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Cataract secondary to self-inflicted blunt trauma in children with autism spectrum disorder

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Abstract

We report 3 cases of bilateral cataract secondary to self-inflicted blunt eye trauma in children with autism spectrum disorder (ASD). All 3 children hit their foreheads, orbits, or globes repeatedly for long periods of time and developed cataracts. Clinicians must be aware of this phenomenon to diagnose ocular pathology early and to provide adequate education, counseling, and services to affected patients and their families and to put appropriate postoperative care mechanisms in place to prevent permanent ocular damage.

Case 1

A 13-year-old white boy was referred to Emory University for ocular examination. The boy had autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD) and self-injurious behavior (SIB). He had struck his face, forehead, and eyes with his fists over the course of many years. He had been diagnosed with a cataract in the right eye 4 months earlier. A week prior to the examination, he started to behave as if he could not see. His visual acuity was light perception in both eyes. His ocular examination was normal aside from a mature cataract in both eyes, with no visible capsular rupture (Figure 1). B-scan ultrasonography revealed normal posterior segments. Cataract surgery with implantation of an AcrySof SN60WF (Alcon surgical, Fort Worth, TX) intraocular lens (IOL) was performed on the left eye and 6 weeks later on the right eye. There was no zonular dialysis. Postoperatively the patient wore safety goggles. He also had a psychiatric evaluation and was started on escitalopram. Three months later his visual acuity was 20/25 in the right eye and 20/30 in the left eye. His mother reported that his SIB was now limited to biting his wrist.

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Case 2

A 10-year-old white girl was referred for an ocular examination. She was adopted from an orphanage when 3 years old. She had ASD, posttraumatic stress disorder, and mental retardation. She repeatedly struck her face and eyes with her fists. She could fix and follow the examiner's face. She had a mature cataract in the right eye and an early cataract in the left eye. Fundus examination revealed a vitreous hemorrhage and an attached retina in the right eye and a normal fundus in the left eye. Cataract extraction with IOL implantation was performed on the right eye 3 days later and on the left eye 5 weeks later coupled with the implantation of a 911A IOL (Pharmacia, Bridgewater, NJ). After cataract surgery, she was placed in a helmet and elbow splints to prevent self-injury. Three years postoperatively, her uncorrected visual acuity was 20/25 in both eyes. Despite efforts to eliminate her self-abusive behavior, she continued to hit her eyes. Seven years later she was noted on examination to have a total hyphema and vitreous hemorrhage in the right eye. A B-scan ultrasound revealed a funnel-shape total retinal detachment that was deemed inoperable. The left eye subsequently developed a retinal detachment and was treated with a vitrectomy, scleral buckling, and silicon oil injection. The right eye progressed to phthisis bulbi and enucleation was performed. Her self-abusive behavior improved after bilateral amygdalectomy and electroconvulsive therapy. At last follow-up, her visual acuity in the left eye was counting fingers at 3 feet.

Case 3

A 12-year-old African American boy presented with difficulty navigating. He had been diagnosed with ASD and had a history of SIB starting 5 months earlier that included striking his face, head, and eyes. His visual acuity was hand movements in the right eye and light perception in the left eye. Pupils were round, but a relative afferent pupillary defect was noted in the left eye. There was a mature cataract in both eyes. B-scan ultrasonography revealed mild vitreous debris in the right eye and a macula-off retinal detachment in the left eye. The patient was evaluated by the retina service, but cataract and retinal detachment surgery were postponed until control of his severe SIB could be attempted. The patient was admitted to an inpatient behavioral program to control the head-targeted self-injury. After 5 months in this inpatient program, his SIB improved, and the decision was made to proceed with cataract surgery in the right eye. On preoperative B-scan ultrasound in the operating room, retinal detachment in the right eye was noted, and the patient underwent pars plana lensectomy, vitrectomy, scleral buckling, and silicone oil injection in the right eye. Six months later, visual acuity was central, steady, and maintained in the right eye and no light perception in the left eye. The patient's family reports that he was able to navigate in familiar environments and was not rubbing his eyes.

Discussion

Ocular damage from SIB is uncommon in children. Usually these injuries occur in severely mentally disabled children and range from corneal laceration to vitreous hemorrhage, retinal detachment, and even self-enucleation.^{1,2} One of the most common causes of cataracts in children is trauma.³ Most traumatic cataracts in children are accidental, but rarely they may

arise from SIB, which is common in children with ASD.¹ Self-hitting directed to the head or face is one of the most frequent forms of SIB.⁴⁻⁶ This behavior places children at risk of eye injury.⁷ We only found 1 previous report of 2 autistic boys who developed cataracts after repeatedly striking their forehead and face with their fists.⁸ The cataracts in our series were most likely caused by repeated blunt trauma. Retinal detachment leading to blindness was the most serious complication. Two of the 3 cases had continued SIB after the diagnosis of cataract, and both developed retinal detachment in both eyes.

Controlling SIB is important not only to prevent initial ocular injuries but also to prevent injuries postoperatively. No single treatment is successful for SIB⁹: Approaches must be adapted to address the underlying causes of the disorder. Behavioral, pharmacological, surgical, and even electroconvulsive therapies have been used.¹⁰ Case 3 experienced a dramatic reduction in SIB after being admitted to an inpatient rehabilitation program that was targeted at controlling head trauma. While delaying surgery to control SIB is a reasonable decision, it prolongs the period of visual disability experienced by a patient with SIB. This could potentially exacerbate SIB, because decreased vision may aggravate patient anxiety¹⁰ and worsen resultant amblyopia in a younger child.

Measures that may be taken to decrease the risk of ocular trauma in the postoperative period include medications, physical restraints such as arm splints, eye shields or goggles, and the use of a helmet with or without a face shield.

Ophthalmologists involved in the care of children with SIB must be aware of the potential for ocular damage resulting from this behavior. Frequent ophthalmologic examination is strongly recommended for this patient group.

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FIG 1.

Preoperative photograph of patient 1 showing dense cataracts present in both eyes but no obvious signs of ocular trauma, such as iris spincter tears.