

Candida Albicans Endophthalmitis after Phacoemulsification and Intraocular Lens Implantation

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Abstract

A case of fungal infection after uncomplicated phacoemulsification with posterior chamber intraocular lens implantation is reported. Initially, aqueous tap showed no organism. Despite capsular bag wash and intravitreal vancomycin treatment, the inflammation persisted. Pars plana vitrectomy sample showed yeast cells on smear examination. Intravitreal Amphotericin B alongwith IOL explantation was performed. *Candida albicans* growth was seen on inoculated culture plates and over the explanted IOL. The patient postoperatively developed secondary glaucoma that required surgical management. At two years follow-up, the vision is 6/18 with RGP contact lenses and no complications is observed.

Key words

Candida albicans, Fungal endophthalmitis, Phacoemulsification, Posterior chamber intraocular lens, Vitreous smears and culture.

Introduction

Endophthalmitis remains one of the potentially sight threatening complications of cataract surgery. It is most important in post operative period, to differentiate infectious causes of increased inflammation from other causes of inflammation (1,2) as the treatment modality is different. Even in infectious endophthalmitis proper differentiation of bacterial or fungal infection is essential for prompt treatment with specific antimicrobial therapy(2). We report a case of postoperative fungal endophthalmitis with satisfactory outcome despite exposure to steroids and delayed specific treatment.

Case Report

A 65 year old man presented with black floaters moving in front of right eye since four months. Past history revealed that he had undergone phacoemulsification with posterior chamber intraocular lens(IOL) implantation in

the right eye 8 months ago and visual acuity was 6/9 at two months follow-up. Four months after surgery, he developed reduced vision associated with pain and redness in the right eye. He was treated by the primary surgeon with topical and periocular (subtenon) corticosteroids, followed by capsular bag wash with intravitreal vancomycin injection. Vitreous culture, done at that time had shown no growth of any organisms after 48 hours of incubation. The patient did not have any complications in left eye and there was no associated systemic illness or previous ocular trauma or ocular disorder.

On presentation to us, his visual acuity in right eye was 6/9 and N8 for near. Slit lamp examination showed flat lids, mild conjunctival congestion, multiple pigments on corneal endothelium with fresh and old keratic precipitates(KP) deep anterior chamber with 2+ cells and

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flare; pupil round and reactive to light and the IOL in the capsular bag. The peripheral rim of the capsular bag was covered by dense exudates, sparing the visual axis (Fig. 1). Intraocular pressure (IOP) by applanation tonometry was 12mm of Hg and dilated fundus evaluation showed attached retina with fluffy ball like vitreous opacities.



Fig 1. Slit lamp picture showing dense exudate over peripheral capsular rim and over IOL.

A provisional diagnosis of chronic infectious post operative endophthalmitis in the right eye due to fungal or Propionibacterium acnes etiology was suspected. The patient was advised pars plana vitrectomy (PPV) with intraocular antibiotics with or without IOL explanation in the right eye as early as possible. However, the patient came for surgery only after 3 months of his first visit when his visual acuity in right eye had decreased to counting finger at four meters and he had developed a 3.0mm hypopyon in addition to previous signs.

Pars plana vitrectomy (PPV) was done and the undiluted vitreous sample was sent for microbiological processing. Smear results were available within 15 minutes. All smears (calcofluor white, Gram and Giemsa) revealed large number of budding yeast cells with pseudophyphae (Fig. 2). PPV was combined with intravitreal 5 microgram of amphotericin B and 1.0mgm of vancomycin with IOL explanation. The vitreous sample and IOL was processed as per out standard routine laboratory technique(3). Six hours after surgery, topical treatment was started with 5% natamycin eye drop 2 hourly. Florbiprofen eye drop 3 hourly and cyclopentolate eye drop (1%) 6 hourly with oral tablet itraconazole (100mg) twice daily. The first post operative

day evaluation of the patient was unremarkable except low intraocular pressure that gradually built up and he developed secondary glaucoma after two weeks of surgery. The high IOP (38mmHg) was not responsive to maximal tolerated medical therapy and therefore trans-scleral Diode laser cyclophotocoagulation was done, following which IOP was controlled.

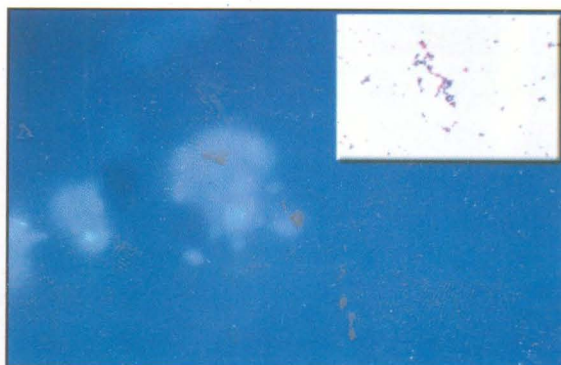


Fig 2. Budding yeast in Calcofluor white and in Fram stain(inset) of vitreous fluid.

Culture report of the vitreous sample, obtained in 48 hours, revealed confluent growth of yeast like fungus in all media. This was subsequently identified as *Candida Albicans*. Minimum inhibitory concentration, determined for amphotericin B(0.001%) indicated the organism to be highly sensitive. The antifungal medication (vide supra) was given for 8 weeks, following which all signs and symptoms of infection and inflammation resolved (Fig. 3). He was subsequently fitted with rigid gas permeable(RGP) contact lens and obtained a vision of 6/18 and IOP of 12mmHg without medication. At two years follow up, no additional pathology was noted.

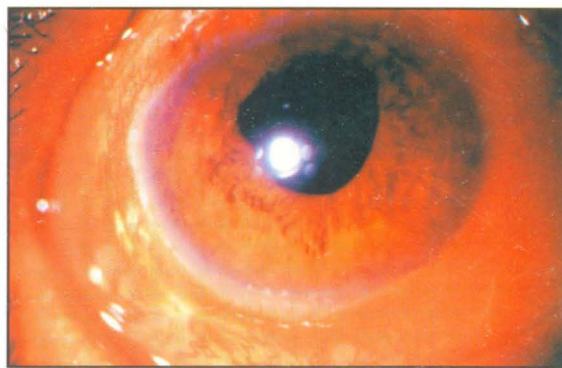


Fig 3. Signs of infection and inflammation recovered.

Discussion

Exogenous fungal endophthalmitis develops in healthy immunocompetent individuals in most cases, following trauma or intraocular surgery. The diagnosis of fungal endophthalmitis should be suspected in all cases of postoperative inflammation that occurs months after surgery with complaints of floaters, blurred vision and minimal pain. It should be differentiated from delayed onset bacterial endophthalmitis (*P. acnes*) by its non-responsiveness to steroid. Recent studies show that fungus accounts for 7% to 13% of culture positive cases of postoperative endophthalmitis and the common fungal species isolated in postoperative endophthalmitis are *Aspergillus* spp., *Cephalosporium* spp., *Candida* spp., *Fusarium* spp., *Volutella* spp., and *Neurospora* spp.(4).

If fungal infection is suspected, it is helpful to pass part of the vitreous sample through a millipore filter so as to concentrate the organism and then culture the filter paper. It may take upto 14 days for the cultures to grow. The initial culture done elsewhere is discarded after 48 hours. The use of calcofluor white staining techniques on vitreous samples allows the rapid identification of fungal elements and has improved diagnostic speed and accuracy(5). Our case clearly shows the utility of smear examination of vitreous sample.

Topical or periocular steroids predispose to growth of fungi and bacteria by suppressing the ocular immunologic response and so must be avoided in conditions of unknown etiology, unless infectious cause is ruled out. Antifungal therapy combined with vitrectomy and removal of an intraocular lens (IOL) is usually the standard treatment in fungal endophthalmitis for a favourable outcome. In *Candida* endophthalmitis, some cases have been successfully managed without removal of IOL(6). Amphotericin B is still the mainstay of intravitreal therapy, though fluconazole (25ug/ml) also can be used. Topical and periocular antifungal agents are used in infections that involve cornea, sclera or anterior chamber(6). Our

patient responded well to antifungal therapy with no recurrence of infection. Development of secondary glaucoma in our patient was unique and we could not ascertain a specific cause except for prolonged intraocular inflammation that could have compromised the outflow from the trabecular meshwork. The exact role of systemic antifungals especially azole derivatives (itraconazole, fluconazole or ketoconazole) in postoperative fungal endophthalmitis is not known.

Systemic azole derivatives have been successfully used to treat severe ocular fungal infections including *Candida* and other fungal endophthalmitis(7-9). Our routine protocol for post-operative fungal endophthalmitis includes frequent topical antifungals (Natamycin and/or fluocytosine) and oral itraconazole for 6-8 weeks after initial vitreous surgery and intravitreal Amphotericin B injection.

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