Original Research Paper

Ophthalmology

STUDY OF INCIDENCE AND PROGRESSION OF RETINOPATHY OF PREMATURITY IN PREMATURE INFANTS IN RELATION TO THE LEVEL OF HAEMOGLOBIN

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ABSTRACT **Aim of the study:** This study aims to correlate the relationship of retinopathy of prematurity (ROP) with anemia in premature infants with regard to incidence and progression of ROP. Materials and Methods: All high-risk infants from our institution and neighboring districts as selected by neonatologist were screened at Special newborn care unit every Thursday on regular basis, and this study includes infants screened at ROP clinic during January 2017–March 2017. Conclusion: In our study at ROP clinic, high-risk premature infants who were screened showed a significant prevalence of ROP in babies weighing <2.000 kg and with female preponderance. The role of anemia and other neonatal risk factors needs to be evaluated further in our ongoing study.

KEYWORDS : Anemia, high-risk premature infants, progression, retinopathy of prematurity

INTRODUCTION:

Retinopathy of Prematurity is a disease affecting the retinae of premature infants. ROP is unique in that the vascular disease is found only in infants with immature, incompletely vascularized retina hence its connection with premature birth.

Pathogenesis:

The mechanism of oxygen effects prints out that the initial changes in the developing vessels was believed to be an injury caused by higher concentration and of oxygen supplementation in premature infants with inadequate respiratory effort and poor oxygen saturation (SPO2)

Induced Hyperoxia caused down regulation of VEGF and death of endothelial cells suggesting that VEGF is an endothelial survival factor. In the time that follows the closure of these growing vessels the differentiating retina becomes increasingly ischaemic and hypoxic and VEGF is upregulated during the neovascularization.

Risk factors

In general prematurity, low birth weight, prolonged supplemental oxygen are established factors for the development of ROP.

Numerous other neonatal factors have been associated with ROP including Cyanosis apnoea, mechanical ventilation, Intraventricular haemorrhage, Seizures, septicemia, in-uterohypoxia, anaemia, and vitamin E deficiency.

Aim of the study

Hence a study was conducted in ROP Clinic to correlate the relationship of ROP with anaemia in Premature infants with regard to the incidence and progression of ROP.

Materials and methods

All high risk premature infants from our institute and neighbouring districts as selected by the neonatologist were screened at ROP Clinic on regular basis and this study includes infants evaluated during January 2017 to March 2017.

Indices included for this study are gestational age, chronological age, birth weight, gender, referral district, staging of ROP and Haemoglobin levels.

Infants were dilated with Tropicamide every 15 mts for three times and the fundus examination was carried out at Neonatal ICU.

Using Wire speculum after instillation of topical anesthetics, fundus examination was done using binocular indirect Ophthalmoscope and with scleral indentation.

All details were recorded in the ROP chart.

Particulars	No.of respondents	Percentage
Normal	55	76.4
Abnormal	17	23.6
Total	72	100.0

Descriptive Statistics

	n	Min.	Max.	Mean	S.D
Age	72	8	180	50.61	38.580
Ges.Age	72	23	40	30.76	4.224
Weight	72	.795	5.400	2.30396	1.147857
Hb	72	7.60	22.80	14.1806	2.79742

A total of 72 infants were screened in our study. Most of the infants were found to be between 30-60 days of birth (40.5%) and below 30 days were of 36.1%

Age

Particulars	No.of respondents	Percentage
Below 30days	26	36.1
31 to 60days	29	40.3
61 to 90days	7	9.7
91 to 120days	7	9.7
121 to 150days	1	1.4
151 to 180days	2	2.8
Total	72	100.0

Affected group were more of female gender population

Particulars	No.of respondents	Percentage
Male	28	38.9
Female	44	61.1
Total	72	100.0

There was no marked difference in respondents between less than 28 weeks of gestational age and above 28 weeks

Particulars	No.of respondents	Percentage
Below 30 weeks	38	52.8
31 to 40 weeks	34	47.2
Total	72	100.0

Most of affected infants were in 1-2 kg group(43.1%) (ie) 31 infants and 2.3 kgs (30.6%) 22 infants.

Particulars	No.of respondents	Percentage
Below 1kg	6	8.3
1 to 2kg	31	43.1
2 to 3kg	22	30.6
3 to 4kg	7	9.7
4 to 5kg	2	2.8
5kg & above	4	5.6
Total	72	100.0

The level of haemoglobin was not much variable in both normal and affected infants with statistical inference of 0.834>0.05 and hence was not significant.

T-Test

Stage	n	Mean	S.D	t	df	Statistical inference
Age						
Normal	55	54.98	41.722	1.754	70	.084>0.05
Abnormal	17	36.47	21.252			Not Significant

Ges.Age						
Normal	55	31.25	4.287	1.801	70	.076>0.05 Not Significant
Abnormal	17	29.18	3.695			
Weight						
Normal	55	2.47791	1.099045	2.388	70	.020<0.05 Significant
Abnormal	17	1.74118	1.153059			
Hb						
Normal	55	14.1418	2.96034	-0.210	70	.834>0.05 Not Significant
Abnormal	17	14.3059	2.26425			

Respondents in relation to age sex place of birth gestational age and birth weight

	Normal		Abnormal		Total		Statistical inference
	n	%	n	%	n	%	
Age							
Below 30days	19	34.5%	7	41.2%	26	36.1%	X2=3.599 Df=5 0.609>0.05 Not Significant
31 to 60days	21	38.2%	8	47.1%	29	40.3%	
61 to 90days	5	9.1%	2	11.8%	7	9.7%	
91 to 120days	7	12.7%	0	.0%	7	9.7%	
121 to 150days	1	1.8%	0	.0%	1	1.4%	
151 to 180days	2	3.6%	0	.0%	2	2.8%	
Sex							
Male	25	45.5%	3	17.6%	28	38.9%	X2=4.225 Df=1 0.040<0.05 Significant
Female	30	54.5%	14	82.4%	44	61.1%	
Place							
Tiruchirappalli	46	83.6%	13	76.5%	59	81.9%	X2=1.759 Df=3 0.624>0.05 Not Significant
Pudukkottai	3	5.5%	2	11.8%	5	6.9%	
Perambalur	5	9.1%	1	5.9%	6	8.3%	
Karur	1	1.8%	1	5.9%	2	2.8%	
Ges.age							
Below 30days	26	47.3%	12	70.6%	38	52.8%	X2=2.833 Df=1 0.092>0.05 Not Significant
31 to 40days	29	52.7%	5	29.4%	34	47.2%	
Type of cases							
New case	30	54.5%	15	88.2%	45	62.5%	X2=6.289 Df=1 0.012<0.05 Significant
Old case	25	45.5%	2	11.8%	27	37.5%	
Weight							
Below 1kg	1	1.8%	5	29.4%	6	8.3%	X2=15.948 Df=5 0.007<0.05 Significant
1 to 2kg	23	41.8%	8	47.1%	31	43.1%	
2 to 3kg	19	34.5%	3	17.6%	22	30.6%	
3 to 4kg	7	12.7%	0	.0%	7	9.7%	
4 to 5kg	2	3.6%	0	.0%	2	2.8%	
5kg & above	3	5.5%	1	5.9%	4	5.6%	
Total	55	100.0%	17	100.0%	72	100.0%	

CONCLUSION:

In our study at ROP Clinic all 72 high risk premature infants who were screened showed a higher prevalence of ROP in babies weighing less than 2 kg and with female preponderance. The role of anaemia and other neonatal risk factors in ROP needs to be evaluated further in our ongoing study.

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