

Prevailing clinical practices regarding screening for retinopathy of prematurity among pediatricians in India: A pilot survey

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Aims: To evaluate the prevailing practices for proper screening and referral scheme among Indian pediatricians for retinopathy of prematurity (ROP). **Materials and Methods:** Pediatricians registered with Indian Academy of Pediatrics from six states of India were selected randomly and were telephonically interviewed in accordance with a preformed questionnaire which comprised of questions regarding demographic factors, number of premature children seen per month, awareness and referral scheme to ophthalmologist; responses thus obtained were analyzed. **Results:** Hundred percent knowledge about ROP and need for screening in premature babies was observed among the respondents. However, only 135 (58%) pediatricians always referred for ROP screening, 19 (8%) referred only sometimes and 80 (34%) did not refer at all. Consistent referral protocols taking into account all plausible risk factors for ROP were followed by only 25% of those who always referred. Major deterrent in ROP screening was perceived as non-availability of trained ophthalmologists. **Conclusions:** Only 14.5% of total pediatricians contacted were following international recommendations for ROP referral. Screening for ROP remains dismal as observed in this pilot survey as a consequence of non-availability of trained ophthalmologists as well as inconsistent screening guidelines.

Key words: Retinopathy of prematurity, screening, survey

Since the advent of recent developments in resuscitation and monitoring in neonatal intensive care units, and consequent improved survival rate of very premature babies, retinopathy of prematurity (ROP) is emerging as a significant cause of severe visual disability in children in developing countries like India.^[1] The disease, if not treated in time, causes irreversible blindness and now is being heralded as the third epidemic of ROP for middle and low-income countries.^[2-4]

Owing to an asymptomatic and essentially preventable nature of the disease in its early course, a good screening protocol is pivotal for early detection and treatment of this devastating yet avoidable disease. However, to implement an effective screening program, all ophthalmologists, neonatologists and other healthcare professionals must be made aware of the disease and its appropriate referral or management protocol at the primary level. This survey was thus conducted to assess the awareness and referral practices for screening ROP among Indian pediatricians (who most often take care of neonates) as no national data is available regarding the degree to which infants receive recommended care for ROP or the impact of a possible shortage of specialists able and willing to screen for ROP.

Materials and Methods

Six states including Rajasthan, New Delhi, Maharashtra, Madhya Pradesh, Bihar and Assam were randomly selected for the survey. Of the 5229 pediatricians registered with Indian

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Academy of Pediatrics (IAP) in these six states, contact details of 2034 pediatricians were accessible to us. One percent (203) of these pediatricians with accessible phone numbers were included for the telephonic survey. Assuming at least 50% response rate, randomly selected 406 pediatricians were telephonically interviewed about their respective area of practice (urban/rural), mode of practice (government/private), number of total and premature neonates attended, screening practice for ROP, criteria used and reasons for not referring to an ophthalmologist. (Appendix I) All phone calls were made by a single investigator. For statistical analysis, those who referred 'at risk' babies for ROP 'sometimes or regularly' were grouped together. Responses were noted on preformed questionnaire and final data was compiled and analyzed using Spss ver. 15.0 and Stata software. χ^2 test was used to analyze differences between existing practices among rural/urban and government/private pediatricians.

Results

Out of 406 calls made, 241 pediatricians could be contacted. A 97% response rate could be elicited with seven of 241 refusing to respond [Table 1]. Of the 234 respondents, 175 (75%) belonged to urban areas and 59 (25%) belonged to rural area; 154 (66%) were in private practice and 80 (34%) in government service. Among those who were practicing in rural areas, 68% (40 of 59) were in government service. Seventy-seven percent (135 of 175) respondents in urban areas were in private practice. Eighty-two percent pediatricians were attending more than 50 outpatients with 63% attending more than 10 neonates and 51% attending more than five premature babies per week [Table 2].

Although all respondents were aware of ophthalmic complications of premature birth including ROP, 135/234 (58%) pediatricians always got all predisposed newborns screened for ROP either in their own center or referred to an ophthalmologist

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Table 1: Showing number of respondents from each of the six states

| State | No. of respondents |
|----------------|--------------------|
| Delhi | 48 |
| Maharashtra | 51 |
| Madhya Pradesh | 36 |
| Rajasthan | 40 |
| Bihar | 31 |
| Assam | 28 |

working elsewhere. Eighty (34%) pediatricians did not refer at all and 19 (8%) referred only sometimes depending upon the availability of a trained ophthalmologist. We found that the proportion of rural practitioners not referring was significantly higher (61%) when compared to their urban counterparts (25%) ($P=0.001$) [Table 3]. Similar scenario was observed with government practitioners never referring for screening, ($P=0.04$) [Table 4]. However, private practitioners in rural areas had a worse screening practice *vis a vis* government physicians in rural setup (83% vs. 53% in never screening group, $P=0.058$) [Table 4]. However, no significant difference was found among urban respondents working in government or private practice [Table 4].

Non-availability of any trained ophthalmologists in nearby areas (41% of those not screening) or absence of ophthalmologists affiliated to hospitals with inpatient care (23%) were the major deterrents in effective screening of predisposed neonates.

Only 33 of 135 (25%) of those referring regularly followed Indian screening recommendations, 66 (49%) of these considered only gestational age or birth weight and 36 (26%) considered both birth weight and gestational age as the referral criteria for ROP screening.

Discussion

ROP, when severe, results in permanent visual disability, causing a high financial burden for the community and the individual, which is amplified when the child commences formal education.^[5-9] The World Health Organization's Vision 2020 programme targets ROP as an "avoidable disease" requiring early detection and treatment to prevent blindness and the inherent costs to the individual and the community.^[3]

This pilot survey reveals that though 100% of the pediatricians were aware of the neonatal complications and ROP in preterm babies, a large percentage (34%) of them were not screening for ROP at all. Among those who were arranging for screening of neonates routinely, referral in accordance with Indian standard guidelines was observed only in 25% of the respondents (period of gestation ≤ 34 weeks and birth weight ≤ 1500 g and postnatal eventful clinical course).^[10] Around half of the pediatricians were considering only either gestational age or weight as sole criterion for referral. It is indeed disheartening that despite more than 50% pediatricians attending > 5 premature babies per week, the overall percentage of pediatricians arranging for ROP screening stands at 64% and the effective number following standard guidelines is a mere 14.5%. This underscores the important role pediatricians can

Table 2: Percentage-wise distribution of total number of patients, neonates and premature babies attending the outpatient department among respondents

| | No. of respondents (%) |
|--|------------------------|
| Total no. of patients attending OPD per week | |
| 1-50 | 18 |
| 51-100 | 21 |
| 101-200 | 34 |
| 201-400 | 24 |
| > 400 | 3 |
| No. of neonates attending OPD per week | |
| 0-10 | 37 |
| 11-20 | 32 |
| 21-30 | 14 |
| 31-50 | 15 |
| > 50 | 2 |
| No. of premature babies attending OPD per week | |
| 0-5 | 49 |
| 6-10 | 27 |
| 11-15 | 11 |
| 16-20 | 10 |
| > 20 | 3 |

OPD: Outpatient department

Table 3: Depicts distribution and screening of respondents in relation to their respective area of practice

| | Rural | Urban | P-value |
|--|------------------|--------------------|---------|
| Total respondents | 59 | 175 | |
| Government: Private | 40:19 (2.1:0) | 40:135 (1:3.75) | |
| Total respondents never referring for ROP screening | 36 (61%) | 44 (25%) | 0.001* |
| Total respondents referring for ROP screening ^a | 23 (39%) | 131 (75%) | |

* χ^2 test, ^aAlways/or sometimes referring for ROP screening grouped together.

play in identifying predisposed children and preventing ROP at appropriate time.

The main gap between awareness and practice was perceived as paucity of trained ophthalmologists in the vicinity of pediatricians in both rural and urban setup. Awareness being same, screening in rural areas was much lower (39%) as compared with urban areas (75%), and that in government setting was lesser relative to private centers.

A survey of similar kind, by Kemper *et al.*, also reported non-availability of a trained ophthalmologist as major hindrance in ROP screening. Screening protocols followed were also found to be variable; however, no difference was found between rural or urban areas in their study.^[11]

We recommend a larger nationwide survey to evaluate

Table 4: Depicts ROP referral practices of the pediatricians in relation to their affiliation with either government or private sector and rural or urban area

| | Government | Private | P-value |
|--|-------------|---------------|---------|
| Total number of respondents never referring for ROP screening | 48% (38/80) | 33% (51/154) | 0.04* |
| Total number of respondents referring for ROP screening ^a | 52% (42/80) | 67% (103/154) | |
| Rural | | | |
| Number of respondents never referring for ROP screening | 53% (21/40) | 83% (16/19) | 0.058* |
| Number of respondents referring for ROP screening ^a | 47% (19/40) | 17% (3/19) | |
| Urban | | | |
| Number of respondents never referring for ROP screening | 42% (17/40) | 28% (38/135) | 0.12* |
| Number of respondents referring for ROP screening ^a | 58% (23/40) | 72% (97/135) | |

* χ^2 test, ^aAlways/or sometimes referring for ROP screening grouped together

the causes for poor screening of high-risk premature babies, recruiting more trained ophthalmologists especially in rural areas and the need to organise a network among the fellow physicians, paramedical staff and parents, for early detection and effective treatment of ROP. Fortunately, the disease course in ROP offers a unique opportunity for the physician to identify and treat the disease. Most premature babies at risk of developing the disease are already under the care of a physician, so community screening is not required.

The main limitation of our study was that the information was gathered telephonically with limited options put forward to all respondents which may not reflect factual data at times. This was done because the subjective response by every respondent would have been difficult to interpret; therefore we included few choices to simplify the questionnaire. Also the level of care in government and private practice was not enquired about. We could not get information and data about those patients who were diagnosed as having ROP as records were not maintained by all practitioners, more so with physicians who were in individual private practice. Other limitation is that we have done a small number sampling of randomly selected six states of India as an initial pilot survey.

Despite all the limitations of current study, this study has succeeded in providing the ophthalmologists a glimpse of existing referral practices of Indian pediatricians and conveyed the message that pediatricians could possibly be the missing link in the broken chain of ROP referral in a nation which produces children at a daunting rate, and hence we can design a better study to overcome the limitations inherent with a telephonically performed survey since this study has provided

us with the critical significance for doing the same.

Appendix I

- Which area do you subserve?
 - Rural
 - Urban
- Are you in Government or private practice?
- What is your patient inflow per week?
 - 1-50
 - 51-100
 - 101-200
 - 201-400
 - >400
- No. of neonates per week?
 - 0-10
 - 11-20
 - 21-30
 - 31-50
 - >50
- No. of premature babies in a week?
 - 0-5
 - 6-10
 - 11-15
 - 16-20
 - >20
- What criteria do you use for ROP screening?
 - Gestational age only
 - Birth weight only
 - Age and weight
 - As per standard Indian screening guidelines
- How often do you perform ROP screening?
 - Regularly
 - Sometimes
 - Never
- Reason for not screening?
 - No trained ophthalmologists in nearby areas
 - No indoor screening facilities due to lack of trained ophthalmologists attached to hospital
 - Do not attend to premature babies due to lack of facilities and refer to higher center

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