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Research Article

A STUDY ON RETINOPATHY OF PREMATURITY BY REVIEW OF RISK FACTORS THROUGH SCREENING IN TERTIARY EYE CARE HOSPITAL

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ABSTRACT

Objectives: Retinopathy of prematurity (ROP) is a vasoproliferative disease that affects premature infants.The purpose of the study is to identify various maternal and fetal risk factors for ROP and to categorize the premature babies according to severity of disease and associated risk factors.

Methods: This is a cross sectional study conducted on 100 infants from May 2021 to August 2021. Examination was done by a single ophthalmologist specialized to screen the babies. It was done 4 weeks after the birth and Detailed history included the birthweight, gestational age, the postnatal problems, obstetric history were obtained. Pupillary dilatation was done with a mixture of 2.5% phenylephrine and 1% tropicamide.0.5% proparacaine is used for topical anesthesia. An infantile lid speculum was used to separate the lids. Fundus was examined with binocular indirect ophthalmoscope and +20D condensing lens.

Results: Prematurity and low birth weight are the most common and important risk factors. Most of the babies had symmetrical disease (88%) and zone 3 is most commonly involved (67%).Apart from prematurity and low birthweight, respiratory distress syndrome with oxygen supplementation was common association (56%).Various maternal risk factors were found to be common associations like pre eclampsia (33%) and gestational diabetes (22%).

Conclusion: ROP is associated with several maternal and fetal risk factors. Early detection by screening of the premature babies can prevent blinding complication. Inadvertent and generous oxygen administration must be stopped due to its high association with ROP. All the premature babies must be screened 4 weeks after gestation for the earliest detection of the disease with an ophthalmologist specialized in that field with regular followups and prompt intervention as soon as the disease is identified.

Keywords: Retinopathy of prematurity, Risk factors, Prematurity.

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INTRODUCTION

Retinopathy of prematurity (ROP) is a vasoproliferative disease that affects premature infants. ROP is on a rise in India as a result of the improved neonatal care and better neonatal survival rate [1]. Identifying and screening of at-risk premature infants performed by an experienced ophthalmologist remains the most important strategy in the management of ROP. It is characterized by initial hyperoxic state with cessation of growth of existing retinal vessels followed by pathological hypoxia induced outgrowth of new vessels [2]. Low birth weight (</=1500 g), prematurity(</=32 weeks) are the most important risk factors [3]. Several maternal and fetal risk factors can lead to ROP [4].

Maternal risk factors

Multiple gestation, premature rupture of membranes, preeclampsia, eclampsia, gestational diabetes, placenta previa, antenatal infections and antenatal steroid injections [5].

Fetal risk factors

Prematurity, low birth weight, oxygen supplementation, blood transfusion, sepsis, necrotizing enterocolitis, Hypoxic ischemic encephalopathy, respiratory distress syndrome (RDS), hyperbilirubinemia, intraventricular hemorrhage [6].

Aim of the study

To identify several maternal and fetal risk factors associated with ROP by screening in a tertiary eye care hospital.

Objectives

1. To identify various maternal and fetal risk factors for ROP
2. To categorize the premature babies according to severity of disease and associated risk factors.

METHODS

A cross sectional study of 100 infants who were screened according to Indian guidelines (gestational age </=34 weeks, birth weight <=2000 grams) done between May 2021 and August 2021.

Examination was done by a single ophthalmologist specialized to screen the babies.

It was done 4 weeks after the birth and Detailed history included the birthweight, gestational age, the postnatal problems, obstetric history were obtained.

Pupillary dilatation was done with a mixture of 2.5% phenylephrine and 1% tropicamide. 0.5% proparacaine is used for topical anesthesia.

An infantile lid speculum was used to separate the lids. Fundus was examined with binocular indirect ophthalmoscope and +20D condensing lens.

Inclusion criteria

All the babies with gestational age less than or equal to 34 weeks and birth weight ≤2000 grams.

Exclusion criteria

All the babies with gestational age more than 34 weeks and birth weight more than 2000 grams.

RESULTS

Out of 100 babies, males were 59% and females were 41%. Out of 100, 36 babies with ROP and 64 without ROP. Out of 36, 32 (88%) were with symmetrical disease and 4 (12%) were with asymmetrical disease (Fig. 1). Out of 36, 4 (11%) babies had Zone 1 ROP, 8 (22%) had Zone 2 ROP, 24 (67%) had Zone 3 ROP (Table1) (Fig. 2). From Table 2, it shows 10 (28%) are in stage 1, 18 (50%) are in stage 2, 6 (17%) in stage 3, 2 (0.06%) in stage 4, and stage 5,0 (Fig. 3). Table 3 shows out of 100 babies, 10 (10%) had history of blood ransfusion and 50 (50%) had history of oxygen administration. RDS is found to be common association among fetal risk factors (Table 4). Among the maternal risk factors, preeclampsia is most common association (Table 5). Babies with plus disease were 12(33%)and without plus disease 24(66.6%) (Fig. 4).

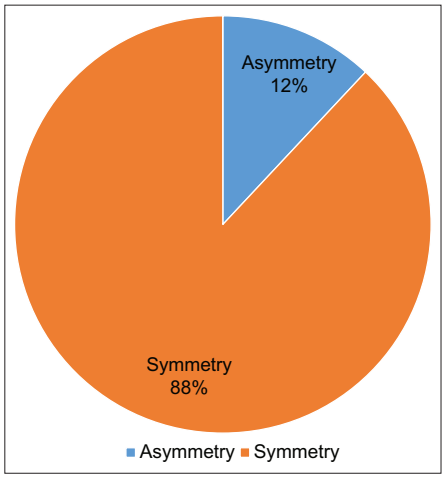

Fig. 1: Symmetry

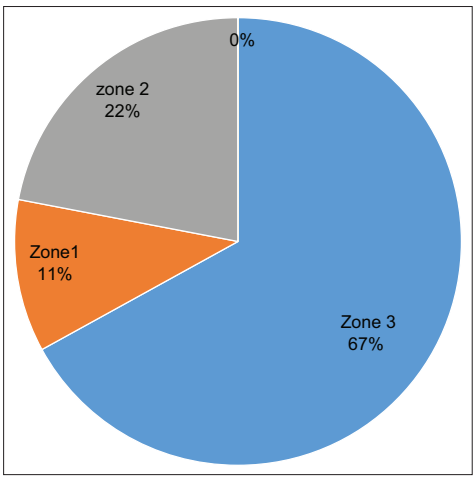

Fig. 2: Zones of ROP

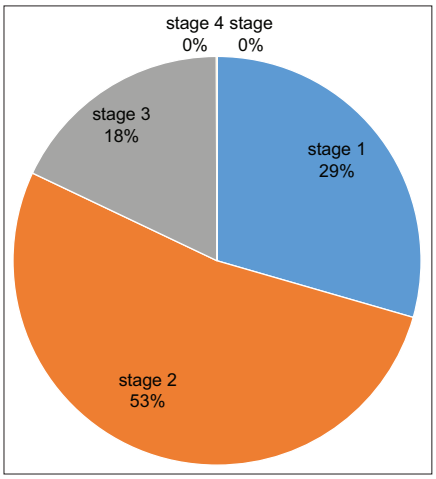

Fig. 3: Stages of ROP

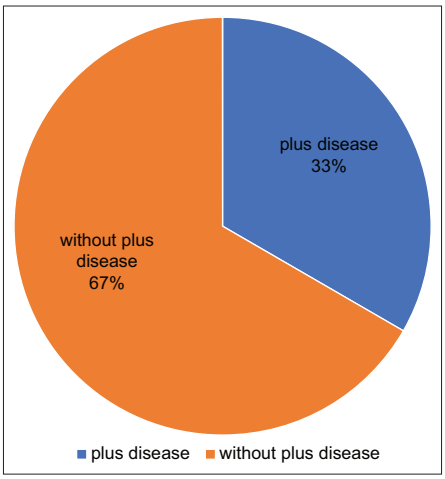

Fig. 4: Plus disease

Table 1: Zones OF ROP

Zones OF ROP	Zone 1	Zone 2	Zone 3
Number and %	4 (11%)	8 (22%)	24 (67%)

ROP: Retinopathy of prematurity

Table 2: Stages of ROP

Stage of ROP	1	2	3	4	5
Number and %	10 (28%)	18 (50%)	6 (17%)	2 (0.06%)	0

ROP: Retinopathy of prematurity

Table 3: History

History	Blood transfusion	Oxygen administration
Total babies (100)	10 (10%)	50 (50%)

Table 4: Fetal risk factors

Fetal risk factors	Number and %
HIE	8 (22%)
NEC	6 (17%)
Anemia	8 (22%)
Sepsis	10 (28%)
Hyperbilirubinemia	6 (17%)
RDS	20 (56%)

RDS: Respiratory distress syndrome, HIE: Hypoxic ischemic encephalopathy, NEC: Necrotizing enterocolitis

Table 5 :Maternal risk factors

Maternal risk factors	Number and %
Multiple gestation	6 (17%)
Premature rupture of membranes	8 (22%)
Pre eclampsia	11 (33%)
Eclampsia	6 (17%)
Gestational diabetes	8 (22%)
Antenatal infections	4 (11%)

DISCUSSION

With improving scientific advances and technological understanding the incidence of ROP is rapidly rising.The constant urge to make premature babies survive with oxygen administration and blood transfusions has lead to increase ROP cases. Prematurity and low birth weight are the most common and important risk factors.Of the total 100 babies screened 36 babies (36%) have ROP and in study by L.Gopal *et al* incidence was found to be 38% and it was 44% in a study by Eduardo Goncalves etal.Most of the babies had symmetrical disease (88%) and zone3 is most commonly involved (67%). Apart from prematurity and low birth weight, RDS with oxygen supplementation was common association (56%).Various maternal risk factors were found to be common associations like pre eclampsia (33%) and gestational diabetes (22%).

CONCLUSION

ROP is associated with several maternal and fetal risk factors.Early detection by screening of the premature babies can prevent blinding complications. As the Zone 1 is rarely involved this disease carries a favourable outcome. Inadvertent and generous oxygen administration must be stopped due to its high association with ROP. All the premature babies must be screened 4 weeks after gestation for the earliest detection of the disease with an ophthalmologist specialized in that field with regular follow ups and prompt intervention as soon as the disease is identified.

AUTHORS CONTRIBUTION

Gurivindapalli Premalatha, Assistant professor in department of Ophthalmology and full time Retina specialist in Government Regional Eye Hospital, Visakhapatnam, diagnosed the cases of ROP and analyzed the reports of the patients.

Chirumamilla Ramya, Postgraduate in department of Ophthalmology, Government Regional Eye Hospital, Visakhapatnam, analyzed them, thereby framing the final outcome of the study, along with the other authors.

Gutti Satyavathi, Associate professor in department of Ophthalmology, Government Regional Eye Hospital, Visakhapatnam, aided in diagnosing the cases along the other authors.

Reddi Santhosha Nikhila,Postgraduate in department of Ophthalmology, Government Regional Eye Hospital, Visakhapatnam, aided in collecting the cases along with the other authors.

CONFLICTS OF INTEREST

The authors declared no conflicts of interest.

AUTHORS FUNDING

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