# Summary & Conclusion & Recommendations

# SUMMARY AND CONCLUSION

Despite the marked improvement in the neonatal care, monitoring and treatment, still Retinopathy of Prematurity (ROP) continues to be an important problem in premature infants. The exact etiology of ROP is still unknown but a large number of factors are suggested to be involved in the development of the disease. This study presents the effect of human milk feedings on the incidence of ROP among VLBW infants, also to determine if the presence of candidemia in infants is associated with an increased incidence and severity of ROP after controlling for some possible risk factors. All preterm infants were admitted to Neonatal intensive care unit of Benha children hospital from the period of March 2003 to March 2006, and exposed to mechanical ventilation during their stay inside the NICU due to respiratory distress

Our study included 120 preterm neonates; only 60 cases who continued up to 28 days and underwent indirect opthalmoscopic examination. Others either died (48 cases) or discharged without eye examination (12 cases).

The results showed that the incidence of ROP was found in 35 out of 60 preterm infants (the incidence was 58%), and 25 out of 60 were normal (42%)

The incidence of the various stages of ROP was as follows:

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| 13 cases showed stage I | (21.5%) of all studied cases |
| 11 cases showed stage II | (18.3%) of all studied cases |
| 8 cases showed stage III | (18.3%) of all studied cases |
| 2 cases showed stage IV | (3.4%) of all studied cases |
| 1 cases showed stage I | (1.6%) of all studied cases |

According to the distribution of ROP severity, there were 25 cases without any ROP changes (42%) and 25 cases show less than threshold disease (42%) of total cases, 6 (six) cases show prethreshold (10%) and only 4 (four cases show threshold disease (6%).

Progression of ROP occurred in four cases out of 35 ROP positive cases of ROP (11%). Of the four progressive cases, three were treated by cryotherapy for threshold ROP while the other one developed retinal detachment and vitrectomy was done, while spontaneous regression occurred in the remaining 31 positive cases (89%).

Infants were divided according to type of feedings introduced during their stay inside the NICU into three groups.

**Group I (EBM):** It include 20 preterm neonates ≤ 34 weeks of gestation, VLBW ≤ 1500 gram, exposed to M.V., and all of them were exclusively breast fed. Nine of them showed ROP changes (45%), which were as following:

Three were stage I (15%)

Three were stage II (15%)

Three were stage III (15%)

**Group II (PBM):** Include 20 preterm neonates ≤ 34 weeks of gestation, VLBW ≤ 1500 grams, exposed to M.V., and were partially breast fed and partially formula fed. Eleven showed rep changes (55%), which were as following;

Five were stage I (25%)

Four were stage II (20%)

Two were stage III (10%)

fed infants, through our study design and statistical adjustment. Our findings suggest a protective effect of human milk feedings against ROP after controlling for potential confounding variables. Clinical interventions to reduce the development of ROP have been limited because many identified risk factors for ROP are difficult to alter in clinical practice. The ability to limit supplemental oxygen administration is necessarily constrained by the need to safeguard the life and neurological status of the VLBW infant. We have identified a potential preventive measure, the provision of maternally expressed human milk, which may reduce the development of ROP without accompanying adverse effects.

There was a significant difference between the incidence and severity of ROP in relation to the low birth weight, as the highest incidence and most severe affected cases were found among infants with birth weight $\leq$ 1250 gm.

There was a significant association between the incidence and severity of ROP and lower gestational age as the highest incidence and most severe affected cases occurred with the lowest gestational age.

Univariate analysis of the association between ROP changes and many risk factors was preformed and revealed that : Neonatal variables showing a significant difference (p value $<$ 0.05) were found in; birth weight, gestational age, duration of mechanical ventilation (M.V.), total oxygen supplementation duration, M.V. settings (Fio2, o2 index, MAP, PIP, Rate, T1), some neonatal complications and procedures (H.F., lasix administration, blood transfusion, exchange transfusion, sepsis, NEC, TPN, HIE, convulsions, barbiturates administration). This was in relation to both incidence and severity of ROP development. Maternal variables showing a significant difference (p value $<$ 0.05) were found in; antenatal hemorrhage,

PROM, pre-eclampsia, positive consanguinity, primygravida and mothers younger than 27 years.

There was no significant association between the presence of ROP changes and PEEP of mechanical ventilation settings, also there was no significant association between the presence of ROP changes and multiple births, mode of delivery and cardiac mothers.

Multiple logistic regression analysis of the significant risk factors for the development of ROP showed that birth weight, gestational age, duration of mechanical ventilation, and $O_2$ index were found to be highly significant. Type of feeding, neonatal sepsis, H.F., HIE, NEC, blood transfusion and exchange transfusion, were found to be significant. So this reflects the fact that ROP occurs principally in a sick preterm.

In conclusion, retinopathy of prematurity is a disease of developing retinal blood vessels. Immaturity (low gestational age and low birth weight) is the greatest risk for ROP development due to ocular immaturity and increased risk of neonatal complications specially prolonged requirement for supplementary oxygen treatment and aided respiration, Neonatal sepsis, H.F. and repeated blood transfusions.

# RECOMMENDATIONS

- Avoiding the risk factors for the development of ROP specially prematurity and low birth weight with their multiple complications e.g. sepsis, apnea, RDS, need for blood transfusion and blood exchange.

- Promotion of maternal health care for safe pregnancy and labor.

- Promation of breast feeding for preterm infant as a protective factor against Rop.

- Oxygen should not be given to infants who do not have a medical need for its administration. When oxygen is used, it should be used for the least possible time and the least possible concentrations.

- First indirect opthalmoscopic examination of all preterm infants less than 34 week or less than 1500 gm birth weight at 4-6 weeks postnatally. The second examination must be done every 2 weeks if there was no ROP changes and weekly for infants in whom ROP changes were detected unit full vasularization of retina occurred.

- Children who have had retionopathy of prematurity should be monitored closely by an ophthalmologist during the first 2 years of life and annually thereafter for late complication.