

Incidence and Risk Factors for Retinopathy of Prematurity in Premature Born Children in Tabuk City

Nada Saleh Albalawi^{1*}, Nada Awad Alsuheimi¹, Amani Abdullah Albalawi¹,
Amani Salem Alatawi¹, Hani Bashir Albalawi²

¹Medical Intern, Ministry of Health, Kingdom of Saudi Arabia.

²MD, Assistant Professor of Ophthalmology,
Faculty of Medicine, University of Tabuk, Tabuk City, Kingdom of Saudi Arabia.

ABSTRACT

Introduction: Retinopathy of prematurity (ROP) is a disease of the eye that considers as one of a complication of preterm birth which characterized by abnormal growth of retina blood vessels at a junction of the vascularized retina and avascular peripheral retina, and it is one of the causes of blindness that can be prevented by early screening and intervention. The major risk factors for development ROP which investigated in many studies include low gestational age at birth, low body weight, duration of oxygen administration, NICU admission and number of days stay in the hospital.

Methods: A retrospective study conducted at King Khaled hospital in Tabuk city to evaluations all preterm infants for development ROP. We observe all premature infants who admitted to NICU in the period from January 2016 to April 2018.

Results: 108 files were included in our study. Out of 108 files, 61, 47 files are belongs to male and female respectively, majority (91.6 %) were ≤ 32 weeks gestational age, 72.2% weight between 1000-1500g at birth, one third (33.3%) diagnosed with retinopathy of prematurity (ROP). Out of 36 (33.3%) who was diagnosed with retinopathy of prematurity (ROP), 50 % were male and 50 % were female, 94.4% were

aged ≤ 32 weeks, 91.6% receive oxygen therapy for more than one week, 66.7% weight between 1000-1500g at birth and 52.8% receive blood transfusion.

Conclusion: The prevalence of ROP in our study was 33.3%; the risk factors for ROP include but not limited to aged ≤ 32 weeks, receive oxygen therapy for more than one week, weight between 1000-1500g at birth and receiving blood transfusion. Both eye were affected, ROP stage 1, ROP zone3 in majority of the cases.

Keywords: Retinopathy of Prematurity; Tabuk; Saudi Arabia.


*Correspondence to:

Nada Albalawi,
Medical Intern,
Ministry of Health, Kingdom of Saudi Arabia.

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INTRODUCTION

Retinopathy of prematurity (ROP) is a disease of the eye that considers as one of a complication of preterm birth which characterized by abnormal growth of retina blood vessels at a junction of the vascularized retina and avascular peripheral retina, and it is one of the causes of blindness that can be prevented by early screening and intervention.^{1,2}

The main cause of visual impairment and blindness in ROP is retinal detachment secondary to scarring of abnormal retina blood vessels.²

Worldwide in 2010 the ROP developed in about 184,700 (uncertainty range (169,600–214,500) preterm infants, about 20,000 (15,500–27,200) of them become blindness or sever visual impairment secondary to ROP and 12,300 developed mild to moderate visual impairment and in the United State, the incidence decreased from 14.70% to 10.88% between 2000 to 2010.^{3,4} One of the studies that conducted in Saudi Arabia in

Riyadh reported the incidence of ROP is 56% in 2008 and other study conducted in Jeddah in 2016 reported the incidence of ROP was 33.7%.^{1,5} The ROP classified into 5 stages, stage 1 is a demarcation line, stage 2 is a ridge with height and width, stage 3 is a proliferation of fibrovascular in extra retinal, stage 4 is partial retinal detachment and stage 5 is total RD.²

The major risk factors for development ROP which investigated in many studies include low gestational age at birth, low body weight, duration of oxygen administration, NICU admission and number of days stay in the hospital.^{1,2,5-8}

The other risk factors for ROP which include surfactant therapy, sepsis, Intrauterine Growth Restriction (IUGR), intraventricular hemorrhage and patent ductus arteriosus (PDA), blood transfusion.^{1,2,6,9}

However, there are no studies conducted in Tabuk city about the incidence of retinopathy of prematurity and its risk factors.

So our aim to report the incidence and risk factors of retinopathy of prematurity in premature born children and investigate the common risk factors for ROP to aware the pediatricians and ophthalmologist about the important screening of all premature born infant <34 weeks and or low birth weight < 1500 g.

METHODOLOGY

A retrospective study conducted at King Khaled hospital in Tabuk city to evaluations all preterm infants for development ROP .We observe all premature infants who admitted to NICU in the period from January 2016 to 2018.

Inclusion Criteria

All premature infants who born less than 34 weeks gestational age and or weight at birth less than 1500g.

The data collected by questioner which include " gender, gestational age at birth, body weight at birth, oxygen therapy and duration of administration, NICU admission and number of days stay in the hospital, surfactant therapy, sepsis, IUGR, intraventricular hemorrhage, patent ductus arteriosus (PDA) blood transfusion, stage of ROP. The analysis included descriptive statistics and graphs.

Ethical Consideration

The study proposal was sanctioned by the ethical committee of the college.

Statistical Analysis

The collected Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) statistical program version 19.

Table 1: General characteristic of study sample

	Number	Frequency		Number	Frequency
Gender	Total :108		body weight at birth		
Male	61	56.4%	< 1000g	15	13.9%
Female	47	43.5%	1000-1500g	78	72.2%
Gestational age			1500g>	15	13.9%
≤ 32 weeks	99	91.6%			
33 – 34 weeks	9	8.3%			
Developed ROP	36	33.3 %			

Table 2: Risk factors for retinopathy of prematurity

	Developed ROP (N= 36)		No ROP (N=72)	
	Number	Frequency	Number	Frequency
Sepsis	16	44.4%	31	43%
IUGR	9	25%	11	15.3%
Blood Transfusion	19	52.8%	25	34.7%
Gestational Age ≤ 32 Weeks	34	94.4%	65	90.2%
Gestational Age Between 33 – 34 Weeks	2	5.5%	7	9.7%
Body Weight < 1000g	10	27.8%	4	5.6%
Body Weight 1000-1500g	24	66.7%	54	75%
Body Weight 1500g>	2	5.6%	14	19.4%
Oxygen Therapy For 7 Days	3	8.3%	23	32.9%
Oxygen Therapy For More Than 7 Days	33	91.6%	47	67.1%
Intraventricular Hemorrhage	7	19.4%	7	9.7%
Patent Ductus Arteriosus (PDA)	6	16.7%	5	6.9%

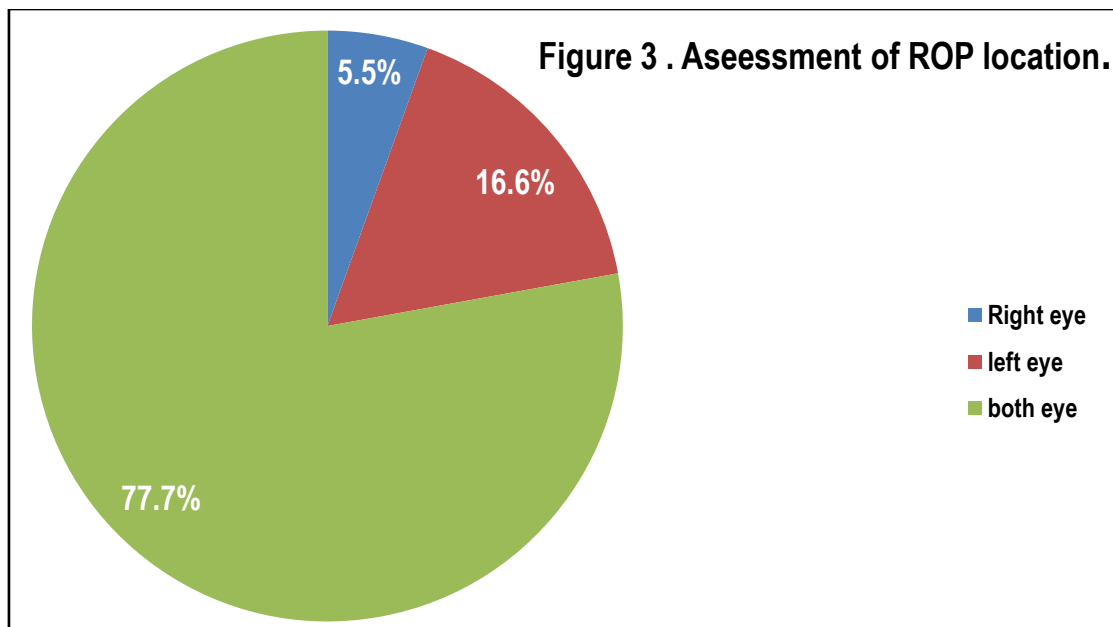
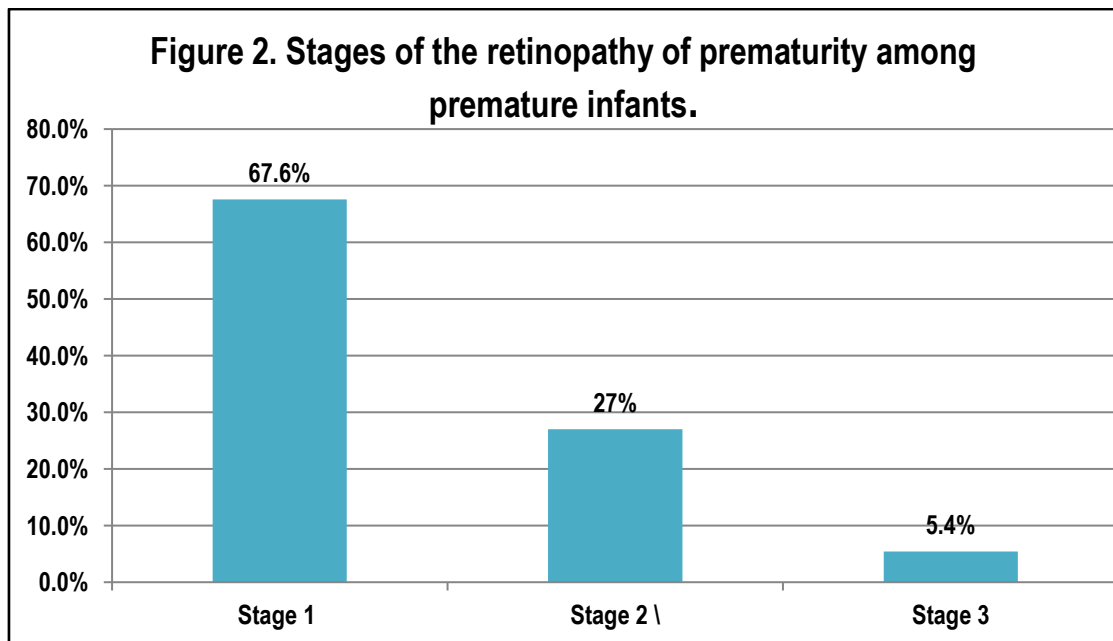
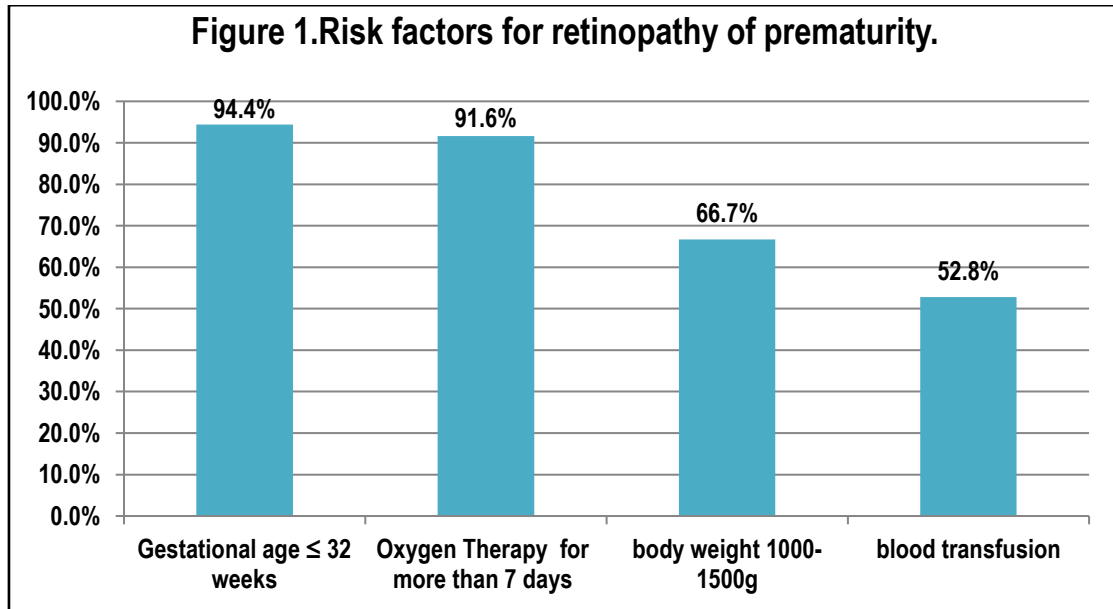
RESULTS

A total of 114 files was reviewed, 3 incomplete files and 3 files were belongs to deed infants were excluded, 108 files were included in our study. Out of 108 files, 61, 47 files are belongs to male and female respectively. Majority (91.6 %) were ≤ 32 weeks gestational age, 72.2% weight between 1000-1500g at birth, one third (33.3%) diagnosed with retinopathy of prematurity (ROP) . (Table 1)

Out of 36 (33.3%) who was diagnosed with retinopathy of prematurity (ROP), 50% were male and 50% were female, 94.4%

were aged ≤ 32 weeks, 91.6% receive oxygen therapy for more than one week, 66.7% weight between 1000-1500g at birth and 52.8% receive blood transfusion. (Table 2, Figure 1)

According to zone of retinopathy of prematurity (ROP) zone 1, 2 and 3 presented in 2.7%, 29.7% and 67.6% respectively. Both eyes were affected in 77.7% of the cases. 67.5% had stage 1 of retinopathy of prematurity (ROP). Plus disease account 6.3%. Three cases were in need for intervention, two of them had ROP leaser and one case had ROP surgery. (Figure 2, Figure 3)



DISCUSSION

The incidence of ROP in our study is 33.3% which is less than 41% as reported in Al-Amro et al study which conducted in 2003 at King Khalid University Hospital in Riyadh, Saudi Arabia.¹⁰ On the other hand our incidence is relatively equal to Waheeb S et al who conduct a study about Incidence of retinopathy of prematurity at two tertiary centers in Jeddah, Saudi Arabia and report an incidence of 33.7%.¹

A lot of risk factors are linked to development of ROP such as low gestational age, low birth weight, sepsis, oxygen therapy and blood transfusion. ¹¹ In our study, aged \leq 32 weeks, receive oxygen therapy for more than one week, weight between 1000-1500g at birth and receiving blood transfusion were found to be risk factors for development of ROP.

CONCLUSION

The prevalence of ROP in our study was 33.3%; the risk factors for ROP include but not limited to aged \leq 32 weeks, receive oxygen therapy for more than one week, weight between 1000-1500g at birth and receiving blood transfusion. Both eye were affected, ROP stage 1, ROP zone 3 in majority of the cases.

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