Intravitreal dexamethasone implant migration to the anterior chamber in an aphakic child

Abstract

An 8-year-old girl, who underwent pars plana lensectomy and vitrectomy for non-infectious uveitis, was treated with a dexamethasone intravitreal implant (Ozurdex®, Allergan Inc., Irvine CA), because of the persistence of cystoid macular edema. The implant migrated into the anterior chamber; however, no cornea edema was detected and a complete resolution of macular edema was observed.

Keywords: Aphakia; Cystoid macular edema; Intravitreal implant; Uveitis

Introduction

Cystoid macular edema (CME) is a common cause of vision loss complicating uveitis. Periocular and intravitreal corticosteroids have been used for treatment of noninfectious uveitis and uveitic macular edema, but the beneficial effects of a single injection are often temporary.1 Repeated injections have been associated with adverse events, such as cataract formation, increased intraocular pressure (IOP), and steroid-induced glaucoma.

Ozurdex® implant (Allergan Inc., Irvine, California, USA) was approved by the Federal Drugs Administration (FDA) in the USA as a therapy for the treatment of macular edema following branch or central retinal vein occlusion.2 The use of this device has also been effective in the treatment of non-infectious uveitis, diabetic macular edema and pseudophakic macular edema.3,4 It utilizes a delivery system in which biodegradable material is combined with dexamethasone to form a small, rod-shaped implant. This material is injected into the vitreous cavity using a specially designed injector and gradually delivers dexamethasone to the posterior chamber.

Case report

An 8-year-old girl presented to the emergency department having blurred vision in her right eye. The best-corrected visual acuity (BCVA) was 20/100 in the right eye and 20/20 in the left eye. Slit-lamp examination revealed chronic non-granulomatous anterior uveitis with extensive posterior synechiae and an incipient band keratopathy in the...
right eye. Her left eye presented an early band keratopathy and 2+ cells with trace flare in the anterior chamber. The IOP was 16mmHg in each eye. Dilated bilateral fundus examination was normal. The patient was treated with intensive topical corticosteroids and mydriatic.

Her medical and ocular histories were unremarkable. She did not complain of any other symptoms. Patient was consulted with pediatricians and pediatric rheumatologists and a physical examination was performed. Laboratory evaluation consisted of a complete blood count with differential, biochemical analysis, urinalysis, and erythrocyte sedimentation rate. Antinuclear antibody, rheumatoid factor, C-reactive protein, human leukocyte antigen (HLA) typing, angiotensin-converting enzyme, pathergy test, skin tuberculin test, chest radiography, syphilis, HIV, toxoplasma, and herpes serology were performed. These tests did not reveal anomalies that could suggest any systemic disease.

At 1 month of follow-up, the right eye had a persistent uveitis and the left eye showed the presence of posterior synchiae, snowballs in the inferior vitreous base and retinal vasculitis. Serological tests were performed for Borrelia, Rickettsia, Bartonella, Brucella and Coxiella. These tests were negative. Oral corticosteroids therapy was started. The left eye gradually improved, and cells in the anterior chamber and vitritis resolved. Despite continuous treatment with local and systemic corticosteroids, the right eye developed a pupillary membrane with ruberosis and significant cataract (Figure 1). The IOP was 25 mmHg. She underwent pars plana lensectomy and pars plana vitrectomy with vitreous biopsy in the right eye. No infections or systemic associated diseases were detected and the diagnosis of pars planitis was made. Control of inflammatory activity was maintained with oral corticosteroids and immunosuppressive therapy (azathioprine, 1.5 mg/kg/day).

Three months after surgery, the BCVA was 20/200 in the right eye, the IOP was 14 mmHg and the posterior segment showed retinal vasculitis and a significant cystoid macular edema (CME), confirmed by optical coherence tomography. She was treated with periocular and intravitreal injection of steroids with complete resolution of edema and improved visual acuity. However, the treatment was temporarily effective and recurrence of edema was noted after one month (Figure 2). Informed consent was obtained from the child’s parents and she received an intravitreal injection of Ozurdex® as off-label treatment. Ten days after the injection, visual acuity of the right eye improved to 20/70. In addition, there was improvement of central macular thickness. At three weeks post-injection, the implant was found floating inferiorly in the anterior chamber (Figure 3). The IOP was 26 mmHg and was controlled with medical treatment. The device moved when patient changed posture. It was placed in the anterior chamber for 2 months, the eye was quiet, no corneal edema was observed and endothelial cell density examined by noncontact specular microscope was stable. The IOP was 16 mmHg with medical treatment and there was no CME (Figure 4). At 10 weeks post-injection, the implant was back in the vitreous cavity. At the last follow-up, 16 months after the initial presentation, the BCVA was 20/70 in the right eye and 20/20 in the left eye, and the CME has resolved in the treated eye.
Discussion

Ozurdex® implant has a better safety profile that other intravitreal corticosteroids injection and its effects may be longer lasting. Several reports found that in patients with non-infectious intermediate or posterior uveitis, a single dose of the dexamethasone implant was well tolerated and produced significant improvements in intraocular inflammation and visual acuity that persisted for 6 months. However, the effect and safety of this drug in children remains to be established.

Recent studies have evaluated the efficacy of Ozurdex® implant in vitrectomized eyes with macular edema and they have concluded that it is an effective treatment option in these patients. The results of its use in eyes with aphakia and eyes with an iris-claw lens have been previously reported in a few studies. The tendency of migration of the implant into the anterior chamber has been described in these eyes, and in many cases a deleterious effect on the cornea has been observed. Vela et al describe the dexamethasone implant reposition to the vitreous cavity when no corneal complications exist, in order to keep the efficacy of the implant in the eye. Nevertheless, this procedure may damage intraocular structures and the device may come back into the anterior chamber by patient posturing. In our patient, the dexamethasone implant was effective to control the ocular inflammation after its migration into the anterior chamber, it was well tolerated and no corneal edema was noted. However, when migration occurs, the patient is at risk for corneal edema and decompensation. Therefore, aphakic eyes should be examined closely and surgical removal of the implant from the anterior chamber must be performed when adverse effects are observed.

To the best of our knowledge, this is the first description of intravitreal Ozurdex® injection in a girl. Our case report indicates that one single Ozurdex® injection induces morphologic and functional improvement in a child suffering from uveitic CME and this outcome continues during the 8-months-follow-up. No systemic side effects have been identified in our patient. Dexamethasone intravitreal implant may represent a successful off-label treatment in children, but further studies are needed to assess the safety and efficacy of this drug in this population. This report could be helpful for pediatric ophthalmologists in their management of similar challenging scenarios.

Figure 4. Optical coherence tomography showing resolution of macular edema 3 months after Ozurdex® injection.

REFERENCES