Original Article

Screening and treatment of infants with retinopathy of prematurity at a tertiary care hospital in Kashmir

Tufela Shafi, Zainab Haroon, Haniyaa Mufti, Snober Yousuf, Tasneem Muzaffar

Abstract:

Background: Retinopathy of prematurity (ROP) is a vasoproliferative disorder seen in the retina of preterm infants. It is a major cause of irreversible, though preventable childhood blindness. Hence screening for ROP and timely intervention is necessary to prevent a lifetime of blindness in the affected babies.

Objective: The study was conducted to report on the incidence of ROP in preterm babies referred for ROP screening to a tertiary care hospital in Kashmir and to assess the outcome of the disease after laser photocoagulation.

Materials and Methods: Retrospective, non interventional study, analysing the hospital records of 103 patients who attended the referral ROP Clinic in a tertiary care hospital in Kashmir between January 2018 – December 2018.

Results: Incidence of ROP in our cohort of 103 patients was 68.93 % (71 patients) out of which laser was required by 23 patients (32.39%), 3 of whom worsened (4.22%). Normal weight babies did not have any incidence of ROP.

Conclusion: Incidence of ROP in Kashmir is quite high and ROP is seen across all gestational age groups and birth weight groups except normal weight groups.

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Introduction:

Retinopathy of Prematurity (ROP) is a vasoproliferative disorder seen in the retina of preterm infants[1] and is a major cause of preventable childhood blindness.[2,3] Recent advances in neonatal care has resulted in increasing survival of preterm babies, hence the incidence of ROP has also seen a rise, particularly in the developing countries like India.[4-6]

First described by Terry in 1942 as fibroblastic proliferation of tunica vasculosa lentis [7], the pathogenesis of ROP is better understood now. Around 12 weeks of gestation, vasculogenesis of retina commences, from the optic nerve head, in a centrifugal fashion completing the vascular architecture of the retina between 36-40 weeks of gestational age. Preterm birth disrupts this pattern of vascularisation and instead vaso obliteration and subsequent neo vascularisation of the immature retina may take place.[8]This may ultimately result in tractional retinal detachment with subsequent blindness.

The term ROP was coined by Heath in 1952 and later on a universally accepted classification of the disease called as International Classification of Retinopathy of Prematurity (ICROP) was universally accepted in 1983.[9] Subsequently the classification underwent further revisions.

Multiple risk factors associated with the disease have been identified which include low gestational age, low birth weight, prolonged exposure to supplementary oxygen, cardio respiratory support, transfusions, sepsis ,respiratory distress syndrome and intra ventricular hemorrhage.[10-13]

ROP is an underestimated disease, with studies from India reporting incidence between 22% to 52%.[14,15] With improvement in neonatal care in India, the number of preterm babies requiring screening for ROP is increasing. Hence reduced exposure to known risk factors along with timely screening and intervention is needed to reduce the visual loss due to the disease.

Author Affiliations
Tufela Shafi, , Department of Pediatric Ophthalmology, **Snober Yousuf, Zainab Haroon, ,** Department of Ophthalmology, Government Medical College, Srinagar, Kashmir**. Tasneem Muzaffar,** Government Medical College, Srinagar, Kashmir**.** **Dr Haniyaa Mufti,** Department of Ophthalmology, SKIMS Medical College, Bemina

Correspondence
Dr Haniyaa Mufti,
Senior Resident
Department of Ophthalmology,
SKIMS- MCH Bemina, Srinagar
Email id: ihm8888@gmail.com

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Keywords
ROP, laser photocoagulation, APROP.

Treatment of vision threatening disease involves ablation of the non vascularised retina by laser photocoagulation or cryotherapy in centres where laser is not available. With the advent of anti VEGF drugs for the treatment of vasoproliferative diseases of the retina, the use of these agents in treatment of ROP is increasing day by day.

Different screening criteria are being followed around the world for ROP, and in India also from time to time, various screening guidelines have been formulated. The guidelines currently in place are the "Revised guidelines for neonatal screening including ROP (RBSK 2017 guidelines)".[16]At our hospital also, these guidelines have been put into effect and we wanted to determine the ROP incidence/ positivity rate in the babies screened ,using the RBSK guidelines and treatment outcome of these babies. To our knowledge, this is the first such study from Kashmir Valley.

Materials and Methods

It was a retrospective, observational study conducted in the ROP Clinic of the Government Pediatric Hospital (Government Medical College) which is a tertiary care pediatric hospital in Kashmir, with a level III NICU and gets referrals from all over the valley. Hospital records of patients referred for ROP screening between 1st January 2018 and 31st December 2018 were analysed in the study. The infants had been screened using the RBSK guidelines and hence all preterm infants with birth weight <2000gm and age <34 weeks as well as preterms with gestational age between 34-36 weeks with high risk factors and infants with unstable clinical course deemed to be at risk for ROP by the attending neonatologist/pediatrician were included in the study. All the babies had been seen by a single examiner (TS).The first examination had been carried out at 3-8 weeks of post natal age depending upon the time of referral from the attending neonatologist. The examination was done using topical proparacaine drops. ICROP Classification was used and ROP was classified into Type 1 and Type II disease(using the ETROP guidelines[17]) and APROP.

Infants with mature vascularisation were not examined again. Those with type II ROP were serially examined till regression occured or till mature vascularisation occurred whereas laser treatment was carried out in type I ROP, and APROP; laser being the gold standard of treatment, and the most easily available modality of treatment in the hospital. Non response to laser , requiring surgical intervention was categorized as worsening.

On basis of prematurity, babies were grouped into

- Extreme preterm (EPT) with gestational age <28 weeks
- Very preterm (VPT) Gestational age 28-31 6/7weeks
- Moderate preterm Gestational age 32-33 6/7
- Late Preterm (LPT) gestational age 34-37

On the basis of birth weight the babies were grouped into

- Extreme Low birth weight (ELBW) <1000gms
- Very low birth weight (VLBW) 1000-1499gms
- Low birth weight 1500-2500gms
- Normal birth weight >2500gms .

Results

103 preterm babies were enrolled in the study. The mean ±SD gestational age was 30.32 ± 2.490 weeks whereas the mean ±SD birth weight was 1495 ± 0.431 gms.11 babies were in EPT, 60 in VPT and 22 in MPT,10 in LPT group (fig 1) .None of the babies referred had term gestation. 5 babies were in ELBW, 46 in VLBW, 48 in LBW and 4 babies in normal weight group (fig 2). The ROP positivity or incidence among these screened newborns was 68.93% (71/103).

ROP positivity /incidence ,of any stage was highest in the EPT group and was seen to successively decrease with increasing gestational age group (fig 3). All preterm babies had presence of one or the other stage of ROP.As far as birth weight was concerned all babies in various low birth weight groups developed ROP(fig 4). 4 babies were seen to belong to normal weight group, out of which none developed ROP .

Out of the 71 babies who developed ROP, 23(32.39%) required laser treatment. 95.7% (68/71) babies showed regression (either spontaneous or post laser). 87% (20/23) of babies who underwent laser showed complete regression whereas 13% (3/23) worsened and had to be referred outside the valley for surgical treatment.

Discussion

The ROP positivity among our study was high as compared to other studies, which have reported a rate ranging between 20-52%.[16,17] This can be attributed to a rigorous screening protocol ,inclusion of wider range of gestational age and birth weight cutoffs for screening, combined with increasing referrals by the neonatologists, increased awareness about the disease amongst the neonatologists, ophthalmologists and general population, along with the setting up of a dedicated ROP screening clinic, the first of its kind in the valley, within the premises of a tertiary level pediatric hospital, which gets referrals from all over the valley.

The guidelines of RBSK have recommended screening in higher weight babies as well, if they have significant risk factors or an unstable clinical course or if the treating neonatologist deems babies to be at high risk for ROP. Many reports indicate that in developing countries, neonates with higher gestational age and birth weight were seen to have severe retinopathy.[18,19] This was explained by Vinekaret al[18] on the basis of exposure to uncontrolled and unmonitored oxygen, lack of awareness of the disease

and intrinsic nature of the disease itself, that may contribute to severe retinopathy in such infants. And in fact, the application of western screening criteria for ROP, for developing countries like India, has been questioned by Jalaliet al[20] and the revised guidelines for neonatal screening (RBSK) have taken these facts into consideration. However, in this study we observed that though all 5 cases in ELBW group had ROP, no case of ROP was seen in the babies born with term weight and above, even though they were also preterm babies, in terms of gestational age. This could be explained on the basis of the fact that incidence of ROP decreases with increasing birth weight and increasing gestational age group, since higher birth weight and gestational age correspond to a more mature and well developed retina. Good quality care and monitoring in the NICU may also have had a contributory role.

33.39% of our babies needed laser photocoagulation. Similar results have been observed by Chaudhariet al. [16] We observed laser requiring babies were from all gestational ages as well as all birth weight groups except the normal birth weight, which did not have any case of ROP. Though all babies in the ELBW group developed ROP, one did not progress to the stage of intervention.

Post laser, 20 (87%) patients showed complete regression of the disease. Laser photocoagulation being an effective, safe and complete treatment continues to serve as a gold standard in the treatment plan of ROP. Several studies have reported that extreme prematurity and more severe forms of the disease strongly correlated with unfavorable outcome. And though we also observed severe and more posterior disease in the 3 babies who had unfavorable outcome, all such cases were also seen to have delay in referrals and hence delay in undertaking treatment. These three babies had been referred at 6-8 weeks post natal age, even though in all the three cases, gestational age was less than 32 weeks.

We conclude that the incidence of ROP might be high in our valley and more rigorous awareness campaigns need to be put in place so that no baby escapes the net of screening. However effective tracking and surveillance is needed to ensure compliance and timely reporting for screening and treatment and given the shortage of trained manpower, it can be a particularly challenging situation. More people need to be trained in ROP screening at district levels so that time delay in screening and treatment is avoided. The number of cases in our study is not large enough to effectively draw a conclusion and we need to undertake more studies with larger numbers to finalise our observations.

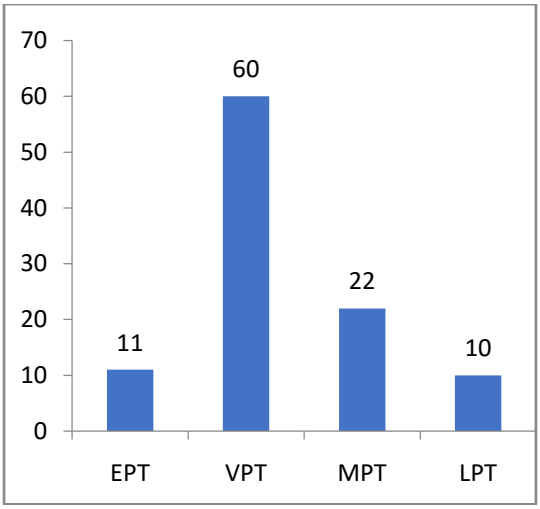

Fig1. Distribution of cases across different gestational age groups.

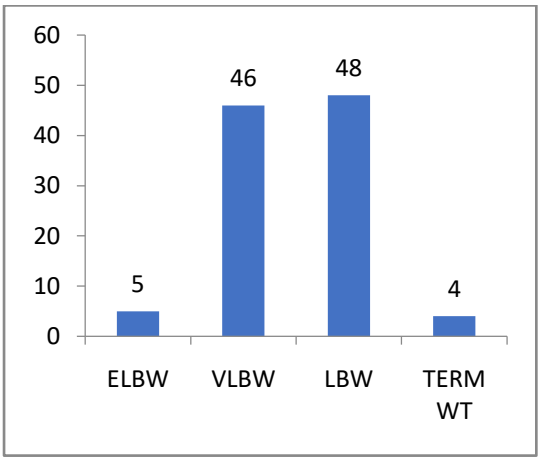

Fig 2. Distribution of cases across different birth weight groups.

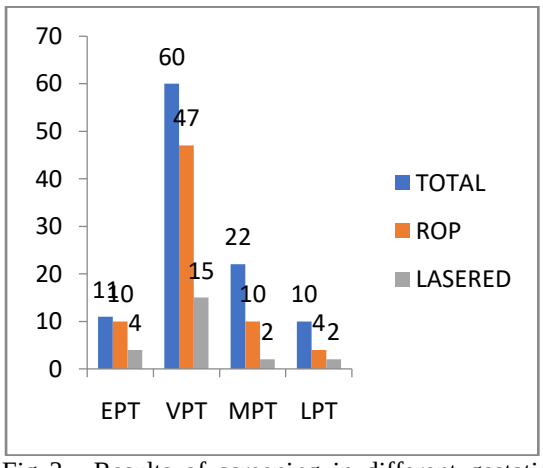

Fig 3. Results of screening in different gestational groups

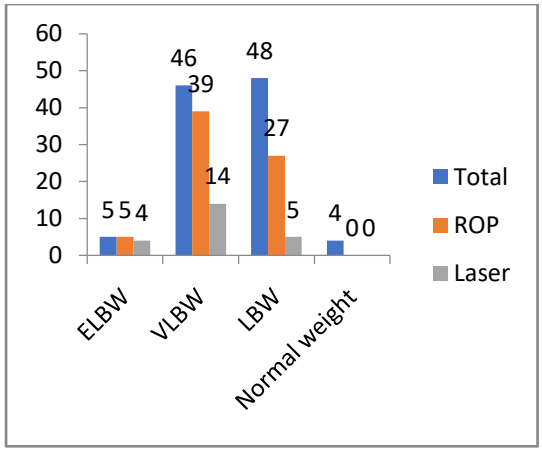

Fig 4. Results of screening in different birth weight groups.

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