

## Commentary: Retinopathy of prematurity: Where do we stand?

India is currently facing the third epidemic of retinopathy of prematurity (ROP). Various attempts have been made in the past to ascertain the incidence and demographic profile of ROP in India. A higher incidence of ROP is reported in India (19.3%–47.2%) when compared with the Western countries (1.2%–19.8%).<sup>[1]</sup> Sivanandan *et al.*<sup>[2]</sup> studied the ROP incidence across four time periods and reported the incidence as 19.6% in 1992–1994, 31.5% in 1999–2000, 11.9% in 2003–2004, and 20% in 2009–2014. They also reported a decrease in the incidence of ROP among extremely low birth weight babies from 67% in 1992–1994 to 27% in 2009–2014. Another study from a tertiary hospital from North India reported a decline in the incidence of ROP from 49% to 26.6% after a 20-year period despite a significant increase in the proportion of neonates with lesser gestational age and birth weight.<sup>[3]</sup> Although the above reports from two premier institutes of India having Level III and Level IV neonatal intensive care units (NICUs) showed decreasing trends of ROP comparable with the Western countries, the scenario may not be the same in NICUs from the other parts of India. A study from a Level II NICU from western India reported 38.5% of newborns having any stage of ROP, whereas a study from the northeastern India reported 44% of newborns developing ROP.<sup>[4,5]</sup> An article published in the current issue reported an overall incidence of any ROP as 32.3% and severe ROP as 17.7% over a 5-year period.<sup>[1]</sup> Importantly, the authors reported the incidence of any ROP of 15.6% among inborns as compared with 58.6% among the outborns. Also, among infants with any ROP, only 18.8% of the inborns had severe ROP as compared with 69.7% of the outborns. It is likely that the babies who are outborn were referred from Level II NICUs receiving suboptimal neonatal care, unmonitored oxygen supplementation, and delayed ROP screening. When it comes to special newborn care units (SNCUs) set up by the government at the district level, the incidence of ROP reported is contrastingly low. Sabherwal *et al.*<sup>[6]</sup> reported ROP in only 11% of those screened in four district-level SNCUs. In this study, only 18% of the eligible infants got screened, whereas only 56.5% of them completed screening. Another possible reason for the low incidence of ROP could be the tendency to refer extremely premature infants and very sick infants to higher level of NICUs.

Second, a recent study reported an increase in the proportion of aggressive posterior retinopathy of prematurity (APROP) cases from 16% in 2013 to 28% in 2017.<sup>[1]</sup> In this study, inborns with ROP had predominantly staged disease in 93.5% and APROP in only 6.5%, whereas outborns had staged disease in 73.9% and APROP in 26.1%. In Western countries, APROP accounts for less proportion of total ROP cases and is reported in extremely preterm infants. On the contrary, infants developing APROP in India is on the rise, and it is seen even in larger and heavier infants. Unblended oxygen, less equipped NICUs, missed ROP screening, and lack of awareness of risk factors in the peripheral centers contributed to a rise in APROP in these settings. Sanghi *et al.*<sup>[7]</sup> reported that if the American screening guidelines for ROP were to be followed, then 15.9% infants having birth weight >1,500 g and 9.1% infants born after 32 weeks developing APROP would have been missed in the Indian setting. Hence, the screening guidelines formulated

for ROP should be India centric and uniformly followed in all the NICUs and SNCUs. The latest ROP guidelines in India propose screening of all the preterm infants born  $\leq 34$  weeks and those >34 weeks with risk factors if gestational age (GA) is known, or all infants  $\leq 2,000$  g birth weight if GA is unknown.

Last, despite this disease known to us since the 1940s, it is a pity that 15% to 20% of all ROP still present with Stage 4B/Stage 5 disease and have no/delayed screening.<sup>[1]</sup> In a study involving 66 infants with Stage 5 ROP, 86.4% infants were never screened, 74.2% infants were self-referred, and 25.8% were referred by ophthalmologists.<sup>[8]</sup> Strangely, pediatricians referred none of these infants despite infants having multiple visits to them for vaccinations and other systemic issues in their first year of life. Hence, increase awareness among the pediatricians should be created by regularly organizing workshops, webinars, and conferences. It is estimated that about 200,000 infants are at risk of ROP every year, but only 215 ophthalmologists (i.e. 1% of the ophthalmologists in India) are involved directly in ROP care, and approximately 19 hours of ophthalmologist's time is required to detect one threshold ROP.<sup>[9]</sup> To bridge this gap, exposure to ROP screening and treatment should be mandatory in ophthalmology residency programs. Telescreening programs using wide-field imaging cameras such as "KIDROP" can be replicated in other parts of India to increase the reach of ROP screening with limited resources.

India needs a holistic approach that includes improving the quality of neonatal care; improved awareness among pediatricians, ophthalmologists, community-based health workers, and parents; and expansion of screening and treatment programs.

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### Conflicts of interest

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