

Posterior Retinal Hemorrhages during Retcam Examination for Retinopathy of Prematurity

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Background: Retcam-assisted retinopathy of prematurity (ROP) screening is a commonly used safe examination procedure. **Case characteristics:** A preterm baby born at 32 weeks gestation age developed extensive posterior retinal hemorrhages during retinal imaging using the RetCam. **Outcome:** Retinal hemorrhages spontaneously resolved. **Message:** As tele screening is becomes more popular, proper training for Retcam usage is essential.

Keywords: Screening, Complications, Tele-screening.

Retcam-assisted retinopathy of prematurity (ROP) screening is a commonly used and safe examination procedure. We report development of extensive retinal hemorrhages during Retcam examination. The possible underlying causes and precautions are discussed.

CASE REPORT

A premature baby boy born at 32 weeks gestational age and 1212g birth weight was examined in an outpatient setting at post-conceptual age of 44 wks following referral for incomplete regression of zone 3 ROP diagnosed elsewhere. The child had suffered from jaundice, respiratory distress, and was on oxygen supplementation during the immediate postnatal period.

Within 15 seconds of Retcam assisted examination of the right eye by a trained personnel, multiple retinal hemorrhages progressively developed and spread over the peripapillary area, posterior pole and large retinal areas in all clock hours till the equator of the eye (**Fig. 1**). This was followed by examination of the left eye which was uneventful. The ROP had regressed in both eyes. No indirect ophthalmoscopy or scleral depression was attempted anytime. Since the child was systemically well and had no previous history suggestive of bleeding diathesis, no further hematological workup was done. The retinal hemorrhages completely resolved over the following four weeks.

DISCUSSION

We routinely use Retcam to document and monitor ROP,

during screening in the neonatal intensive care unit, to monitor infants after treatment and to examine out-born infants who are referred for assessment for treatment or for second opinions. It is especially useful in larger babies who do not cooperate for indirect ophthalmoscopy with scleral indentation. Retinal hemorrhages adjacent to the very vascular ridge often occur during ROP screening/laser with scleral indentation. However, posterior retinal hemorrhages following Retcam examination are very rare, but have been previously reported following Retcam examination [1] and scleral depression [2,3]. Examination in larger babies seems to predispose to this occurrence [2,3].

Previous reports have attributed various factors as possible causes like excess pressure by speculum or unintentional pressure by Retcam handpiece, poor vascular autoregulation and absence of a mature autonomic system in sick neonates, vascular microtrauma



FIG. 1 Fundus picture of right eye (a) at start, and (b) after 15 seconds of Retcam examination showing multiple retinal hemorrhages. (See color images at website)

by excess scleral pressure, and the fragile newborn vasculature susceptible to minimal trauma [1-3]. There is some evidence that thrombocytopenia associated with acute ROP might cause retinal hemorrhage, but this has not been reported in preterm infants [4]. Indeed, we had previously replied to an author indicating that we had never observed retinal hemorrhage during Retcam imaging [5].

Excess pressure on Retcam handpiece commonly happens and is visualized by appearance of disc vascular pulsations and retinal vessels blanching, which recover quickly once the pressure is released. Indeed, excess pressure can alter the clinical signs which indicate the presence of plus disease [6].

In our case we believe the strong valsalva reflex from the stressful crying of the larger baby combined with inadvertent excess pressure on the eye (in an attempt to examine the retinal periphery) could have led to a sudden unilateral increase in intraocular pressure and local venous pressure, leading to these retinal hemorrhages across the fragile newborn vasculature in one eye only. It could be further predisposed by the poor vascular autonomic system often seen in premature babies.

Though such retinal hemorrhages are very rare, we suggest that the Retcam hand piece be lifted immediately from the eye when they are observed during examination, to limit severity of these hemorrhages. Making the baby comfortable during the procedure with nesting, adequate topical anesthesia, proper gentle technique, and appropriate speculum size may reduce the incidence of such events. Use of non-pharmacological interventions such as non-nutritive sucking, oral sucrose and facilitated tucking can further help to reduce pain and stress responses [7].

As tele-screening is becoming popular in developing

countries [8], proper training for Retcam-assisted ROP screening is essential.

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