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CASE REPORT

Handheld ocular coherence tomography: An adjunct to grading retinopathy of prematurity

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Case Report

A premature male infant born at 26 + 1 weeks with a birthweight of 639 g developed Type 1 retinopathy of prematurity (ROP) at post-menstrual age of 37 + 1 weeks. Despite retinal laser photocoagulation, the ROP progressed and the infant was transferred at 41 + 4 weeks of age for further management. RetCam3 photos (Clarity Medical Systems, Inc., Pleasanton, CA, USA) (Fig. 1) revealed ROP stage 3, zone 2 ROP with plus disease in both eyes. Handheld ocular coherence tomography (OCT) (Leica/Bioptigen Envisu, Wetzlar, Germany) (Fig. 2) demonstrated a shallow retinal detachment involving the fovea of the right eye, thus changing the ROP staging from stage 3 to stage 4b. The left retina remained attached (Fig. 3). The patient was treated with intravitreal injections of bevacizumab 0.5 mg in 0.02 mL and fill-in retinal laser photocoagulation in both eyes. Over the next 6 weeks, the right eye retinal detachment continued to progress. The left retina remained attached with an excellent foveal contour. While in severe ROP retinal detachments can occur at least up to the age of 15 years,[1] the current appearance augurs well for left visual acuity.

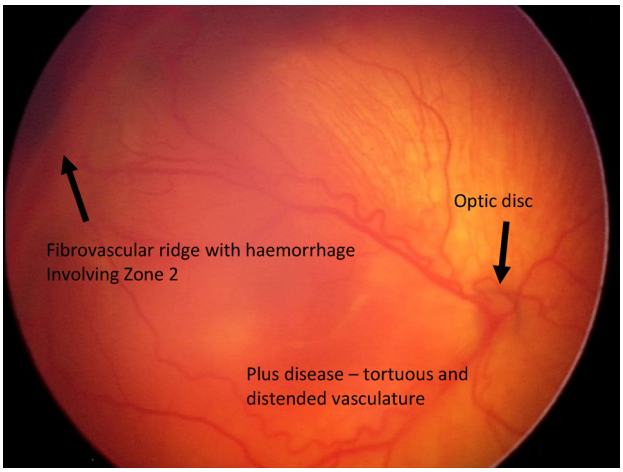

Fig. 1 RetCam photo of right eye demonstrating 'plus disease' (thick and tortuous retinal vessels) and fibrovascular ridge with some haemorrhage. Note that a retinal detachment cannot be definitively diagnosed with this photo.

Key Points

1 Stage 4 retinopathy of prematurity is diagnosed when there is a partially detached retina, which may be difficult to detect clinically or with conventional fundus photography. Its diagnosis confers a poor prognosis.
2 Newer imaging techniques, such as the handheld OCT, allow accurate visualisation of the retinal layers and aid in diagnosis. Images obtained are also useful to educate clinical staff and most importantly, family members.

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Discussion

The grading of ROP is important because it influences management and provides prognostic information. Type 1 ROP requires timely treatment, being either laser and/or intravitreal anti-vascular endothelial growth factor injections.[2] Screening is done with a binocular indirect ophthalmoscope and/or widefield retinal imaging. The handheld OCT is a non-contact adjunct to assessing neonatal retinas that allows high-resolution imaging of the layers of the retina.[3] In this case, the handheld OCT allowed visualisation of the shallow detachment of the retina that was difficult to discern with RetCam3 photos and binocular indirect ophthalmoscopy. This allowed more accurate prognostic information to be provided to the family and neonatal team. Furthermore, parents appreciated seeing the images from week to week, and this aided their understanding of the evolving situation significantly. In summary, handheld OCT is a valuable tool for ROP examination and should be considered an important adjunct with widefield fundal photography in infants with severe ROP.

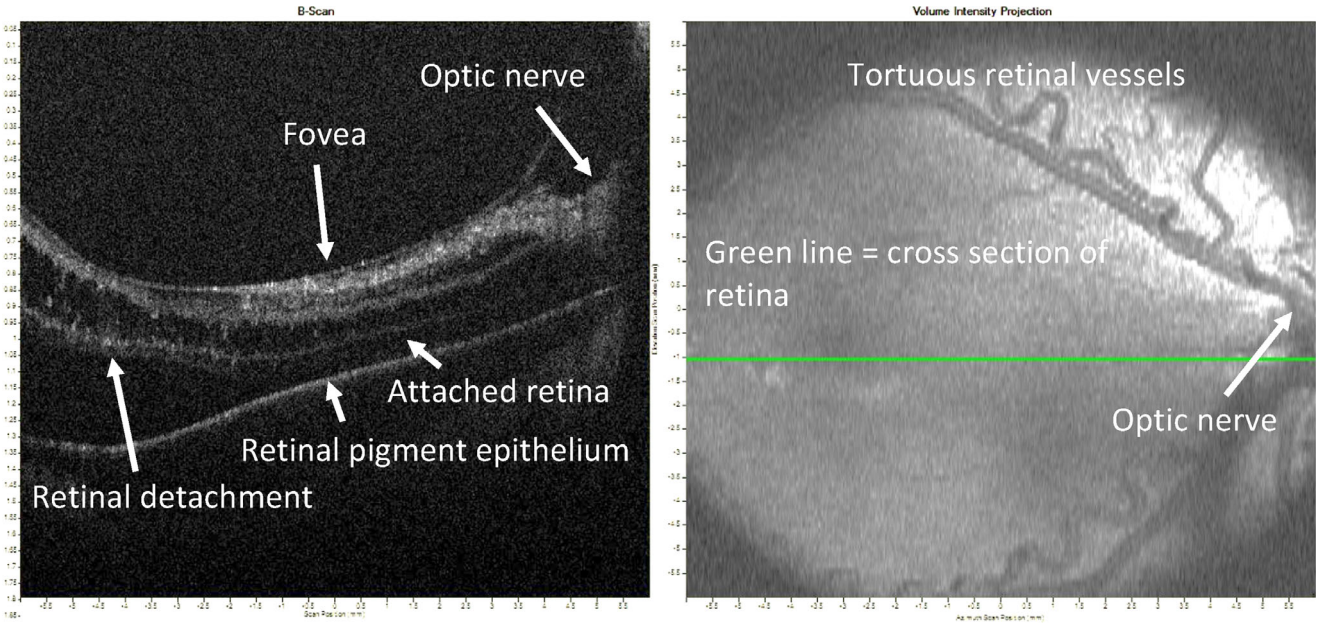

Fig. 2 An ocular coherence tomography cross-section of the right eye demonstrating retinal detachment involving the fovea.

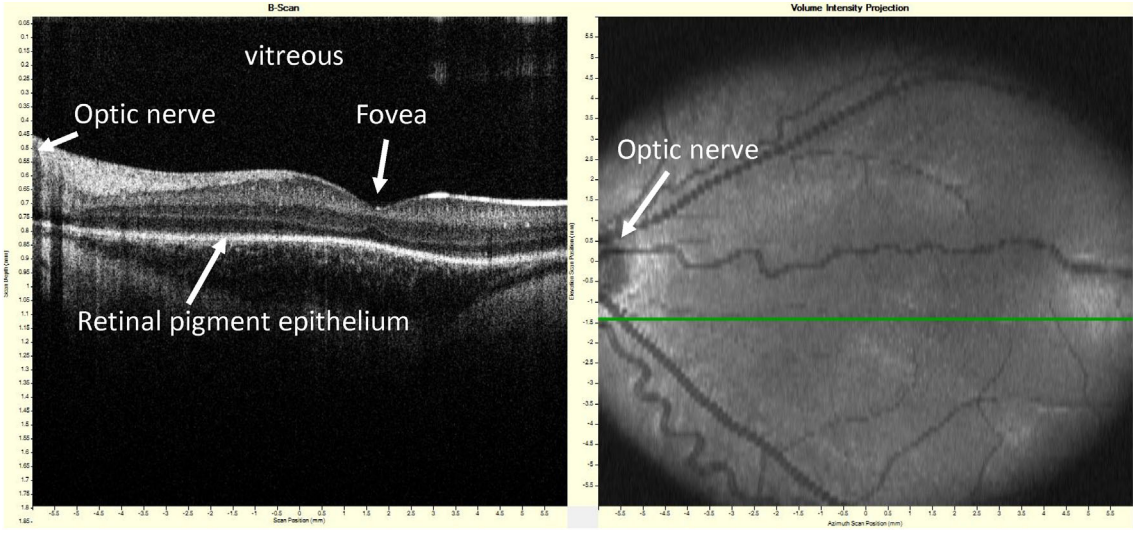

Fig. 3 Ocular coherence tomography cross-section of the left eye with attached retina for comparison.

Acknowledgement

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