

Original article:

Study of retinopathy of prematurity in infants at Pravara Rural Hospital, Loni

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ABSTRACT:

INTRODUCTION: Retinopathy of prematurity (ROP) is one of the main causes of preventable blindness in children¹. It involves abnormal neovascular development in the retina of premature infants.

AIM: To Study Retinopathy of Prematurity in infants at Pravara Rural Hospital

OBJECTIVES: 1.To find out percentage of babies with ROP in premature infants admitted in Pravara Rural Hospital.

2.To determine the staging of ROP in premature infants admitted in a Pravara Rural Hospital.

3.To identify the possible risk factors for ROP in premature infants admitted in Pravara Rural Hospital.

METHODOLOGY: It is a hospital based cross sectional observational study on 227 premature babies from period September 2017 to August 2019 conducted at NICU, Department of Paediatrics and Ophthalmology, Pravara Rural Hospital, PMT, Loni.

RESULTS AND CONCLUSIONS: The number of premature babies with ROP were 56 (24.34%) out of 230. Only babies with gestational age at birth of less than 32 and were found to develop ROP. Although there was no statistically significant difference between the babies with and without ROP with respect to Requirement of Oxygen therapy, there was significant difference found when the duration of Oxygen therapy was taken into consideration. The number of babies with Stage 3 (53.57%) were more as compared to those with stage 2 (17.8%), 1 (17.8%) and Plus disease (10.7%). All babies with Stage 3 ROP and Stage 2 of Zone III were treated with Laser and injection anti VEGF

INTRODUCTION:

Retinopathy of prematurity (ROP) is one of the main causes of preventable blindness in children¹. It involves abnormal neovascular development in the retina of premature infants. The vessels are fragile in nature and leak, causing scar formation in retina and its detachment in severe cases. This tractional retinal detachment causes visual impairment and blindness in children².

Owing to advancement in health care which have increased the survival rate of premature infants, there has been a drastic increase in incidence of ROP³. The risk factors, in addition to prematurity, associated with development of ROP are low birth weight, treatment with high oxygen inhalation, Respiratory distress syndrome, anaemia, sepsis and blood transfusion⁴.

Globally, ROP is estimated to affect more than 50,000 infants annually. The overall incidence of ROP is 10-65%⁵. The incidence of ROP is increasing in India because of improved neonatal survival rate. Out of 26 million annual live births in India, approximately 2 million are <2000 g in weight and are at risk of developing ROP⁶. In India the incidence of ROP is between 38 and 51.9% in low-birth-weight infants.^{6, 7}

MATERIALS AND METHODS

This study was conducted in a rural based hospital giving medical cover to many nearby small villages having population of very poor socioeconomic background.

MATERIAL

STUDY DESIGN: Hospital based cross sectional observational study

STUDY PERIOD: September 2017 to August 2019

SITE OF STUDY: NICU, Dept of Paediatrics and Ophthalmology, Pravara Rural Hospital, PMT, Loni.

SAMPLE SIZE: Considering 18% as prevalence of ROP in premature infants, the sample size was calculated at 95% Confidence interval, 5% Confidence limit and Design effect of 1 to be 227. The OpenEpi, Version 3, open source calculator was used for calculation

PROCEDURE OF EXAMINATION

The examination was done in NICU of our hospital with proper aseptic precautions half an hour before feed and in presence of a neonatologist. The NICU in this hospital uses Continue Positive Airway Pressure for oxygen supplementation. The saturation of Oxygen is maintained at 90%. The First examination was done at 2 to10 weeks (average 4-6 weeks) after birth and/or at 32 weeks of gestational age whichever was later.

For examination of eye, pupillary dilatation was carried out using instillation of Tropicamide 0.5% + Phenylephrine 2.5% combination eye drops 3 times at the interval of 10 minutes. The Proparacaine (0.5%) eye drop was used as anesthetic agent. The child was wrapped with warm cloth cover to keep the baby comfortable and restrain movements of hands and feet.

The general ocular examination was done with diffuse torch light. The anterior segment of eye was evaluated by +20D lens with indirect ophthalmoscope for iris neovascularization and tunica vasculosa lentis. A pediatric eye speculum (Alfonso) was used to separate the lids and fundus was examined with binocular indirect ophthalmoscope with +20D lens. Scleral depression was performed using wire vectis and was carried out transconjunctivally. Topical tear substitute eye drops were used during the examination to prevent the dryness of cornea. The findings were noted in the proforma indicating stages of disease and zone involved, presence or absence of plus disease, prethreshold and threshold disease according to modified ROP classification .



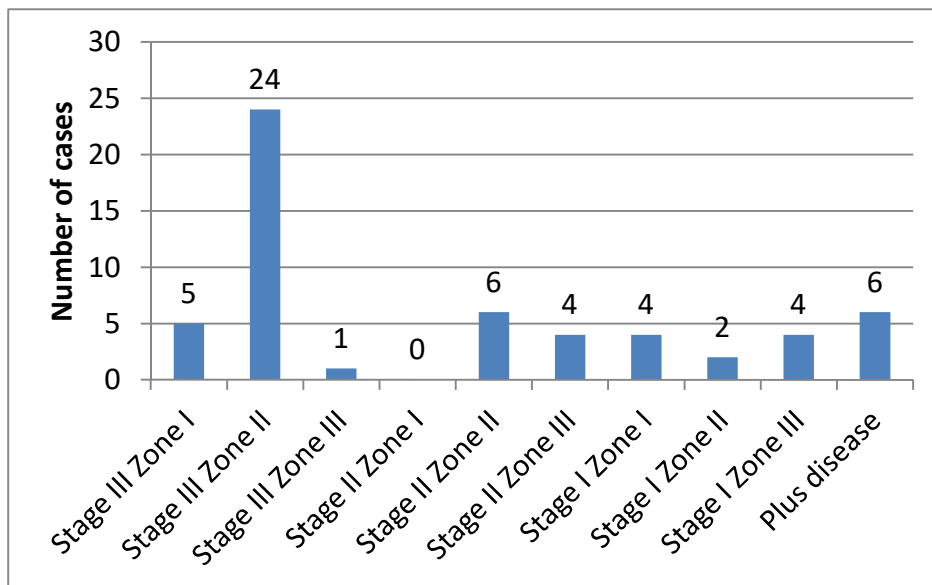
Figure : Indirect ophthalmoscopy of an infant

RESULTS:

Table: Number of ROP Premature babies according to Stage and Zone

Stage	Zone	Number of Premature babies	Advice Given
Stage 3 (30, 53.57%)	Zone I	5	Laser, antiVEGF
	Zone II	24	Laser, antiVEGF
	Zone III	1	Laser, antiVEGF
Stage 2 (10, 17.8%)	Zone I	0	-
	Zone II	6	Follow up
	Zone III	4	Laser, antiVEGF
Stage 1 (10, 17.8%)	Zone I	4	Follow up
	Zone II	2	Follow up
	Zone III	4	Follow up
Plus disease (6, 10.7%)		6	Laser, antiVEGF
Total		56	

Figure : Number of ROP Premature babies according to Stage and Zone



The above Graph represents Number of ROP Premature babies according to Stage and Zone. The number of babies with Stage 3, 2, 1 and Plus disease were 30 (53.57%), 10 (17.8%), 10(17.8%) and 6 (10.7%), respectively.

All babies with Stage 3 ROP and Stage 2 of Zone III were treated with Laser and injection antiVEGF (Avastin). All the remaining babies were followed up. All babies with Plus disease were also treated with Laser and injection antiVEGF

Table: ROP Status & Blood transfusion requirement in Premature babies

ROP Status	Blood transfusion		Total
	Not required	Required	
Present	42	14	56
Absent	139	35	174
	181	49	230

Chi-square test (χ^2):0.6, d.f:1, P:0.21 Non-significant

Table: ROP Status & Surfactant treatment status in Premature babies

ROP Status	Surfactant		Total
	Given	Not given	
Present	8	48	56
Absent	12	162	174
Total	20	210	230

Chi-square test (χ^2):2.91, d.f:1, P:0.043 Significant

DISCUSSION

The present study was aimed to study Retinopathy of Prematurity in the rural setup of Tertiary Care Centre at Pravara Rural Hospital, Loni. During the course of the study, 230 premature babies were included. The number of males (126, 54.8%) were high as compared to females (104, 45.2%). The number of premature babies with ROP were 56 (24.34%) out of 230. Of these 56 babies, females and males were 24 (42.85) and 32 (57.14) respectively. Among the babies suffering with ROP, 47 required while only 3 did not require oxygen therapy. There was statistically significant difference between the number of babies with ROP treated with Surfactant as compared to those without ROP treated with Surfactant. Point to be noted is that there is no standard means of accurately measuring the amount of oxygen that is administered to the neonates.

CONCLUSION

In the present study 230 premature babies were included. The number of males (126, 54.8%) was high as compared to females (104, 45.2%). With respect to the postnatal age, the females had presented as early as 14 and as late as 45 days after birth, while males presented at the 16th to 39th postnatal day. The mean birth weight in females was lower as compared to that of males, but not statistically significant. There was statistically significant increase in birth weight successively in the more than 30 Weeks, 31-32 Weeks and 33 Weeks in that order.

The number of premature babies with ROP were 56 (24.34%) out of 230. Of these 56 babies, females and males were 24 (42.85%) and 32 (57.14%) respectively. On comparing the number of babies with and without ROP with respect to the gestational age, birth weight, Blood transfusion status there was no statistically significant difference observed. However, only babies with gestational age at birth of less than 32 and were found to develop ROP. Although there was no statistically significant difference between the babies with and without ROP with respect to Requirement of Oxygen therapy, there was significant difference found when the duration of Oxygen therapy was taken into consideration. There was also a statistically significant increase in ROP babies suffering from meningitis and Respiratory Distress Syndrome when compared with babies without ROP suffering.

The number of babies with Stage 3 (53.57%) were more as compared to those with stage 2 (17.8%), 1 (17.8%) and Plus disease (10.7%). All babies with Stage 3 ROP and Stage 2 of Zone III were treated with Laser and injection anti VEGF.

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