Original Article

Awareness of Retinopathy of Prematurity (ROP) amongst Pediatricians in Pakistan

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Purpose: To find the awareness of ROP among Neonatologists in Pakistan.

Study Design: Quantitative and qualitative survey.
Place and Duration of Study: National pediatric conference held at Lahore in March 2014.

Material and Methods: A questionnaire was given to all the pediatricians and neonatologists at a national pediatric conference held at Lahore in March 2014. The answering pediatricians/neonatologists were divided into two groups. Group I consisted of 28 pediatricians who had worked for less than 5 years, and in group II, there were 34 pediatricians who had worked for more than 5 years. This questionnaire was especially constructed to assess knowledge, attitude, and practice (KAP) of Retinopathy among participants attending the conference.

Results: A total number of 62 pediatricians/neonatologists participated in the study Majority of the 58pediatricians (93%) had heard about retinopathy of prematurity and 43 (69.4%) agreed that the infants must be checked for ROP. A few participants 15 (24%) stated that there is a ROP screening criteria, 44 (71%) responded negatively and 3 (4.8%) responded that there may be a criteria present. Forty eight (77.4%) stated that they did not have an ophthalmologist for ROP screening while 11 (17%) had an ophthalmologist. Thirty five (56.5%) agreed that there are treatment options for ROP but 20 (32.3%) were not sure about such treatment options. Thirty two (51%) agreed that a patient should be given reappointment within 3 days once he missed one. ROP was an important issue for 40 (64%) of doctors while 16 (25%) were not sure about this. There was insignificant difference with respect to years of experience as pediatrician and the questions asked.

Conclusion: ROP awareness should be raised at a national level to improve the development of ROP screening and treatment services in Pakistan.

Keywords: Retinopathy of Prematurity, Awareness, Screening, Neonatologist.

Retinopathy of prematurity (ROP), is a proliferative retinopathy that develops in preterm infants. As the survival rate of premature infants is increasing worldwide, ROP is emerging as an important cause of preventable blindness. Different criteria are set for the high, middle and low – income countries.[1] Screening for middle-income countries like India and Pakistan is recommended in infants with a birth weight of less than 2000 grams, gestational age of less than 35 weeks, multiple births, and eventful postnatal period like oxygenation, sepsis, respiratory distress syndrome and blood transfusions.[2]

At least 50,000 children are blind due to ROP throughout the world[3] and in India alone, which is a country like our socioeconomic background, 500 children are estimated to become blind every year.[4]

As the survival rate of premature infants is improving, the blindness due to ROP is increasing in

children especially in the developing countries; this is referred as "third epidemic" of ROP.[5,6]

In Pakistan, neonatal death rate was 82.5 percent in the year 2000, which dropped to 61.3 percent in 2012, showing a slow improvement over twelve years.[7] With this slight improvement in survival rate, the incidence of blindness due to ROP increased. A referral system was then developed by the leading Agha Khan University Hospital, Karachi.[8]

A key strategy used for ROP screening programs is recognition and an early referral of high risk infants.[9] One study carried out by Aga Khan University Hospital, Karachi; states that a significantly high number of children attending the hospital had turned blind because, as infants, they were not screened or referred to the ophthalmologists for the management of ROP.[10] In India, ten year data was collected to find out the incidence of ROP in Asian Indian premature babies.[11], and world-wide.[12]

The initial screening guidelines given by the American Academy of pediatrics, and American association for Pediatrics and Strabismus in 2006.[13] These guidelines recommend screening for the infants "with a birth weight of less than 1500g or a gestational age of 32 weeks or less and selected infants with a birth weight 1500 and 2000g or gestational age of more than 32 weeks with an unstable clinical course, including those requiring cardio-respiratory support and those who are believed by their attending pediatrician or neonatologist to be at high risk, should have retinal screening examination performed after pupillary dilation using binocular indirect ophthalmoscopy to detect retinopathy of prematurity (ROP)."

Neonatologists / pediatricians play a vital role in identification and referral of neonates to the ophthalmologists.[9,10] Thus, it is essential that neonatologists/pediatricians should be aware of ROP screening guidelines, risk factors, referral indications and resource availability.[14] The present study is carried to find out the level of knowledge amongst this group of doctors.

MATERIAL AND METHODS

A questionnaire was given to the pediatricians and neonatologists who had come to attend a national pediatric conference held at Lahore in March 2014. A total number of 62 doctors answered the questionnaire. The answering pediatricians/ neonatologists were divided into two groups. Group I consisted of pediatricians who had worked for less than 5 years, and in group II, pediatricians had worked for more than 5 years.

This questionnaire was especially constructed to assess knowledge, attitude, and practice (KAP) of Retinopathy among participants attending the conference (Fig 1.) Six questions were about the profile of the doctors attending the conference. Twelve questions were formulated for the knowledge, attitude and practice (KAP) study. These consisted of 9 open – ended and 3 closed – ended questions.

The ROP related questionnaire included questions for collecting information about their educational and practice profile, knowledge about ROP screening guidelines, risk factors and treatment guidelines. Attitude assessment included questions about knowing if infants needed their eyes examined by the ophthalmologists and a comprehensive question about the time of referral if the infant missed one appointment. Practice based questions included if they had taken care of infants with ROP, was there an ophthalmologist attending their neonatal intensive care unit, and if there was a screening criterion practiced at their unit.

RESULTS

A total number of 62 pediatricians/neonatologists participated in the study. Group I consisted of 28 pediatricians who had an experience of less than five years in their field. Group II consisted of those 34 pediatricians who had a work experience of more than five years in their respective field. Majority of the 58 (93%) had heard about the retinopathy of prematurity and 43 (69.4%) agreed that the infants must be checked for ROP while 18 (29%) further specified that only certain babies need to be checked. ROP can cause blindness was highlighted by 60 (96%) of neonatologists. There was a little difference between the doctors who had taken care of the infant with ROP previously as frequency of positive responders was 25 (40%) while negative responders were 37 (59%). When inquired about the screening criteria for ROP few 15 (24%) stated that there is a criteria, 44 (71%) responded negatively and 3 (4.8%) responded that there may be a criteria present. Majority of the doctor 48 (77.4%) stated that they did not have an ophthalmologist for NICU infants and just 11 (17%) had an ophthalmologist. 35 (56.5%) agreed that there are treatment options for ROP but 20 (32.3%) were not sure about such treatment options. There was almost

Table 1: Distribution with respect to awareness to ROP.

Question	Answer, n (%)	Answer, n (%)	Answer, n (%)
Have you heard about ROP?	Yes, 58 (93.5)	No, 2 (3.2)	May be, 2 (3.2)
Do infants need their eyes examination for ROP?	Yes, 43 (69.4)	No 1 (1.6)	Only certain baby 18 (29)
Can ROP cause blindness?	Yes, 60 (96.8)	Not Sure, 2 (3.2)	
Have you taken care of a baby with ROP?	Yes, 25 (40.3)	No, 37 (59.7)	
Is there a screening criterion for ROP?	Yes, 15 (24.2)	No, 44 (71)	May be, 3 (4.8)
Do you have an ophthalmologist who comes to your NICU for screening ROP?	Yes, 11 (17.7)	No, 48 (77.4)	May be, 3 (4.8)
Is there any treatment for ROP?	Yes, 35 (56.5)	No, 7 (11.3)	Not sure, 20 (32.3)
Please state the criteria for treatment of ROP?	Laser therapy, 5 (8.1)	Depending on stage, 5 (8.1)	Oxygen therapy, 1 (1.6)
If appointment is missed, next appointment must be within?	3 days, 32 (51.6)	1 week, 13 (21) 2 – 3 week, 7 (11.3)	1 month, 4 (6.5) Other, 6 (9.7)
Is ROP is an important disease in Pakistan?	Yes, 40 (64.5)	No, 6 (9.7)	Not sure, 16 (25.8)

Table 2: Comparative opinion of doctors for ROP on basis of experience.

Question	Answer	< 5 Years in Practice n (%)	> 5 Years in Practice n (%)	p-value
Have you heard about ROP?	Yes	24 (41.4)	34 (58.6)	0.259
	No	0 (0)	2 (100)	
	May be	0 (0)	2 (100)	
Do infants need their eyes examination for ROP?	Yes	15 (34.9)	28 (65.1)	0.350
	No	1 (100)	0 (0)	
	Only certain baby	8 (44.4)	10 (55.6)	
Can ROP cause blindness?	Yes	24 (40)	36 (60)	0.518
	Not Sure	0 (0)	2 (100)	
Have you taken care of a baby with ROP?	Yes	7 (28)	18 (72)	0.190
	No	17 (45.9)	20 (54.1)	
Is there a screening criterion for ROP?	Yes	4 (226.7)	11 (73.3)	0.369
	No	18 (40.9)	26 (59.1)	
	May be	2 (66.7)	1 (33.3)	
Do you have an ophthalmologist who comes to your NICU for screening ROP?	Yes	4 (36.4)	7 (63.6)	0.962
	No	19 (39.6)	29 (60.4)	

	May be	1 (33.3)	2 (66.7)	
Is there any treatment for ROP?	Yes	16 (45.7)	19 (54.3)	0.076
	No	0 (0)	7 (100)	
	Not sure	8 (40)	12 (60)	
Please state the criteria for treatment of ROP?	Laser therapy	2 (40)	3 (60)	0.730
	Depending on stage	2 (40)	3 (60)	
	Oxygen therapy	0 (0)	1 (100)	
If appointment is missed, next appointment must be within?	3 days	12 (37.5)	20 (62.5)	0.986
	1 week	5 (38.5)	8 (61.5)	
	2 – 3 week	3 (42.9)	4 (57.1)	
	1 month	2 (50)	2 (50)	
	Other	2 (33.3)	4 (66.7)	
Is ROP is an important disease in Pakistan?	Yes	16 (40)	24 (60)	0.696
	No	3 (50)	3 (50)	
	Not sure	5 (31.3)	11 (68.8)	

equal distribution for the selection of various techniques for treatment of ROP. Most of the doctors 32 (51%) agreed upon that a patient should be given reappointment within 3 days once he missed one, 13 (21%) agreed for 1 week delay, 7 (11.3%) for 2-3 week delay and just 4 (6.5%) agreed for delay in repeat appointment for 1 month. For 40 (64%) of doctors ROP was an important issue while 16 (25%) were not sure about this. There was insignificant difference with respect to years of experience as practicing pediatrician and the questions asked (Table 2). Knowledge of pediatricians / neonatologists about criteria for screening of ROP patients is given in Table 3.

DISCUSSION

It was encouraging to find out that 93.5% of the neonatologists and pediatricians were aware of ROP. The results are similar to the knowledge Attitude Practice (KAP), study done in South India[4], where 97.4% of the 38 participants were aware of the disease. Our sample is double to that of the study mentioned.

Table 3: Criteria for ROP screening.

State the criteria for screening.		
Criteria	**Group I (n=28)**	**Group II (n=34)**
ROP screening at 6 weeks of age	-	2 (5.9)
< 1.5 Kg, < 32 wks. Gestation, receiving high flow oxygen	2 (7.1)	1 (2.9).
Premature babies receiving oxygen/mechanical ventilation.	2 (7.1)	-
Every premature child	2 (7.1)	1 (2.9)
All babies < 1.5 kg to be screened.	-	1 (2.9)
< 32 wks, within 1st. month of birth	-	1 (2.9)
Premature babies receiving oxygen / mechanical ventilation.	2 (7.1)	-

Although 98.8% thought that ROP could cause blindness, only 29% said that only certain babies should be examined by the ophthalmologists, the majority, (71%), thought that all infants needed an ophthalmic screening. When asked about screening criteria, 79% did not answer.

As time is a crucial parameter in ROP screening, it is currently recommended that a uniform screening protocol should be followed.[15] "20thday screening strategy" for the babies born at less than 30 weeks gestational age to detect acute posterior ROP at the earliest, and "30th day screening strategy" for infants born between 30 and 35 weeks.[11-15]

About 50% of the participants had never taken care of an infant with ROP. This figure was higher in the young pediatricians, i.e.; 70.8%. There was a screening criterion in 24.2% of the institutions where the participants had come from. Although, the survival rate of neonates has increased in Pakistan, [16]in our survey only twenty one percent of the pediatricians had an ophthalmologist visiting their institution.

In the present study, 56.5% agreed that a treatment for ROP was available, but when asked about the treatment criteria, 82.2% did not answer at all. Only 8% of the doctors knew about laser therapy. These results indicate that the awareness was good, whereas the depth of knowledge, attitude and practice had a lot of room for improvement.

Partnership groups, like "NO ROP group[5]" should work together to improve screening of ROP, and, hence treatment and prevention of blindness in premature babies. There should be a consensus amongst ophthalmologists and neonatologists about the screening programs throughout Pakistan.

Availability of the referral services is important on a country based level. In our study, only 21% of the pediatricians had an ophthalmologist visiting their NICU for screening purposes.[17] This stresses a need to increase referral services. In a study done by Kemper et al.[12] the most important barrier for ROP screening was 'lack of availability of eye care specialists'. Finding barriers is essential for formulating any successful screening program. Barriers like 'parents not willing' and 'unaware of referral services' were found even in the developed countries like USA.[18]

The most important factor responsible for the development of ROP is the gestational age and birth weight.[9]Risk factors such as supplemental oxygen, sepsis, respiratory distress and anaemia were not significantly associated with ROP. Cerman E et al[19] have divided their results into 3 groups including premature babies less than 28 weeks, those between 29 and 32 weeks and those between 33 and 37 weeks. Majority of the pediatricians in our study knew about the risk factors for the development of ROP. Low birth weight (80.6%), prematurity (75.8%), and high oxygen therapy (85.5%) were the most feared risk factors by the pediatricians.[20,21]

Till date, no study has been published on KAP for ROP amongst pediatricians in Pakistan. The study was done on one of the largest gathering of pediatricians / neonatologist who had come to attend the National conference in Lahore, and hence the results cannot be extrapolated to the entire population of pediatricians.

CONCLUSION

ROP awareness should be raised at a national level to improve the development of ROP screening and treatment services in Pakistan.

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