Retinopathy of Prematurity – A Case Study

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Retinopathy of Prematurity

- Disease of retinal blood vessels
- Occurring in premature children
- Defective vasculogenesis
# Gestational age

<table>
<thead>
<tr>
<th>Gestational age</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 – 35 wks</td>
<td>26%</td>
</tr>
<tr>
<td>28 – 31 wks</td>
<td>63%</td>
</tr>
<tr>
<td>24 – 27 wks</td>
<td>89%</td>
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</tbody>
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Ng YK et al : Lancet 1988
# Birth weight

<table>
<thead>
<tr>
<th>Birth Weight</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001-1250 gms</td>
<td>47%</td>
</tr>
<tr>
<td>751-1000 gms</td>
<td>78%</td>
</tr>
<tr>
<td>&lt; 751 gms</td>
<td>90%</td>
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</tbody>
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CRYO ROP Study Arch Ophthalmol 1988
Risk Factors

- Gestational Age
- Birth Weight
- Oxygen
- Light
- Steroids
- Vitamin E
- Surfactant

American Guidelines
- GA ≤ 30 weeks
- BW ≤ 1500 gm

UK Guidelines
- GA ≤ 31 weeks
- BW ≤ 1500 gm
Incidence of ROP

- Western literature - 65.8%
- Indian literature - 46%
Initiation of Screening

• For any disease it is often necessary for patients to present at right time
• However in ROP it is duty of care takers to get these newborn infants screened at right time
Initiation of ROP Screening

- Screening has to be done timely as there is a very narrow window of opportunity for avoiding blindness
- Start at one month after birth
Awareness Creation

• While awareness creation in general public can help to some extent
• We need to proactively reach out to pediatricians who come in contact with these preterm infants in order to enable early identification and intervention
Coimbatore Experience

• Year 2000 – No charge
• Weekly – Every Thursday
• To increase awareness among pediatricians in Coimbatore district & Kerala
• Sent ROP information brochures to sensitize them to refer to us at right time
• List IAP website
Follow up
Once treated, lifelong follow up (yearly) or more is mandatory. All other prematurity infants, irrespective of having ROP yearly follow up till the age of 5 years is advisable to rule out sequelae.

Sequela
- Refractive error (most common)
- Squint
- Amblyopia (Lazy eye)
- Retinal detachment
- Glaucoma

What you need to do?
It is of utmost importance to refer premature babies to an ophthalmologist (Retina Specialist) on time. Follow the ‘30 day’ strategy: These examinations could save your patient’s sight. Hence, prompt and timely referral is warranted.

Sight is the natural birthright of every child.

INTRODUCTION
Retinopathy of Prematurity (ROP) occurs due to abnormal growth of blood vessels in an infant’s eye. During development, blood vessels grow from the central part of the retina outwards. This process is completed few weeks before the normal time of delivery. However, in premature babies, it is incomplete. If blood vessels grow normally, ROP does not occur. On the contrary, if the vessels grow abnormally the baby develops ROP.

Advanced stage in ROP

The incidence of ROP in India is between 58-51.9% and it is as high as 80-100% in infants weighing <900 gms at birth or with a gestational age of <25 weeks. With the improved NICU care the incidence has increased. Unfortunately there is no proportionate increase in awareness among the medical fraternity. In the absence of an effective screening strategy an increasing number of children who could have been successfully managed are going irreversibly blind. The socioeconomic burden of such childhood blindness is immense.

Screening
Whom?
- Birth weight ≤1750gms
- Gestational Age at ≤34 weeks

Any premature baby with severe illness in perinatal period (RDS, sepsis, blood transfusion, IVH, apnea, etc.) need a retinal examination.

When?
Follow the ‘30 day’ strategy (i.e. the retinal examination should be completed at or before ‘day-30’ of life). Should preferably be done earlier (at 2-3 weeks of birth) in very low weight babies (<1200gms) or in babies with very low gestational age (<28 weeks).

How?
An ophthalmologist (Retina Specialist) can detect ROP by dilated fundus examination. Indirect ophthalmoscopy is done to scan the entire retina and gauge the state of retinal maturities.

MANAGEMENT
The treatment in the form of lasers, intravitreal anti-VEGF injections or surgery is planned to reduce the chances of unfavorable disease outcomes. Mild forms of ROP may resolve on their own without any active intervention. Severe forms of the disease on the other hand may need medical treatment as long as it is limited to stage 3. Surgical intervention is necessary once the disease reaches stage 4 or 5.
Better Patient Compliance

Separate waiting area (+infant feeding room)
• Privacy
• Warm (non A/C) environment
• Keeps them away from general patients

Separate examination room
• ↓ Waiting time

Coordinate F/U along with pediatric F/U
Better Patient Compliance

Parent Information Brochure

Retinopathy of Prematurity -ROP-

What is Retinopathy of Prematurity?
Retinopathy of Prematurity (ROP) is the abnormal growth of blood vessels in an infant’s eyes. It is most common in babies more than 12 weeks premature. During development, blood vessels grow from the central part of the eye out toward the edges. This process is completed just a few weeks before the normal time of delivery. In premature babies this process is not complete. If blood vessel growth proceeds normally, the baby does not develop

What happens if my baby has ROP?
If the Retina Specialist sees any abnormal growth of blood vessels, he/she will record the extent of ROP. This is called Staging. Infants who have ROP are followed with more frequent eye examinations to watch for any progression.

How is ROP treated?
Stage 1 and Stage 2 does not usually need any treatment. These stages may resolve on their own without further progression. Infants with Stage 3 may require laser treatment to stop the progression of the abnormal vessels. Using a laser, the inner lining of the eye (retina) at the
ends of these vessels is made non functional to prevent further abnormal growth of the blood vessels. This helps prevent the inner retina from being detached. If the retina detaches then it becomes either Stage 4 or Stage 5. Surgery for this stage has very poor visual outcome.

Is there a need for further follow up examinations after treatment?
Yes, even after treatment the baby could develop complications as specified below. So yearly follow up examinations are necessary life long.
Efforts towards creating Awareness

2003
- Apr at AEH on launch of Retcam
- Sept at Hotel Residency
- Dec (full day) with Dr. Subhadra Jalali as guest speaker at AEH

2004
- 5 day HBP in Apr by Orbis with Dr. Khaled Tawansy as VF
- Lecture on Pediatric Retinal Disorders at Jenny Club in Apr
Efforts towards creating Awareness

- Displaying posters in waiting area
- 30 presentations
- 20 publications
  - Ophthalmology + Pediatric Journals
Screening Examination of Premature Infants for Retinopathy of Prematurity

Section on Ophthalmology
American Academy of Pediatrics
American Academy of Ophthalmology
American Association for Pediatric Ophthalmology and Strabismus

2. Retinal examinations in preterm infants should be performed by an ophthalmologist who has sufficient knowledge and experience to enable accurate identification of the location and sequential retinal changes of ROP. “The International Classification of Retinopathy of Prematurity Revisited” should be used to classify, diagram, and record these retinal findings at the time of examination.
Short Term Training in Management Retinopathy of Prematurity and Paediatric Retinal Disorders

Pediatric Retina & Ocular Oncology Services
The retina department at Aravind Eye Hospital-Chennai was started in 1997 and is providing ROP services in working with Neonatal Intensive care Units as and around Chennai.

Retinopathy of Prematurity
ROP is a vasoproliferative disorder affecting the retinal vessels of premature babies. It is an avoidable cause of childhood blindness.

Need for this Training
With the survival of smaller premature babies, the incidence of ROP is on the rise in India. ROP screening is difficult and requires doctors with specialized training to examine the pediatric retina. Indirect ophthalmoscopy is difficult to use in infants and has a long learning curve. It may take several weeks of training to accurately screen for ROP.

Many regional medical centers with large birthing centers around the world do not have trained staff to effectively screen these infants for ROP. So, there is an urgent need to start ROP training programs in centers where this expertise is already available.

Course objectives:
The training is intended to help the participants to acquire knowledge about the following:
- Screening protocols and procedures
- How to set up ROP services in their own areas
- How to make appropriate decisions for treatment, Fig. Retinoblastoma. Screening and follow-up schedules
- Perform laser treatment for ROP (if the candidate has experience in treating adults with retinal lasers)
- The candidate will also be exposed to management of other paediatric retinal disorders like Retinoblastoma, Persistent Fetal Vasculature. Cost’s disease, etc.

Programme Details
Eligibility criteria: Any ophthalmologist who has special interest in management of ROP and Pediatric Retinal Disorders.

No of positions: One per month
Course Duration: One month
Course Fee: Rs 3000/- (for India & Nepal candidates) US$250 (for international candidates)
Accommodation: Accommodation is available for selected male candidates on request at the Aravind Hostel and for the female candidates, at the hospital itself. Accommodation fee Rs 3000/-

Food
Food is served at the hostel itself and includes breakfast, lunch, and dinner (local Indian menu). On Sunday, only breakfast will be provided. However, there are a number of good restaurants located within walking distance. Food expenses are separate and can be paid at the hostel itself on a monthly basis.

Admission / How to apply
- Applicants are requested to download the application forms from our website and send the completed form to Course Coordinator by email/post/fix
- If you have difficulty in downloading
- The form you can contact the course coordinator to get the forms by mail/post (see contact info)
- Status of the application form will be updated two-three weeks after the receipt of the application form

For further details, Contact
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E-mail: cbe.training@cbh.aravind.org
Website: www.aravind.org
Coimbatore Experience

NICUs

• GKNM – 2000
• Ramakrishna, Sheela, Ganga, Bethel, Rao, Aiswarya, Women’s Center, KMCH, Kurinji, Govt Hosp – 2013

References

• Pediatricians from Kerala & TN

OP statistics 🤗
Summary

• Two pronged approach is needed to tackle emerging epidemic of blindness due to ROP
• Requires close collaboration between neonatologist and ophthalmologists
Neonatologist

• Identify babies to be examined with first exam scheduled at 4 weeks after birth
• Reduce supplemental oxygen except to those babies who really need it
• Use of 100% oxygen should be avoided
Ophthalmologist

• Undertake regular screening to detect and treat vision threatening ROP
• Need to develop evidence based screening criteria
• To ensure that all babies at risk of ROP needing treatment are not missed
Conclusion

- Communication between neonatologists and ophthalmologists is important
- In order to have efficient and effective ROP screening program
- Most important is proper counseling of family for better compliance
much has been done and
much remains to be done . . .

Thank You