B-Scan Echography in Cases of Confirmed Persistent Fetal Vasculature

To the Editors:

Persistent fetal vasculature (PFV) results from failure of the intraocular hyaloid vasculature to involute during lens development. It is a common cause of unilateral congenital cataracts and has a reported prevalence of 20% of monocular cataracts.² Although the visual outcome of PFV cataract surgery is not inferior to other unilateral cataract surgeries, the presence of PFV increases the risk of intraoperative complications and has a higher incidence of postoperative adverse events.³,⁴ Echography is often employed in the preoperative assessment because the preoperative diagnosis of PFV can be made with visualization of the persistent hyaloid vessel (Figure 1). Although the false-negative rate of echography in PFV has been evaluated, the true positive rate has not.⁵

To evaluate the true positive and false-negative rates of B-scan echography in intraoperatively confirmed PFV cases, we obtained institutional review board approval and performed a retrospective review of medical records at Bascom Palmer Eye Institute between 1994 and 2014. We included all patients younger than 18 years of age who had undergone B-scan echography prior to congenital cataract surgery and had a PFV diagnosis. PFV was diagnosed if the postoperative diagnosis in the operative report was “persistent fetal vasculature” or “persistent hyperplastic primary vitreous,” or if visualization of a persistent hyaloid vessel and/or ciliary body stretching was described. Eyes were excluded if only a “retrolental membrane” was described but none of the other findings were present or if evidence of posterior disease precluded adequate echographic examination of the vitreous cavity. A technician experienced in ophthalmic echography interpretation reviewed archived images of each study and a forced choice of “PFV present” or “PFV absent” was made. If a patient had bilateral disease, only the eye with the better quality echographic images was included.

Twenty-five eyes of 25 patients were included. Twenty-three had positive preoperative echographic findings indicative of PFV (92%, “true positives”), whereas 2 had negative echographic findings (8%, “false negatives”). Of these patients, cataracts were unilateral in 23 (92%) and bilateral in 2 (8%). Dilated fundus examination was attempted in all eyes and the fundus was visible in only 7 (28%) eyes. Tractional retinal detachment was present preoperatively in 3 (12%) eyes. Retinal detachment occurred intraoperatively in 1 (4%) eye.

The limitations of our study include the retrospective design and relatively small number of patients; however, given the relative rarity of congenital cataracts and PFV, a prospective study with a large population would be unlikely. Second, there was no standardization of echography technique. Because the eyes included in the analysis had either a preoperative diagnosis of PFV or echographic examination performed specifically to rule out PFV, the

Figure 1. Preoperative B-scan echography performed on eyes of two patients with congenital cataracts and an intraoperative diagnosis of persistent fetal vasculature (PFV) with left (A) demonstrating a persistent hyaloid vessel (arrow) consistent with PFV (“true positive”) and right (B) demonstrating no signs indicative of PFV (“false negative”).
qualities of the examinations were likely adequate despite the lack of a uniform protocol. Finally, the archived echographic images were interpreted in a binary fashion, which may sacrifice many nuances of echography and limit the results.

Our study showed that B-scan echography has a high true positive rate and a low false-negative rate for detecting PFV in a population with a high pretest probability, which supports its role in the preoperative evaluation for cataract extraction and management of congenital cataracts.

REFERENCES


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