VOLUME - 9, ISSUE - 9, September - 2020 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Ophthalmology

PREVALENCE OF RETINOPATHY OF PREMATURITY IN TERTIARY CARE CENTER.

Srishty Sen* Junior Resident, Department of Ophthalmology, Government Medical College Jammu-180001 *Corresponding Author

Manpreet Kour Junior Resident, Department of Ophthalmology, Government Medical College Jammu

Pranav Gupta Senior Resident, Department of Ophthalmology, Government Medical College Jammu

ABSTRACT

Background: Retinopathy of prematurity (ROP) is a multifactorial vasoproliferative retinal disorder that increases in the incidence with decreasing gestational age and low birth weight. Those born with risk factors have avascular or incompletely vascularized retina at birth and ROP evolves over 4-5 weeks after birth.

Objective: The aim of this study is to know the prevalence of retinopathy of prematurity in preterm infants, with birth weight ≤ 1500 grams and/or gestational age ≤32 weeks in a tertiary care center.

Methods: The study was conducted in Government Medical College and Hospital Jammu in 2018. 105 newborn babies in the neonatal intensive care unit of SMGS were studied by doing binocular indirect ophthalmoscopy under topical anesthesia. Preterm infants with birth weight of ≤1500 grams and/or ≤ 32 weeks of gestation and baby those at risk of ROP were taken.

Results: 105 babies were enrolled during the study period of which 88 babies fulfilled the inclusion criteria and completed this prospective study.12 babies could not complete the follow-up protocol and 5 babies died before full vascularization of the retina. 88 babies who fulfilled the inclusion criteria were screened and 15 babies were found to have ROP. The prevalence of ROP in this study is 17.04%.

Conclusions: Among the preventable causes of blindness in children, ROP figures very high on the agenda. Low birth weight and gestational age were found to be the most important risk factors for the development of ROP.

KEYWORDS : Low birth weight, Prematurity ,preterm infant, Retinopathy

Retinopathy of prematurity (ROP) refers to the biological process disorder of the tissue layer in premature infants and is one among the intense complications in premature infants.(1) Embryonic retinal arteries begin to grow within the third month of gestation and their development ends at birth. These abnormal vessels are fragile and might leak or bleed, scarring the tissue layer and actuation it out of position. Tractional detached retina is that the main reason for visual disorder and visual defect in ROP.(2) The clinical profile of ROP is totally different within the developed and developing world. Within the majority of the infants, ROP may be a delicate sickness and undergoes spontaneous regression with no important visual sequelae. Future morbidity of ROP contains a spectrum starting from delicate nearsightedness to blindness.

Ours is a tertiary care teaching hospital, that caters to an oversized variety of population. Advancements within the infant care with infant medical aid units with ventilators have led to the enhanced survival of preterm/low birth weight babies. This study was designed to evaluate the prevalence of ROP.

MATERIAL AND METHODS

The present study was conducted within the Upgraded Department of Ophthalmology and Department of pediatrics SMGS, Govt. Medical College Jammu over a amount of one year from Gregorian calendar month 2018 to Gregorian calendar month 2018.

Inclusion criteria

Premature infants admitted with ≤1500 g birth and/or ≤32 weeks gestation.

Babies between 3-35weeksof gestation and >1500-2000 g who were at the highest risk of developing ROP like, metabolic process distress syndrome, sepsis, multiple blood transfusions, multiple births, with apnoea, bodily cavity hemorrhage.(4,5)

Exclusion criteria

Babies from whom consent for the study couldn't be obtained. Babies who expired before full vascularization of the retina.

First examination: A first screening examination was dole out at thirty two weeks of gestation or four weeks old-time, whichever was later. Gestational age was calculated from the last menstrual period or with the assistance of the first-trimester prenatal ultrasonographic diagnosis in cases wherever the last discharge amount date was unsure.(6) Typically the babies were examined earlier within the case of very premature neonates.

Procedure : All preterm babies who satisfied any one of the inclusion criteria were considered for the study. Demographic history and risk factors like metabolic process distress syndrome, sepsis, multiple blood transfusions, multiple births, apnoeic episodes, and element square measure given were documented employing a study proforma.

Preparation of the child: the pupils were dilated with a mixture of phenylepherine 0.5% and Tropicamide 0.5% instilled three times at ten minutes interval concerning one hour before the scheduled examination. Any resistance to dilation was noted. Mother was suggested to not feed kid simply before the examination because the child would possibly aspirate or vomit.

Method of examination The examination was done underneath antiseptic precautions |in a very temperature-controlled area by an ophthalmologist within the presence of a neonatologist. The indirect ophthalmoscopic examination was done. One drop of topical paracaine eye drops was accustomed anaesthetize the tissue layer. A wire speculum was accustomed keep the eyelids apart. Once decreasing the space illumination, the anterior segment was 1st visualised to look for tunic vasculosa lentils, aperture dilatation and lens, and media clarity. Then the posterior pole was examined for any and sickness. A scleral indenter was accustomed

visualize the outer boundary. The outer boundary was examined altogether clock hours to appear for the extent of changes from nasal to the temporal tissue layer. Care was taken to not place an excessive amount of pressure on the globe throughout the examination, untoward infant complications were sought for and managed fittingly.

Follow up protocol if no ROP was detected at the initial examination, the infants were re-evaluated once each fortnight till organic process was complete. If ROP was detected, the examinations were performed weekly for stage 1-2 disease and additional often for stage three sickness, till the sickness started resolution or progressed to the brink stage.(7) Babies showing proof of regression were followed up until organic process was complete. Babies about to the brink stage were suggested treatment. The follow-up examinations were done at the infant medical aid Unit itself if the baby had to remain there for a few alternative reasons. The discharged babies were referred to as up for follow up as suggested by the eye doctor.

STATISTICAL ANALYSIS

Data were analyzed mistreatment SPSS code version twenty two and MedCalc code version fifteen. Information were understood as percentages and proportions.

RESULTS

105 babies were taken in the study period of which 88 babies fulfilled the inclusion criteria and completed this prospective study.12 babies could not complete the follow-up protocol and 5 babies died before full vascularization of the retina. Out of 88 babies screened, 48 were male and 40 were female. The birth weight of the study population ranged from 550 g to 2000 g.

Table 1: Prevalence of retinopathy of prematurity (any stage).

ROP	NO.	%
Present	15	17.04
Absent	73	82.95
Total	88	100

88 babies who fulfilled the inclusion criteria were screened and 15 babies were found to have ROP. The prevalence of ROP in this study is 17.04%. Out of 15 babies with ROP, 6 babies (40%) were in stage 1, 6 babies (40%) were in stage 2 and 3 babies (20%) were in stage 3 (Table1).

Table 2: Type of gestation.

ROP and Type of Gestation					
		ROP			
		Present	Absent	Total	%
Type of gestation	Single	8	40	48	16.66
	Twins	7	33	40	17.5
	Total	15	73	88	17.04

Out of 88 babies, 48 babies were singletons, 40 babies were twins. Out of 48 singletons, 8 babies developed ROP. Only 7 of the 40 twins developed ROP. The type of gestation was not found to be statistically significant with ROP in the present study (Table 2).

Table 3: Birth weight and ROP.

Distribution as per birth weight					
	ROP				
	Gram	Present	Absent	Total	% ROP present
Birth weight	<1000	12	15	27	44.44
	1000-1500	3	48	51	5.88
	>1500	0	10	10	
	Total	15	73	88	17.04

Lower birth weight was significantly associated with an increased incidenceof ROP. The incidence of ROP was 44.44% in extremely low birth weight babies weighing ≤1000g at birth, while in the very low birth weight group weighing 1000-1500g at birth was 5.88%. The only baby with severe ROP had a birth weight of 660g (Table 3).

Table 4: Gestational age and ROP.

Distribution as per Gestational age					
	ROP				%ROP Present
	Weeks	Present	Absent	Total	
Gestational age	<28	10	2	12	83.33
	28-32	5	61	66	7.57
	>32	0	10	10	100
	Total	15	73	88	17.04

The gestational age of the ROP babies ranged from 26-32 weeks (mean 27.60±1.72 weeks), while that of non-ROP babies ranged from 27-34 weeks (mean 30.59±1.71 weeks). The incidence of ROP was 83.3% in babies born <28 weeks of gestational age. Among babies born between 28-32 weeks of gestation, the incidence of ROP was 7.57%. Lower gestational age was found to be statistically significant. (Table 4).

Table 5: Oxygen and ROP.

Oxygen and ROP					
		ROP			%ROP present
		Present	Absent	Total	
Oxygen	Given	15	46	61	24.59
	Not given	0	27	27	
	Total	15	73	88	17.04

Out of 88 babies screened 61 were given oxygen and 15 (24.59%) babies developed ROP. None of the babies for whom oxygen was not given developed ROP. Oxygen administration was a significant risk factor or the development of ROP (Table 5).(8)

DISCUSSION

Retinopathy of prematurity (ROP) is a vaso-proliferative disorder affecting premature infants. It is one of the most common causes of visual loss in children and can lead to lifelong vision impairment and blindness. Low birth weight and gestational age were found to be the most important risk factors for the development of ROP. The prevalence of ROP in this study was 17.04 % and this was less than that reported in many other studies; 24% in India, 29.2% in Singapore, and 32.4% in Pakistan.(5,9,10). This can be explained by the fact that these studies involved only very low birth weight infants. However, it is higher than the study done in Beijing which involved infants with higher gestational age and birth weight (up to 2 kg and /or 34 weeks gestational age) and reported a prevalence of 10.8%. The prevalence is in concert to the study conducted by an author (3) in 2014 where the point prevalence was 12.5%.

Risk Factors

ROP is a multifactorial disease involving many risk factors. Prematurity, low birth weight, respiratory distress, sepsis are the most significant risk factors.(4,5)

Effect of low gestational age was found to be an important risk factor in our study which is in concert to the multicentric study CRYO-ROP where an increase in gestational age decreased the odds of reaching threshold disease by 19%.

We found that birth was an insignificant factor for the development of ROP which concurs with authors (11). We found that birth weight was an insignificant factor for the development of ROP. But this was in disagreement with many studies(12,13,14), which reported that lower birth weight was significantly associated with the development of ROP, and

explained that by more susceptibility for oxygen therapy, prolonged ventilation, sepsis, and blood transfusion in very low birth weight infants. In this work, this may be related to the small number of patients (12 out of 27 cases) whose birth weight was less than 1000 g.

In this study, we found that sepsis was significantly associated with the development of ROP. This was in agreement with (12), (15) which may be due to the effect of endotoxins on retinal blood vessels.

Oxygen was an independent risk factor for the development of ROP according to the study (16) which was in concert to our study. Through a study done by (17) found oxygen as an insignificant factor for the development of ROP.

CONCLUSION

ROP screening program should include neonates with birth weight <1500g and/or gestational age <32 weeks and babies more than 1500g and >32weeks with other risk factors of ROP. Along with the regular screening, each neonatal unit should have a policy on oxygen administration. Pulse oximeters and blended oxygen should be used in delivery rooms and neonatal units to guide oxygen therapy. All babies who receive oxygen should be monitored closely to target oxygen saturation of 90-95% with the appropriate use of oxygen blenders.

ACKNOWLEDGEMENTS

The authors would like to thank consultant pediatrician and Ophthalmology staff nurses, and laboratory technicians of the Pediatrics Department of SMGS, Govt. Medical College and Hospital Jammu for helping with data collection and laboratory analyses.

REFERENCES

1. Prendiville A, Schulenburg WE. Clinical factors associated with retinopathy of prematurity. Arch Dis Child. 1988;63(5):522-7.
2. Purohit DM, Ellison RC, Zierler S, Miettinen OS, Nadas AS. Risk factors for retrolental fibroplasia: Experience with 3,025 premature infants. National Collaborative Study on Patent Ductus Arteriosus in Premature Infants. Pediatrics. 1985;76(3):339-44.
3. Gupta AK,PanditaN,GuptaS,SharmaAK.Determinants of retinopathy of prematurity:A prospective observational study from Tertiary Care Teaching Hospital from North India.Indian J Child Health.2014;1(3):109-13.3.
4. Shah VA,YeoCL,LingYL,HoLY.Incidence,risk factors of retinopathy of prematurity among very low birth weight infants in Singapore.AnnAcad Med Singapore.2005;34(2):169-178.
5. Gupta VP, Dhaliwal U, Sharma R. Retinopathy of prematurity-risk factors. Indian J Pediatr. 2004;71:887–92.
6. Ballard JL, Khoury JC, Wedig K, Wang L, Eilers-Walsman BL, Lipp R. New Ballard Score, expanded to include extremely premature infants. J Pediatr. 1991;119(3):417-23.
7. Committee for the Classification of Retinopathy of Prematurity (CCRP). An international classification of retinopathy of prematurity. Arch Opthalmol. 1984;102:1130-4.
8. Dutta S, Alaraop S, Narang A. Risk factors of threshold retinopathy of prematurity. Indian Pediatr. 2004;41:665–71.
9. Murthy KR, Nagendra BK. Analysis of risk factors for the development of ROP in preterm infants at a tertiary referral hospital in South India. Acta Medica Lituanica. 2006;13:147–51.
10. Taqui AM, Syed R, Chadry TA. Retinopathy of prematurity: Frequency and risk factors in a tertiary care hospital in Karachi, Pakistan. J Pak Med Assoc. 2008;58:186–90.
11. Arroe M, Peitersen B. Retinopathy of prematurity: Review of a seven-year period in a Danish neonatal intensive care unit. Acta Paediatr.1994;83:501–5.
12. ShahPK,NarendranV,SaravananVR,Raghuram A,ChattopadhyayA , KashyapM,et al.Fulminateretinopathyofprematurity-Clinicalcharacteristics andlaser outcome.IndianJOphthalmol2005;53:261-5.
13. Fortes JB, Barros CK, Lermann VL. Prevention of blindness due to retinopathy of prematurity at hospital de clinicas de portoalegre, Brazil: Incidence, risk factors, laser treatment and outcomes from 2002 to 2006. Acta medicaLituanica. 2006;13:130–6.
14. Roberto F, Miguel AH, Ricardo JH. Screening for retinopathy of prematurity: Results of a 7-year Study of underweight newborns. Arch Med Res. 2007;38:440–3.
15. Vinekar A, Dogra MR,Sangtam T,Narang A, Gupta A. Retinopathy of prematurityin Asian Indian babies weighing greater than1250gramsat birth: Ten year data froma tertiary care center in adevelopingcountry. Indian J Ophthalmol2007;55:331-6.
16. Kong L, Fry M, Al-Samarraie M, Gilbert C, Steinkuller PG. An update on progress and the changing epidemiology of causes of childhood blindness worldwide. J AAPOS. 2012;16(6):501-7.
17. Palmer AE, Hardy RJ, Dobson V Cryotherapy for Retinopathy of Prematurity Cooperative Group. Outcomes following Threshold Retinopathy of Prematurity. Final results from the multicenter trial of cryotherapy for retinopathy of prematurity. Arch Ophthalmol. 2005;123:311–8.