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Case report

Successful management of post-traumatic vancomycin-resistant enterococcus endophthalmitis

Jason Nguyen, Mary Elizabeth Hartnett*

John A. Moran Eye Center, 65 Mario Capecchi Dr, Salt Lake City, UT, USA

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ABSTRACT

Purpose: To highlight good visual outcome with intravitreal amikacin administered 18 days following trauma-inducing vancomycin resistant enterococcal endophthalmitis treated initially with vitrectomy and oral linezolid.

Observations: Despite initial vitrectomy, intravitreal vancomycin, ceftazidime and oral linezolid, smoldering vitreous infiltrates prompted treatment with intravitreal amikacin 18 days later and restored vision to 20/40 in a vancomycin-resistant traumatic endophthalmitis.

Conclusions and importance: Good visual outcome was attained with intravitreal injection of amikacin 18 days following penetrating trauma and vancomycin resistant enterococcal endophthalmitis that smoldered following initial treatment of vitrectomy, intravitreal antibiotics and oral linezolid.

1. Introduction

Enterococci cause serious infections, including urinary tract infection, bacteremia, endocarditis and pelvic infection[1] *Enterococcus casseliflavus* and *Enterococcus gallinarium* have emerged as species resistant to vancomycin and are most commonly reported in immunosuppressed patients,[2] but rarely in endophthalmitis. There have been only 3 reported cases of exogenous endophthalmitis with *E. casseliflavus*, and all resulted in poor outcomes with visual impairment.[3–5] We report on the management of a case of exogenous endophthalmitis secondary to ocular trauma and *E. casseliflavus* endophthalmitis that resulted in a good visual outcome.

2. Case report

A previously healthy, immunocompetent and fully immunized, 9-year-old boy was struck in the left eye by an object projected from a lawn mower. The child experienced pain and reduced vision and was immediately taken to a local hospital where an iris-plugging wound 2 mm posterior to the inferotemporal limbus was repaired. Computerized tomography showed no intraocular foreign body. The following morning, the boy had continued pain with decreased vision, anterior chamber cell and flare, and was transferred to an eye center 3 hours away for management. There, visual acuity was 20/20 OD and hand movements OS. The right eye appeared normal. In the left eye, there was 2 + conjunctival injection and chemosis temporally, mild corneal edema, an irregular iris, and 4 + anterior chamber cells with a 1 mm layered hypopyon and 1.5 mm hyphema. The lens appeared clear, with a poor retinal view due to inflammation. The patient underwent an emergent 25-gauge vitrectomy with intravitreal vancomycin (1 mg) and ceftazidime (2 mg) and subconjunctival dexamethasone (4 mg). He was started on a 7-day course of oral cephalexin, topical 1% atropine twice a day, 1% prednisolone acetate every 2 h, and 0.5% moxifloxacin four times a day.

Two days later, cultures grew gram-positive cocci, *Enterococcus casseliflavus* sensitive to linezolid, ampicillin, streptomycin, gentamicin, tetracycline and penicillin but was resistant to vancomycin. Because of concern of retinal damage from intravitreal gentamicin, a 10-day course of oral linezolid 600 mg twice daily was begun. This dose was reported to have good intraocular penetration.[1] Anterior segment inflammation lessened, but there was persistent smoldering vitreous inflammation. Linezolid was continued, and 0.3% tobramycin drops were started 4× daily. Because of persistent inflammation and questionable retinal infiltrates, the patient

* Corresponding author. 65 Mario Capecchi Dr, Salt Lake City, UT 84132,USA.
E-mail address: ME.Hartnett@hsc.utah.edu (M.E. Hartnett).

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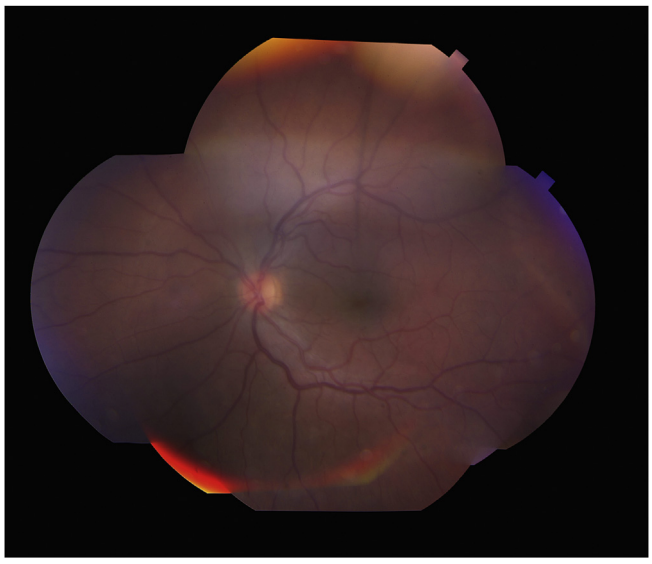

Fig. 1. Montage of left eye showing hazy view secondary to posterior capsular opacification. Temporally a faint line shows demarcation of a peripheral retinal detachment associated with traumatic dialysis.

underwent a vitrectomy with intravitreal injection of 400 μg amikacin 18 days after the initial injury. One week later, visual acuity improved to 20/125 OS. Cultures were negative. After phacoemulsification with IOL placement 2 months later, vision improved to 20/40 OS and remained stable for 1 year when the patient underwent successful scleral buckle repair of a macula-sparing retinal detachment from a 5 clock hour peripheral dialysis temporally (Fig. 1).

3. Discussion

E. casseliflavus is typically associated with fecal matter or found in soil and associated with plants.[6–8] We believed *E. casseliflavus* entered the eye from an object in the soil propelled by the lawn mower. No previous cases of *E. casseliflavus* endopthalmitis recovered visual recovery of 20/40. We believe that early linezolid dosed to inhibit most enterococci in vitreous [9] and vitrectomy helped, but that intravitreal amikacin and vitrectomy, even 18 days after the initial injury, were critical in restoring vision to 20/40. There have been 3 reported cases of exogenous *E. casseliflavus* endophthalmitis. All had poorer outcomes than ours and only one reported 20/70 visual,[5] in which a vitrectomy with intravitreal vancomycin, ceftazidime and dexamethasone was performed initially, but with worsened signs and growth of *E. casseliflavus*, was repeated with intravitreal amikacin and oral linezolid within 3 days of the injury. The other two cases did not use amikacin.[3,4]

There is hesitation to use intravitreal aminoglycosides, because aminoglycosides can cause retinal infarction. However, infarction is less often reported with intravitreal amikacin than with gentamicin,[10] and is also a better choice for vancomycin resistant endophthalmitis because some strains of *E. casseliflavus* are resistant to gentamicin through the gene aph (2″)-Id.[11]

Intravitreal amikacin led to good visual outcome in this case of traumatic exogenous vancomycin resistant enterococcus endophthalmitis even though given 18 days following trauma. It should be considered in cases of vancomycin resistant enterococcal endophthalmitis despite concerns of toxicity when oral linezolid does not cause prompt improvement. Ours is the first case of exogenous vancomycin resistant enterococcal endophthalmitis that attained 20/40 vision following treatment.

4. Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Conflict of interest

The following authors have no financial disclosures: JN, MEH.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

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