Saudi Journal of Ophthalmology (2016) xxx, xxx–xxx

Case Report

Acute bacterial endophthalmitis following intravitreal dexamethasone implant A case report and review of literature

Neha Goel *

Abstract

Endophthalmitis following intravitreal dexamethasone (DEX) implant has been rarely reported. This report describes the case of a 70-year-old male who underwent intravitreal DEX implant injection under aseptic conditions, for diabetic macular edema. He developed a clinical picture suggestive of endophthalmitis within 2 weeks of the injection, and vitreous culture grew coagulase negative *Staphylococcus*. He was treated with intravitreal antibiotics followed by pars plana vitrectomy and removal of the implant. This was followed by resolution of the infection with a favorable final visual outcome. The challenges faced during surgical management of this case are discussed.

Keywords: Acute bacterial endophthalmitis, Intravitreal dexamethasone implant, Pars plana vitrectomy, Dexamethasone implant removal

http://dx.doi.org/10.1016/j.sjopt.2016.12.003

Introduction

Sustained release intravitreal dexamethasone (DEX) implant, available as Ozurdex (Allergan, Inc, Irvine, CA), is approved for the treatment of diabetic macular edema (DME) following a randomized, masked, sham-controlled phase III clinical trial that demonstrated its efficacy and safety.[1] Endophthalmitis following intravitreal injections is not uncommon owing to the increasing number of injections;[2] however, there are very few reports of endophthalmitis after an intravitreal DEX implant.[1,3–5] This case adds to the literature on complications following administration of an intravitreal DEX implant and discusses the challenges faced while managing this scenario.

Case report

A 70-year-old male presented with decreased vision in his left eye since one month. He was a diabetic and hypertensive since 10 years, controlled on medications. He had history of both eyes panretinal photocoagulation performed 6 years back. Best corrected visual acuity (BCVA) was 20/30 in the right eye and 20/120 in the left eye. Anterior segment examination showed nuclear sclerosis grade 2 in both eyes with intraocular pressure (IOP) of 16 mmHg bilaterally. Fundus examination revealed lasered diabetic retinopathy in both eyes with clinically significant macular edema in the left eye. Optical coherence tomography (OCT) of the left macula was consistent with DME, with a central macular thickness of 437 μm. After written informed consent, he underwent intravitreal DEX implant injection in this eye. The injection was performed in the operation theater with topical anesthesia under aseptic conditions. The physician and all other involved medical staff wore caps and surgical masks. A sterile injection set was used and the instruments were prepared on a sterile tray. A periocular scrub using 10% povidone iodine was performed, and 5% povidone iodine was instilled in the conjunctival cul-de-sac before the injection. A fenestrated

Received 22 February 2016; received in revised form 2 November 2016; accepted 6 December 2016; available online xxxx.

ICARE Eye Hospital and Postgraduate Institute, Noida, U.P, India

* Address: 57, Mayur Vihar Phase 1 Extension, New Delhi 110091, India. Fax: +91 11 23230033.
e-mail address: nehadoc@hotmail.com

Peer review under responsibility of Saudi Ophthalmological Society, King Saud University

Production and hosting by Elsevier

Access this article online:
www.saudiophthaljournal.com
www.sciencedirect.com

Please cite this article in press as: Goel N. Acute bacterial endophthalmitis following intravitreal dexamethasone implant: A case report and review of literature. *Saudi J Ophthalmol* (2016), http://dx.doi.org/10.1016/j.sjopt.2016.12.003

self-adhesive surgical drape that covered the patient's nose and mouth was applied, and a sterile lid speculum was used. Following the injection, the eye was patched with sterile compresses. Moxifloxacin 0.5% drops were instilled prior to the injection as well as at the end of the procedure and prescribed four times daily for a week.

15 days after the injection, the patient presented with a history of sudden loss of vision in his left eye since 3 days. There were no complains of pain, redness or discharge. BCVA was counting fingers close to face with accurate projection of rays. Anterior segment examination revealed minimal circumcorneal congestion, the presence of keratic precipitates, 3 + cells in the anterior chamber and an IOP of 16 mmHg. Fundus examination showed a poor red reflex, grade 3 vitreous opacity and a hazy view of the disc. The implant was seen inferiorly and appeared to be fragmented in two pieces. An ultrasound B-scan confirmed the presence of numerous highly reflective echoes and membranes in the vitreous cavity with an attached retina.

A clinical diagnosis of acute endophthalmitis was made and the patient underwent a vitreous tap and intravitreal injection of 1 mg in 0.1 ml of vancomycin and 2.25 mg in 0.1 ml of ceftazidime the same day. Oral ciprofloxacin 750 mg twice daily was started along with topical fortified vancomycin and ceftazidime drops instilled hourly. Within 48 h, cultures grew out coagulase negative *Staphylococcus* which was sensitive to vancomycin by Kirby-Bauer disk diffusion method. The patient's visual acuity and clinical picture showed no improvement and a decision to perform vitrectomy with removal of the DEX implant was taken. After written, informed consent 23 gauge pars plana vitrectomy was carried out. The vitreous was opacified and the fractured implant was present inferiorly (Fig. 1a). Removal of the implant was attempted using the 23 gauge vitreous cutter; however, it was unable to do so. Following complete vitrectomy, the implant was lifted using the suction mode of the vitreous cutter, grasped with a 23 gauge forceps (Fig. 1b) and removed. The remaining fragment was embedded in the vitreous inferotemporally and could not be grasped by the 23 gauge forceps as it was larger than the mouth of the forceps. After dissection in this area, it was removed using a 20 gauge forceps (Fig. 1c). Two smaller fragments were seen on indentation (Fig. 1d) and carefully dissected and removed. The implant was very friable and underwent fragmentation when held by forceps. Remnant particles were aspirated using a flute needle and the intravitreal antibiotics were repeated. Post operatively, the patient received a tapering regimen of topical antibiotics and prednisolone acetate 1% with oral ciprofloxacin and systemic corticosteroids 1 mg/kg/day for 10 days.

Within 72 hours of the procedure, BCVA improved to 20/200 with a significant decrease in the anterior and posterior segment inflammation. Complete resolution was noted at six weeks post operatively. BCVA, however, was limited by progression of cataract and the presence of an epiretinal membrane (ERM). A month later, the patient underwent phacoemulsification with implantation of a posterior chamber intraocular lens with ERM peeling. At the final follow-up of 3 months, BCVA was 20/60 with no evidence of any inflammation (Fig. 2a), or ERM on OCT (Fig. 2b).

Discussion

Endophthalmitis is considered one of the most devastating complications following any intraocular procedure. The rates of endophthalmitis after intravitreal injections have been reported to vary from 0.038% to 0.065% as per large scale meta-analyses.[2] Endophthalmitis following an intravitreal DEX implant is extremely uncommon. No case of endophthalmitis was noted after a total of 1830 intravitreal DEX implants administered in the GENEVA study.[6] The MEAD study reported a single of acute endophthalmitis following a DEX implant, out of 2928 injections given during the study for DME, with no further details on presentation, management or outcome.[1] A recent nationwide case series from France reported 4 cases of endophthalmitis in patients who had received the DEX implant; however, no information was provided regarding the clinical course or outcome.[7] A review of literature revealed only four published cases of acute endophthalmitis following an intravitreal DEX implant administered for retinal vascular disorders with details of presentation and management (Table 1).[3–5] All four cases presented within 2 to 3 days of receiving the injection with painful loss of vision. The current case, however, developed symptoms of painless decreased vision at 12 days post injection. While the first two cases were noted to have a hypopyon at presentation, the latter two as well as the current case did not. All cases had varying degrees of vitreous inflammation.

The Endophthalmitis Vitrectomy Study (EVS) outlined the recommendations for management of acute endophthalmitis following cataract surgery;[8] however, the same cannot be extrapolated to endophthalmitis following intravitreal injections, due to differences in clinical aspects.[9] Also, endophthalmitis after an intravitreal DEX implant should be delineated from that associated with anti-vascular endothelial growth factor (VEGF) agents,[2] because of its pharmacological properties. It has been reported that the use of intravitreal steroids is associated with significantly increased odds of approximately 7 times higher than that of anti-VEGF agents for post injection endophthalmitis.[9] This may be attributed to the higher gauge of needle employed while giving intravitreal steroids (27- or 25-gauge for triamcinolone, and 22-gauge for the DEX implant as compared to 30- or 32-gauge for anti-VEGF agents) resulting in a larger wound tract and hence easier bacterial penetration into the vitreous. Also, the immunosuppressive nature of steroids may contribute to this difference.[10]

In the absence of current, evidence-based guidelines for management of post-injection endophthalmitis, varied treatment approaches have been carried out for endophthalmitis following DEX implant as well.[3–5] Pars plana vitrectomy with removal of the implant has been recommended as it has been hypothesized that the infectious agent may be stationed inside the device and the steroid itself may weaken the host's defense mechanisms.[3,4] On the other hand, two cases have also been successfully managed by administration of intravitreal antibiotics, without vitrectomy or implant removal.[5] These cases had better presenting visual acuity and less severe clinical features at presentation and were culture-negative. The current case showed minimal response to intravitreal antibiotics and was a culture-positive case, and hence was subjected to vitrectomy and implant removal, despite having a relatively less severe initial presentation.

Please cite this article in press as: Goel N. Acute bacterial endophthalmitis following intravitreal dexamethasone implant: A case report and review of literature. *Saudi J Ophthalmol* (2016), http://dx.doi.org/10.1016/j.sjopt.2016.12.003