Presentation and Management of Traumatic Pediatric Glaucoma

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Case Report

A 10 y/o African American male presents for an intra-ocular pressure check and 24-2 visual field OD/OS for management of traumatic pediatric glaucoma. This patient previous reported to the clinic 2 years prior with a swollen and bruised left eye secondary to trauma from a schoolbook being thrown at his eye. Initial diagnosis was ecchymosis and a corneal abrasion, which was not reported. In fact, only about 160,000 to 280,000 children under the age of 15 who sustain an ocular trauma are admitted to the hospital each year [1,2]. However, ocular injuries that do not require hospitalization but which can still cause serious ocular morbidity to children, such as glaucoma, is estimated to be 3.3 to 5.7 million annually [3]. In other words, less than 8% of these children are being properly diagnosed and treated, leaving their vision at great risk. According to De Leon-Ortega, traumatic glaucoma is when an eye with post traumatic IOP>21 mmHg, which may be acute or chronic, occurs in a child younger than 12 years old with a history of either a blunt or penetrating trauma, with or without the establishment of a glaucomatous optic neuropathy on visual field testing. The incidence of angle recession following an ocular trauma ranges from 20 to 94%, since specific rates of angle recession are not well documented, however about 5-20% of patients with angle recession have been found to develop glaucoma [5]. The larger the area of angle recession, i.e. greater than 180 degrees, the greater the risk for developing glaucoma. According to the United States eye injury registry, about 2.67% of all penetrating ocular injuries result in traumatic glaucoma [6].

When managing pediatric glaucoma, surgery is main management option considering the long life expectancy of the child [7]. According to Marchini et al, ocular drops are adequate for temporarily lowering and maintaining IOP while waiting for surgery, but for longer term treatment, glaucoma drops could have significant effects of the developing child's system. For example Lumigan (Bimatoprost) while relatively safe can cause uveitis, and Simbrinza (brinzolamide/brimonidine tartrate ophthalmic suspension) is a combination of a carbonic anhydrase inhibitor, which may cause lethargy, paresthesia, anorexia, diarrhea, metabolic acidosis, urolithiasis, growth suppression, and enuresis [5] and an alpha 2 adrenergic receptor agonist, which can cause CNS toxicity with chronic use [5]. For these reasons, surgery should be the main line of treatment in cases of traumatic pediatric glaucoma, along with close monitoring of both intraocular pressure, visual fields and the architecture of the optic nerve head.

Pediatric glaucoma is a well-researched condition; however pediatric glaucoma due to a traumatic event is not as well documented or reported. In fact, only about 160,000 to 280,000 children under the age of 15 who sustain an ocular trauma are admitted to the hospital and seek medical treatment each year [1,2]. However, ocular injuries that do not require hospitalization but which can still cause serious ocular morbidity to children, such as glaucoma, is estimated to be 3.3 to 5.7 million annually [3]. In other words, less than 8% of these children are being properly diagnosed and treated, leaving their vision at great risk. According to De Leon-Ortega, traumatic glaucoma is defined as glaucoma resulting from a blunt or penetrating injury. The mechanisms of raised IOP in this condition can be caused by several factors including uveitis, hyphema, angle recession, ghost-cell glaucoma, or a dislocated lens [4]. Kaur et al. [3] expanded this definition and clarified that traumatic pediatric glaucoma is when an eye with post traumatic IOP>21 mmHg, which may be acute or chronic, occurs in a child younger than 12 years old with a history of either a blunt or penetrating trauma, with or without the establishment of a glaucomatous optic neuropathy on visual field testing. The incidence of angle recession following an ocular trauma ranges from 20 to 94%, since specific rates of angle recession are not well documented, however about 5-20% of patients with angle recession have been found to develop glaucoma [5]. The larger the area of angle recession, i.e. greater than 180 degrees, the greater the risk for developing glaucoma. According to the United States eye injury registry, about 2.67% of all penetrating ocular injuries result in traumatic glaucoma [6].

References


