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Case Report

Fulminant Endophthalmitis After Intravitreal Injection with Aflibercept Caused by *Streptococcus mitis*

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Abstract

Purpose: To report a case of fulminant *Streptococcus mitis* endophthalmitis after intravitreal injection of aflibercept.

Methods: Retrospective case report

Results: An 83-year-old man presented with acute painful vision loss in his left eye approximately 20 hours after intravitreal injection of aflibercept. His vision had decreased from a baseline of 20/100 to barely hand motion in the left eye at the time of evaluation. He underwent immediate tap and inject followed by pars plana vitrectomy with irrigation of the vitreous cavity and intravitreal injection of antibiotics. The corneal edema continued to worsen due to the infectious and inflammatory membranes/debris in the anterior chamber. Five days after vitrectomy, the left eye underwent another intravitreal injection with Vancomycin, followed by a short course of oral prednisone and a sub-tenon's injection with Triamcinolone few days thereafter. Ultimately, a funneled retinal detachment was noted three weeks after presentation on B-scan and vision became no light perception.

Conclusion: Exotoxin-producing *Streptococcus mitis* endophthalmitis can result in poor visual outcome through severe inflammatory reaction, fibrinous and cyclitic membrane formation, and tractional retinal detachment.

Keywords: *Endophthalmitis; Streptococcus mitis*

Introduction

Endophthalmitis secondary to intravitreal injection with anti-vascular endothelial growth factor (VEGF) agents is an uncommon yet potentially devastating complication of the procedure [1]. Previous studies demonstrated poor visual outcomes in cases of streptococcal endophthalmitis with 59% - 80% of cases obtaining hand-motions or worse visual acuity [2,3]. Goldberg., *et al.* reported an outbreak of 12 cases of *Streptococcus mitis (S. mitis)* endophthalmitis after intravitreal injections with bevacizumab prepared at the same compounding pharmacy [4]. Baxter., *et al*. at reported a case of occlusive vasculitis due to hyperacute *S. mitis* endophthalmitis after intravitreal ranibizumab [5]. Thomas., *et al*. reported a case of *S. mitis* endophthalmitis after intravitreal injection with aflibercept which was managed with early and aggressive surgical treatment with early vitrectomy, panretinal photocoagulation, and silicone oil tamponade [6].

We report a case of endophthalmitis after intravitreal injection with aflibercept caused by *S. mitis*, our management and the patient's clinical course.

Case Presentation

83-year-old Caucasian man presented 2 days after intravitreal injection of aflibercept (Eylea; Regeneron, Tarrytown, NY) for exudative age related macular degeneration in his left eye OS. He reported acute onset of severe pain and decreased vision in his left eye, beginning approximately 20 hours after administration of the intravitreal injection.

Upon exam, visual acuity was found to be 20/25 OD and barely HM OS (from a baseline of 20/100). Intraocular pressure was 14 and 25 mm Hg OD and OS, respectively. Slit lamp exam OS showed diffuse conjunctival injection with superotemporal scleral tendernss, mild corneal edema, white hypopyon (0.75 mm) and significant amount of fibrinous material and inflammatory debris within the anterior chamber, which resulted in a poor view to the lens implant, vitreous and retina. B-scan Ultrasound showed significant amount of vitreous debris, but no masses nor retinal detachment (Figure 1 and **supplemental video 1**). The patient was diagnosed with endophthalmitis and the left eye underwent intravitreal injections with Vancomycin (1 mg/0.1 mL) and Ceftazidime (2 mg/0.1 mL) followed by anterior chamber paracentesis, and the aqueous humor sample was sent to microbiology. Oral moxifloxacin was initiated. The left eye was started on moxifloxacin drops 4 times a day and prednisolone drops 2 times a day. Within 24 hours, vision became light perception OS and the patient underwent an immediate surgical intervention. First, an anterior chamber washout was performed (using scissors and forceps to release the fibrinous membranes and inflammatory debris and send a sample to microbiology). After achieving adequate view through the pupil, a 25 gauge pars plana vitrectomy with intravitreal injection of Vancomycin and Ceftazidime was performed to de-bulk the vitreous cavity and samples were sent to microbiology. Retinal hemorrhages were noted in all quadrants. The view to the macula was obscured by fluffy white material and membranes. Subconjunctival Dexamethasone injection was administered. Vitreous and anterior chamber samples both grew *S. mitis, Streptococcus oralis* and *Streptococcus sanguis*, which were all sensitive to Vancomycin. Five days after vitrectomy (Figure 2), the left eye underwent intravitreal injection with Vancomycin, followed by a short course of oral prednisone, then a subtenon injection with Triamcinolone few days thereafter which suppressed the inflammatory reaction OS (Figure 3). Three weeks after presentation, funneled retinal detachment was noted on B-scan OS (Figure 4 and **supplemental video 2**) and the vision became no light perception.

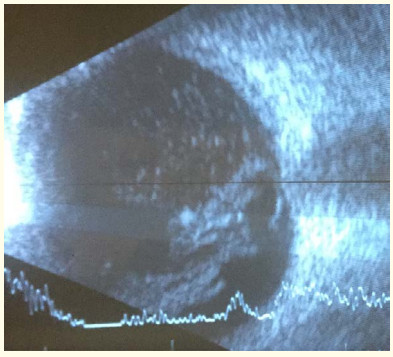

Figure 1: *B-scan ultrasound of the left eye shows significant amount of vitreous debris, but no masses nor retinal detachment.*

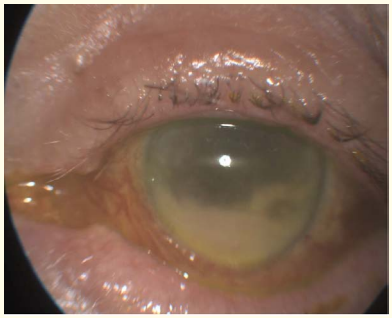

Figure 2: *Slit lamp photograph of the left eye 5 days after the pars plana vitrectomy shows conjunctival injection, superotemporal subconjunctival hemorrhage, mild corneal edema, white hypopyon and significant amount of fibrinous material and inflammatory debris within the anterior chamber. The superior half of the iris is visualized and the iris is mid-dilated.*

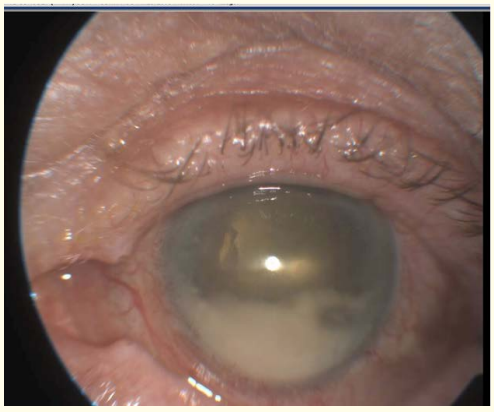

Figure 3: *Slit lamp photograph of the left eye 11 days after the pars plana vitrectomy shows conjunctival injection, improved corneal edema, regressed fibrinous material and inflammatory debris within the anterior chamber. Cyclitic membrane is noted within the anterior chamber. The iris is mid-dilated.*

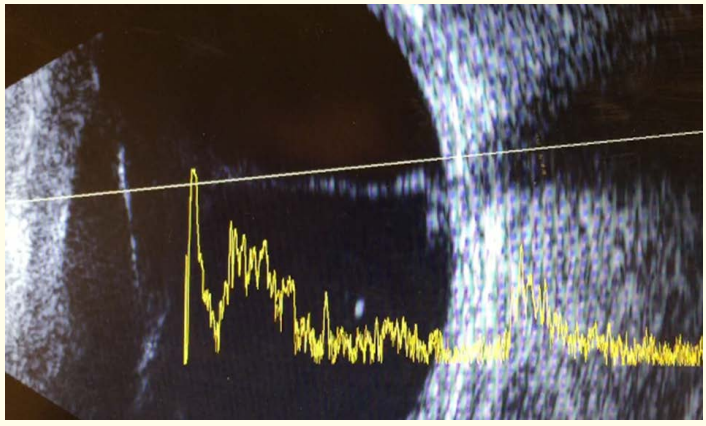

Figure 4: *B- scan ultrasound of the left eye 3 weeks after presentation shows funneled retinal detachment.*

Supplemental Digital Content 1.mov

Supplemental video demonstrates the vitreous debris during eye movement.

Supplemental Digital Content 2. mov

Supplemental file/video demonstrates the funneled retinal detachment.

Discussion

In a histopathological study by Matthews*., et al.* exotoxin-producing *S. mitis* endophthalmitis was associated with a significant rate of globe loss (7 out of 12 patients, 58.3%). Seven surgical specimens from 2 evisceration tissues and 5 enucleated globes showed no organisms. However, chronic inflammatory changes including infiltration with lymphocytes and retinal necrosis were present in most of the samples. Fibrous proliferation associated with cyclitic membranes, retinal detachment, rubeosis iridis and secondary angle closure were observed in all five enucleated globes [7].

Boscher., *et al.* [8] retrospectively analyzed a consecutive series of 12 pseudophakic eyes with severe endophthalmitis (initial visual acuity limited to light perception) operated on with endoscopy assisted vitrectomy. One eye was lost and one eye developed unproven sympathetic ophthalmia. Five of 11 (45%) eyes achieved VA ≥ 10/200, and one of 12 eyes (8%) achieved VA of 20/32. While anterior vitreous base cleansing can be accomplished using endoscopic visualization to remove inflammatory debris and toxins and decrease the risk of postoperative retinal detachment, It is crucial to realize that extensive dissection to reach the ciliary epithelium and retina, including attempts to induce a posterior vitreous detachment [9] are hazardous and can result in iatrogenic retinal breaks, because of severe traction and friable ischemic and necrotic retina in severe endophthalmitis cases.

We report a fulminant case of *S. mitis* induced endophthalmitis after an intravitreal injection with aflibercept. The patient had a poor visual outcome related to persistent inflammation, fibrous proliferation, subsequent membrane formation and retinal detachment. Our findings support early and aggressive surgical intervention as well as targeting the severe inflammatory process and fibrinous reaction encountered in exotoxin-producing streptococcus induced endophthalmitis.

Summary Statement

We report a case of fulminant *Streptococcus mitis* endophthalmitis in an 83 year-old-man with wet age related macular degeneration after intravitreal injection of aflibercept. Exotoxin-producing *Streptococcus mitis* endophthalmitis can result in poor visual outcome through severe inflammatory reaction, fibrinous and cyclitic membrane formation, which can result in tractional retinal detachment.

Financial Statement

The authors have no financial interest in the material presented in this case report.

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