



## Prevalence & risk factor analysis for Retinopathy of Prematurity in a Tribal Based Secondary Care Teaching Hospital Adilabad (Telangana), India

### KEYWORDS

Retinopathy of prematurity (ROP), low birth weight, prematurity, Risk factors

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### ABSTRACT

**Introduction:** Retinopathy of prematurity (ROP) is increasingly being recognised as one of the major preventable cause of childhood blindness globally. ROP mainly affects children with low birth weight and prematurity who are mainly exposed to longer duration of oxygen therapy.. The present study was designed to assess the magnitude of the problem of ROP in a tribal based medical college and hospital in Adilabad, a district in the state of Telangana.  
**Materials and Methods:** Babies with less than 1800 grams of birth weight with known risk factors for ROP were included in the study. The included babies were screened for ROP within 3-5 weeks of birth or gestational age below 32 weeks whichever was earlier. Follow up examinations were done according to the grade of ROP. In severe ROP (Grade 3, 4) the eyes were examined every week and in mild ROP (Grade 1, 2) every 2-4 weeks until the resolution of ROP (retinal maturation).  
**Results and Analysis:** Incidence of ROP in the present study population was 31.64%. Analysis of risk factors showed statistically significant relation with birth weight, gestational age and use of oxygen as significant factors.  
**Conclusion:** The incidence of ROP was found to be comparatively high. This emphasizes the need for regular screening in secondary care centres and peripheral hospitals. All babies with history of birth asphyxia, neonatal convulsions, septicaemia requiring prolonged oxygen administration should undergo ROP screening irrespective of their gestational age.

### INTRODUCTION:

Retinopathy of prematurity (ROP) is a vasoproliferative disorder affecting the retina of premature infants. It is increasingly being recognised as one of the major and preventable cause of childhood blindness globally. ROP mainly affects children with low birth weight and prematurity. Low birth weight is defined as birth weight below 2500gms or less. (1) Low birth weight babies can be further classified as very low birth weight that is 1500gms and extremely low birth weight that is less than 1000gms. International Journal of Health Sciences & Research (www.ijhsr.org) 89 Vol.5; Issue: 7; July 2015 Prematurity is defined as birth before 37 weeks of gestation. (1) Apart from low birth weight various other risk factors such as uncontrolled use of oxygen, anaemia, (2) birth asphyxia and sepsis [3] have been associated with development of ROP.

Incidence of ROP is reported to vary from 20% to 47% (5) among different studies in India. Early detection with timely screening and treatment has proved to be beneficial in preventing complications of ROP and its sequela. The present study was designed to assess the magnitude of the problem of ROP in a tribal based medical college and hospital in Adilabad district. It aims to determine the incidence of ROP in the said institution and assess its relevant risk factors.

### MATERIALS AND METHODS:

The prospective study was carried out in the Special New Born Care Unit (SNCU) of Rajiv Gandhi Institute Of Medical Sciences (RIMS) and Hospital from January 2015 to December 2015. All neonates admitted to the SNCU department during the study period who met the inclusion criteria were included in the study by complete enumeration. Babies with less than 1800grams of birth weight and gestational age <34 weeks with known risk factors for ROP were included in the study. Babies who were too sick for examination, LAMA, referred to other center or who died during the follow up were excluded from the present study. Detailed history regarding the babies and their mothers were obtained. A thorough general and systemic examination was done with the help of the attending

paediatricians. The babies were screened for ROP within 21 to 30 days of life or gestational age below 32 weeks whichever was earlier. Follow up examinations were done according to the grade of ROP. In severe ROP (Grade 3, 4) the eyes were examined every week and in mild ROP (Grade 1, 2) every 2-4 weeks until the resolution of ROP (retinal maturation).

Anterior segment evaluation was done in diffuse torchlight. Eyes were dilated with 1% Tropicamide eye drops and using paediatric eye speculum posterior segment examination was done with binocular indirect ophthalmoscope using a +20 D lens and a scleral depressor. Feeding of the baby was not allowed for 30 mins before & after examination. The extent of maturity of the retina was seen. Identification and staging was done according to the international classification of ROP. The collected data was compiled, tabulated, and analysed using standard statistical methods to find out incidence of ROP. The necessary approval from the Institutional Review Board has been obtained.

### RESULTS AND ANALYSIS:

A total 320 patient were enrolled out of which 13(4.1%) referred, 74(23.1%) were Left against medical advice, and 75(23.4) were died. A total of 316 eyes of 158 babies were screened during the study period. The mean weight of the screened population was 1552.7 grams and the mean gestational age was 30.15 weeks. Of these, 26 (52%) were male and 24 (48%) were female. Of the babies screened, 48 babies (30.37%) had mature retina, 60 babies (37.97%) had immature retina which matured in subsequent visits and 50 babies (31.64%) developed ROP. Incidence of ROP in the study population was 31.64%. 12 out of 50 babies (24%) had immature retina in the first visit that went on to develop ROP in subsequent visits. Rest of the 38 patients (76%) had ROP in the first visit itself. The mean age at which ROP was first diagnosed in the study population was 32.65 weeks. Maximum number of cases (84.3%) showed involvement of Zone II, followed by Zone III (15.7%). There were no babies with Zone I involvement. Only 09 (18%) among 50 cases developed plus disease which required laser photocoagulation. Rest (82%) underwent spontaneous

regression There was statistically significant relation with birth weight (p=0.03), gestational age (p=0,) uncontrolled use of oxygen (p=0.00) and other. No statistically significant relationship, hyperbilirubinemia , use of phototherapy

Total Pt n=320			
		Ref 13 (4.1 %)	
Male 52	LAMA 74 ( 23.2 %)		
Female 48	Died 75( 23.4 %)		
<b>ROP n=50</b>			
Zone I , 0%	Zone II, 84.3 %	Zone III (15.7%).	Plus disease 18%

**Table 1 Showing Analysis of risk factors for ROP among the study population**

Parameters		CASES WITH ROP(50)	PERCENT AGE %	P value
GENDER	MALE	26	52%	P=0.020
	FEMALE	24	48%	
BIRTH WEIGHT	<1800 gms	42	84%	P=0.03
	1800-2000 gms	08	16%	
GESTATIONAL AGE	<32 weeks	46	92%	P=0.01
	32-34 weeks	03	06%	
Uncontrolled use of oxygen	Yes	46	92%	P=0.00
	No	04	08%	
OTHERS		01	02%	

In our study Gopal et al (7) reported the incidence of ROP to be 38% among premature neonates with birth weight less than 2000grams Rekha et al [ 2] reported the incidence of ROP to be 46% in babies with birth weight less than 1500 grams and gestational age less than 35 weeks. Varughese et al (8) reported the incidence of ROP as 52% among babies with birth weight less than 1500 grams and gestational age less than 34 weeks. The difference in the incidence of ROP between previous studies and the present study is probably because of the difference in the inclusion criterion. Some recent studies such as by Gupta et al ( 3) and Chaudhury et al ( 9) has shown the incidence of ROP to be 21.7% and 22.3% respectively. This is probably because the neonatal care centre in their hospital provided controlled delivery of oxygen to the premature at risk babies.

In the present study 15.7% of cases progressed to stage 3and plus whereas Charan et al [ 5] reported that 11.52% of cases progressing to stage 3. The present study showed more number of babies in stage 3and plus disease than previous studies probably due to uncontrolled use of oxygen(10) in the study population.

There was strong association between gender of the baby and the development of ROP which was similar to few other studies increased incidence among male (2) . The causal role of oxygen in the development of ROP has been confirmed by controlled trials and clinical studies. [ 4, 5] Like the present study,

the main limitation of this study is that it has been done in a single centre, so the availability of cases was limited. . The number of babies weighing below 1000grams was very low hence statistical conclusion could not be derived.

Less number of high risk babies due to less ELBW babies and inclusion of only non ventilated babies due to non-availability of the ventilator in our setup.

**CONCLUSION:**

ROP has been considered as one of the main avoidable cause of childhood blindness in Vision 2020. Improving neonatal care allows more and more low birth weight babies to survive and develop the disease. So the incidence of ROP is increasing. Regular screening and timely intervention can save the progression to irreversible blindness. This study was conducted in a tribal based medical college with very wide catchment area and a huge number of premature deliveries. The incidence of ROP was found to be very high (31.64%). This emphasizes the need for regular screening not only in secondary care centres but also in tertiary and peripheral hospitals. The prerequisites for efficient screening mechanism are trained personnel with increased awareness. Hence the obstetrician, neonatologist and the ophthalmologist should receive proper institutionalised training and inter sectorial co-ordination for ROP screening and management. It is strongly recommended that in a tribal based tertiary care centre like the study venue should enforce mandatory ROP screening with indirect ophthalmoscopy for all preterm babies weighing less than 1800 grams beginning 2- 3 weeks after birth. All babies with history of apnoea, prolonged oxygen administration and septicaemia should undergo ROP screening irrespective of their gestational age.

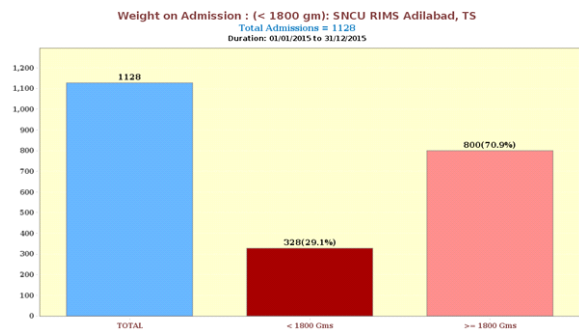
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**DISCUSSION :**

The International classification for ROP has been accepted as a standard for describing and documenting the disease. Their recommendation has been followed for documentation in this study. The first description of retina damage in premature newborn infants was published in 1945 by Terry who reported on 117 cases of blindness described as retrolental fibroplasia.(4) There have been two well-defined ROP epidemic phases: during the 50s, attributed to the extensive use of oxygen in neonatal ICUs and again during the seventies due to increased survival of extremely low weight premature newborn infants.(6) Retinopathy of prematurity develops because of the cessation of vasculogenesis. Instead of a gradual transition from vascular to avascular regions, there is an abrupt limit to the vascular area marked by a demarcation line that indicates the onset of ROP

In our study, the incidence of ROP was found to be 31.64% whereas in various western studies it has been reported to vary from 21% to 65.8%.Among the previously done Indian studies,



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