CASE REPORT

Acute post-traumatic endophthalmitis secondary to *Propionibacterium acnes*

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SUMMARY

Propionibacterium acnes has rarely been reported as the causative organism in acute endophthalmitis following penetrating ocular trauma. We report a 53-year-old man, who presented with best corrected vision of counting fingers at 2 m, <N36, in the right eye and clinical features suggestive of endophthalmitis following penetrating trauma with a tree branch 2 days earlier. Conjunctival swab, aqueous and vitreous tap were sent for aerobic, anaerobic and fungal culture. The patient was treated with intravitreal ceftazidime, vancomycin along with topical antibiotics and steroids. An aqueous anaerobic culture was positive for *P. acnes*. At the fifth month follow-up, the best corrected vision had improved to 20/20, N6. Thus, a good visual outcome was achieved, following appropriate treatment of a rather unusual causative organism.

BACKGROUND

Acute and chronic endophthalmitis differ significantly with regard to causative organisms, presentation and treatment.¹ Chronic endophthalmitis caused by *Propionibacterium acnes* is a well-recognised complication of cataract surgery. Clinical findings include conjunctival injection, keratic precipitates, vitritis and hypopyon.¹ The most characteristic sign is a white intracapsular plaque that has been shown histologically to be composed of sequestered organisms inside the peripheral capsular bag. This makes treatment with intraocular antibiotics alone to be often inadequate and vitrectomy with partial or complete capsulectomy is frequently required.¹ There are many studies that highlight these features and the management of a chronic postoperative endophthalmitis caused by *P. acnes*.

However, this anaerobic, Gram-positive, pleomorphic bacillus has rarely been reported as the causative organism in acute^{2–3} and delayed endophthalmitis following penetrating ocular trauma.^{4–5}

We report a case of acute post-traumatic *P. acnes* endophthalmitis, highlighting the diagnostic challenges that led to good visual outcome and absence of recurrence at 1-year follow-up. This report highlights the need for performing anaerobic cultures in all cases of endophthalmitis.

CASE PRESENTATION

A 53-year-old man with no known systemic illness presented with a 2-day-old penetrating injury to the right eye with a tree branch. The best corrected vision in the right eye was counting fingers at 2 m,

<N36 and in the left eye was 20/20, N6. Slit-lamp biomicroscopy of the right eye revealed congestion of the conjunctiva, 3 mm from the limbus at 9:00, which was probably the entry wound. The anterior chamber had grade 4 cells and flare with an exudative membrane and <1 mm hypopyon. Lens had nuclear sclerosis grade 1. Anterior segment findings in the left eye were normal except for the presence of nuclear sclerosis grade 1 in the lens. Fundus in the right eye showed severe vitritis (figure 1), while it was normal in the left eye.

INVESTIGATIONS

A B-scan of the right eye showed multiple low reflective echoes in the vitreous suggestive of exudates. Few membrane echoes in the mid and posterior vitreous were noted. Retina was attached and no intraocular foreign body was noted.

Under aseptic precautions, conjunctival swabs, aqueous and vitreous aspirates were obtained. Gram's stain, Giemsa stain and potassium hydroxide (KOH) mount were performed.

The samples were plated on blood and chocolate agar, Robertson's cooked meat medium (at 37°C) and Sabouraud's dextrose agar (25°C) for the detection of bacteria (aerobic and anaerobic) and fungi.

DIFFERENTIAL DIAGNOSIS

A preliminary diagnosis of post-traumatic endophthalmitis of probably fungal aetiology was made in view of an injury with vegetative matter.

TREATMENT

Intravitreal injection of ceftazidime (2.25 mg/0.1 mL), vancomycin (1 mg/0.1 mL) and amphotericin B (5 µg/0.1 mL) was given on the day of

Figure 1 Right eye fundus showing severe vitritis.

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Figure 2 Aqueous blood agar culture showing *Propionibacterium acnes* growth.

presentation. Oral ciprofloxacin 500 mg twice daily for 5 days, oral fluconazole 150 mg once daily for 2 weeks were initiated. Topically, the following eye drops were given to the right eye; ciprofloxacin 0.3% hourly, atropine 1% thrice daily and prednisolone acetate 1% second hourly.

OUTCOME AND FOLLOW-UP

At the end of 48 h, the microbiology report was negative. In view of inadequate clinical improvement, a repeat intravitreal injection of ceftazidime and vancomycin was given. The patient subsequently showed signs of improvement clinically. On day 6 after presentation, the aqueous anaerobic culture was positive for *P acnes* (figure 2). Staining showed non-sporing Gram-positive bacilli which were (figure 3) catalase and spot indole positive. The organism was further confirmed with Vitek 2 identification system as *P acnes*. As the patient was improving clinically and had already received two doses of intravitreal vancomycin, which is recommended in the management of *P acnes*, he was followed up closely. At the end of 2 weeks, his best corrected vision was 20/30, N12, conjunctival congestion was absent, anterior chamber was clear and anterior vitreous had few opacities. Fundus was seen up to third-order vessels (figure 4). At 5-month follow-up, best corrected vision was 20/20, N6, the anterior segment had no hypopyon and the fundus showed vitreous haze grade 1. At 1-year follow-up, there was no evidence of recurrence.

Figure 3 Gram's stain showing non-sporing Gram-positive bacilli.

Figure 4 On postoperative follow-up day 14, fundus was seen up to third-order vessels.

DISCUSSION

The most common organisms to be implicated in post-traumatic endophthalmitis in India are Gram-positive cocci (*Staphylococcus epidermidis*) and *Pseudomonas aeruginosa*.⁶ Sharma *et al*,⁷ studied anaerobic bacteria causing endophthalmitis following a cataract surgery with intraocular lens implantation, glaucoma surgeries and penetrating trauma. They reported that *P acnes* and *Bacteroides* species were the most common anaerobes isolated. However, they did not specify to which of the three groups they belonged. Huynh and Johnson and El-Asrar *et al*⁴ have reported post-traumatic *P acnes* endophthalmitis. However, in both cases, it was of delayed onset. In our case, although penetrating trauma with vegetative matter would suggest a fungal aetiology, *P acnes* was isolated as the causative organism. Our patient also had an unusually acute presentation of endophthalmitis.

In the normal conjunctiva, there is a predominance of *Propionibacteria* and Gram-positive anaerobic cocci.⁷ However, in our case, the conjunctival swab was negative for *P acnes* growth, thus attributing the source of infection to be extraneous that is, the penetrating trauma.

Post-traumatic endophthalmitis is usually associated with a particularly poor visual outcome.⁸ But our case had a good visual recovery due to reasons such as short wound length, lack of retinal detachment, absence of intraocular foreign body, a relatively non-virulent organism and an appropriate and prompt treatment. Even on long-term follow-up, there has been no recurrence, although recurrence is common in *P acnes* infections.

Learning points

- ▶ Though rare, *Propionibacterium acnes* should be considered in the differential diagnosis as a cause for acute post-traumatic endophthalmitis.
- ▶ Need for performing anaerobic cultures in all cases of endophthalmitis.
- ▶ By overcoming this diagnostic challenge, it is possible to attain good visual outcome and no recurrence.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Clark LW, Kaiser PK, Flynn HW, *et al.* Treatment strategies and visual acuity outcomes in chronic postoperative Propionibacterium acnes endophthalmitis. *Ophthalmology* 1999;106:1665–70.
- 2 Ormerod LD, Paton BC, Haaf J, *et al.* Anaerobic bacterial endophthalmitis. *Ophthalmology* 1987;94:799–808.
- 3 Beatty RF, Robin JB, Trousdale MD, *et al.* Anaerobic endophthalmitis caused by Propionibacterium acnes. *Am J Ophthalmol* 1986;101:114–16.
- 4 El-Asrar AM, Al-Obeidan SA, Yeboah EA. Late onset post traumatic Propionibacterium acnes endophthalmitis. *Eur J Ophthalmol* 2004;14:442–4.
- 5 Huynh TH, Johnson MW. Delayed post traumatic Propionibacterium acnes endophthalmitis in a child. *Ophthalmic Surg Lasers Imaging* 2006;37:314–16.
- 6 Vedantham V, Nirmalan PK, Ramasamy K, *et al.* Clinico-microbiological profile and visual outcomes of post-traumatic endophthalmitis at a tertiary eye care center in South India. *Indian J Ophthalmol* 2006;54:5–10.
- 7 Sharma T, Gopal L, Parikh S, *et al.* Endophthalmitis caused by anaerobic bacteria. *Indian J Ophthalmol* 1995;43:191–4.
- 8 Lieb DF, Scott IU, Flynn HW, *et al.* Open globe injuries with positive intraocular cultures: factors influencing final visual acuity outcomes. *Ophthalmology* 2003;110:1560–6.

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