

Review Article

Practical guidelines for screening and treatment of retinopathy of prematurity in Saudi Arabia



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Abstract

Retinopathy of Prematurity (ROP) is one of the leading causes of bilateral blindness in childhood. Early detection and effective treatment can prevent blindness. Efficient and timely screening examination of the retina by an experienced ophthalmologist who deals with preterm neonates with ROP is the mainstay in the management of this disease. All neonatologists and pediatricians who care for these at-risk preterm neonates should also be aware of this timing. This practical guideline intends to provide guidance to ophthalmologists, neonatologists and allied health care professionals in Saudi Arabia on current indications for screening and management of retinopathy of prematurity to prevent or minimize subsequent complications. This practical guideline was led by the National Eye Health Program (NEHP) and Neonatology Services Improvement Program at Ministry of Health (MOH), furthermore it has been solicited and endorsed from both Saudi Ophthalmological Society (SOS) and Saudi Neonatology Society (SNS).

Keywords: Retinopathy of prematurity, Screening, Laser treatment, Anti-VEGF intravitreal injections

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Introduction

Retinopathy of Prematurity (ROP) is a proliferative disorder of the developing retinal blood vessels in preterm infants that potentially leads to blindness in a small but considerable percentage of these neonates.

In term neonates, the retinal vasculature is fully developed, and ROP does not occur; however, in preterm neonates, the development of the retinal vasculature which proceeds from the optic nerve head anteriorly during the course of gestation, is incomplete, with the extent of the

avascularity of the retina depending mainly on the degree of prematurity at birth. The multicenter trial of cryotherapy for retinopathy of prematurity (Cryo-ROP) proved the usefulness of peripheral retinal cryotherapy in reducing unfavorable outcomes.¹ The follow-up report of the 10-year study² confirmed that unfavorable structural outcomes were reduced from 48% to 27%, and unfavorable visual outcomes (ie, best corrected visual acuity worse than 20/200) were reduced from 62% to 44%. Laser photocoagulation has been used for peripheral retinal ablation with excellent success rates.^{3–7} Recently, the early treatment for retinopathy of prematurity

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randomized trial (ET-ROP) confirmed the effectiveness of treatment for severe ROP and redefined the indications for treatment.⁸

To reduce the risk of visual loss, efficient and timely examination of the retina by an experienced Ophthalmologist who deals with preterm neonates with ROP is now the golden rule. All neonatologists and pediatricians who care for these at-risk preterm neonates should be aware of this timing.

The first published recommendations on screening of ROP in Saudi Arabia was published in 2003, after years of doing ROP screening.⁹ The goal of an effective screening program must be to identify the at-risk preterm neonates who require treatment for ROP to prevent blinding sequelae. It is also important to reduce the number of stressful examinations required for these sick neonates. Any screening program is liable to have over-referral or under-referral. Bearing all this in mind, the following guideline is being suggested. It is important to understand that there can be different screening standards in other world locations.

The objective of this document is to provide guidance to Saudi Arabia's ophthalmologists, neonatologists, and allied health care professionals on current indications for screening and management of Retinopathy of Prematurity to minimize risk of blindness and maximize successful patient outcomes. These guidelines are not meant or intended to restrict improvement, nor to be a replacement for clinical judgment.¹⁰ Furthermore, these guidelines should not be used as a legal resource, as their general nature cannot provide individualized guidance for all patients in all circumstances.¹⁰ These guidelines do not attempt to comment on the financial impact of procedures recommended.

Ideally, guidelines are flexible tools that are based on the best available scientific evidence and clinical information, reflect the consensus of professionals in the field, and allow physicians to use their individual judgment in managing their patients.¹¹

This Guideline has been developed after numerous meetings and discussions of the ROP Task Force Committee and after an ROP workshop with both International and local participants. The development of this Guideline, which was led by the National Eye Health Program (NEHP) at Ministry of Health (MOH), has been undertaken by a multidisciplinary guideline development group (GDG) of ophthalmologists, neonatologists, and Information Technologists Experts. The Guideline will be revised periodically.

Recommendations

Screening

Inclusion criteria

- Neonates with birth weight of 1500 g or less and/or gestational age of 32 weeks or less (as defined by the attending Neonatologist).
- Preterm neonates (≤ 36 weeks) receiving supplemental O₂ for 50 days or more.
- Special attention should be paid to larger preterm neonates at risk of ROP who receive frequent RBC transfusions or exchange transfusions to treat anemia of prematurity or Rh hemolytic disease of the newborn.^{12,13}

Examination

The screening examination can be stressful for both babies and parents. The examination requires a well-dilated pupil so the peripheral retina can be fully visualized.

- Ophthalmological notes should be made after each ROP examination, detailing zone, stage, and extent in term of clock hours of any ROP and the presence of any pre-plus or plus disease. These notes should include a recommendation for the timing of the next examination (if any) and be kept in the baby's medical record.
- Effort should be made to minimize the discomfort and systemic effect of this examination by pretreatment of the eyes with topical anesthetic agent. Pacifiers or oral sucrose etc, can also be used.
- Pupil dilatation is done by using phenylephrine 2.5% and tropicamide 1% eye drops x 2, 15 min apart, instilled 1 h before examination.
- Retinal examination should be done using lid speculum and scleral rotator/depressor specified for neonates.
- Retinal screening examinations performed after pupillary dilation using binocular indirect ophthalmoscopic examination or using wide-angle retinal digital photography to detect ROP.
- Retinal examinations by indirect ophthalmoscope in preterm neonates and interpretation of fundus photography should be performed by an Ophthalmologist who has enough knowledge and experience to enable accurate identification of the location and extent of retinal changes of ROP.
- The "International Classification of Retinopathy of Prematurity Revisited"¹⁴ should be used to classify, draw and record these retinal findings at the time of examination.
- Acute-phase of ROP screening should be based on the neonate's age. The onset of serious ROP correlates better with postmenstrual age (gestational age at birth plus chronological age) than with postnatal age.¹⁵ That is, the youngest infants at birth take the longest time to develop serious ROP. Previously, this knowledge has been timely used in conducting a screening schedule.^{16,17} This schedule provides a system for detecting ROP potentially damaging to the retina with 99% confidence.
- All babies <32 weeks' gestation age or birth weight <1500 g should have their first ROP screening examination prior to discharge.
- Where a decision is made not to screen a baby, the reasons for doing so should be clearly stated in the baby's medical record and the examination should be rescheduled within one week of the intended examination.

Timing of first examination

- Any preterm neonate of gestational age of 27 weeks or less should have the first fundus examination at postmenstrual age of 31 weeks.
- Any preterm neonate of gestational age of 28 weeks or more should have the first fundus examination at 4–6 weeks chronological (postnatal) age.
- Any eligible stable preterm neonate planned for discharge prior to the scheduled fundus examination should have the first fundus examination at the time of discharge.

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