

## Successful Treatment of *Paecilomyces lilacinus* Keratitis and Endophthalmitis with Penetrating Keratoplasty, Pars Plana Vitrectomy, Intravitreal and Oral Voriconazole

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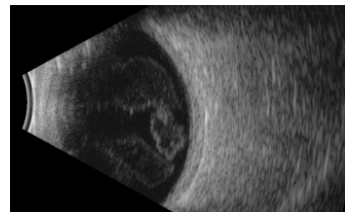
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*Paecilomyces lilacinus* is a rarely identified cause of local and systemic infections. Of reported *P. lilacinus* infection cases in the literature there is a preponderance of oculomycoses composing 51.3% of reported cases in a recent review often associated with intraocular surgery or trauma with or without a foreign body [1]. Historically, treatment of *P. lilacinus* infections has been difficult due to resistance to commonly used antifungals [2]. With the advent of newer antifungal agents such as voriconazole there is a growing body of case reports of successful management of these infections. Here we report an uncommon case of *P. lilacinus* keratitis with endophthalmitis in the setting of a penetrating keratoplasty treated successfully with intravitreal and systemic voriconazole.

A healthy 58-year-old pseudophakic female, with a history of soft contact lens use, was referred to our tertiary care facility one month after undergoing a penetrating keratoplasty for a non-healing bacterial corneal ulcer. Initial bacterial and fungal cultures prior to surgery only showed *Streptococcus* species; however pathology of the corneal button showed fungal elements within the corneal stroma. Three weeks post-operatively she developed a recurrent ulcer within the graft and was referred to our facility for further management of a possible undetected fungal infection that subsequently affected the corneal graft.

On initial presentation the patient's vision was hand motion at 3 feet. She had 2+ anterior chamber cells and flare, a corneal epithelial defect with an underlying 2.7 x 3.8 mm infiltrate within the corneal graft (Figure 1). The corneal infiltrate was re-cultured and the patient was started on hourly-fortified topical vancomycin (25 mg/mL), tobramycin (14 mg/mL), and topical Natamycin (5%) eye drops. Oral ketoconazole 200 mg twice daily was also added.

Two days after presentation the corneal infiltrate had increased in size with progression to the graft-host margin. The anterior chamber inflammation had increased to 4+ cells and flare and an ocular ultrasound demonstrated vitritis (Figure 2). The patient emergently underwent a repeat penetrating keratoplasty and anterior chamber wash out. Intra-operatively, the intraocular lens expelled from the eye and explanted. Intravitreal injections of vancomycin (1 mg/0.1 mL),



**Figure 2:** Ocular ultrasound demonstrating vitreous cells and endophthalmitis.

ceftazidime (2.2 mg/0.1 mL), and voriconazole (0.1 mg/0.1 mL) were administered at the conclusion of the case. Vitreous samples were sent for culture and the corneal button was sent for pathologic analysis. Post-operatively the patient was started on topical prednisolone acetate 1% four times daily, moxifloxacin every two hours and oral ketoconazole 200 mg twice daily. On post-operative day two, there was persistent anterior chamber and vitreous inflammation. Repeat ocular ultrasound demonstrated subhyaloid and intravitreal infiltrates. The preliminary analysis from the recent operative cultures demonstrated fungal elements with mold forms. Intravitreal voriconazole was re-injected. On post-operative day three, a 25-gauge pars plana vitrectomy was performed and intravitreal voriconazole was again injected.

Four days after the repeat penetrating keratoplasty and vitrectomy the initial vitreous cultures were identified as *Paecilomyces lilacinus*. Pathologic evaluation of the corneal button revealed full thickness inflammation, fungal elements in the anterior two thirds of cornea with endothelial cell loss. Infectious disease consultation was made and the patient was initiated on oral voriconazole 400 mg twice daily.

Over the subsequent two weeks the anterior chamber and vitreous inflammation persisted but showed gradual improvement. Blood voriconazole levels were drawn and shown to be within systemic therapeutic range (3.54 mcg/mL). After three weeks of oral voriconazole therapy the patient's best-corrected vision improved to 20/300 with



**Figure 1:** *Paecilomyces lilacinus* keratitis in the original penetrating keratoplasty.

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rare anterior chamber and vitreous cells. After one month of high dose voriconazole therapy the dosage was decreased to 200 mg twice daily for an additional three months. Over which time there was no sign of recurrent keratitis, the anterior chamber and vitreous inflammation resolved and the patient's best-corrected vision improved to 20/60.

*Paecilomyces lilacinus* is a rare cause of keratitis and endophthalmitis. Treatment has been variably successful owing in part to the high degree of resistance of *Paecilomyces* organisms. Amphotericin B, itraconazole and ketoconazole have poor *in vitro* activity against *P. lilacinus* with high mean inhibitory concentrations [3].

The advent of new triazole antifungals particularly voriconazole has been shown to have lower mean inhibitory concentrations and to be an effective treatment of *Paecilomyces* oculomycoses [4]. This is in part that orally administered voriconazole has good bioavailability and achieves therapeutic aqueous and vitreous levels [5]. Prompt recognition of this infection combined with long term oral voriconazole treatment can be effective in treating *Paecilomyces* oculomycoses.

## Disclosure

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