improving both infrastructure as well as manpower training.

National neonatology forum guidelines include ROP screening and treatment as mandatory parameter to accredit both level II and III nurseries. Current national ROP screening guidelines are broad considering the observed spectrum of disease in heavier and older preterm infants. If measures to reduce ROP are strictly implemented, we may have tailored guidelines (like the West) in the future. We congratulate the authors for compiling huge ROP screening data from semiurban and rural NICUs. This provides them with an opportunity to study risk factors for ROP and plan focused corrective neonatal care interventions in their setting. With a limited number of trained retina surgeons available for ROP screening and treatment, it is even more imperative to focus on the primary prevention of ROP through improved neonatal care. A combined effort by neonatologists, nursing staff, and ophthalmologists is needed.

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Quick Response Code: 
Website: https://journals.lww.com/ijo
DOI: 10.4103/IJO.IJO_754_23

Cite this article as: Sanghi G, Sawhney JS, Kaur S, Kumar N. Response to comments on: Evaluation of clinical profile and screening guidelines of retinopathy of prematurity in an urban level III neonatal intensive care unit. Indian J Ophthalmol 2023;71:2923-4.