

# Fungal Keratitis caused by *Scedosporium Apiospermum*

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## Abstract

A case report of fungal keratitis caused by *Scedosporium apiospermum* which was treated with oral and topical anti-fungals and tectonic keratoplasty finally resulting in an anterior staphyloma.

**Keywords:** Fungal keratitis, *Scedosporium apiospermum* keratitis, topical Voriconazole

## Introduction

*Scedosporium apiospermum* is a rare cause of keratitis with variable response to treatment. It usually infects individuals who live in unhealthy dirty environment. The most common mechanism of entry into the eye is due to trauma or injury. The first reported corneal infection by *S. apiospermum* occurred in 1955[1]; the infected eye was eventually removed after failure of treatment. To date, treatment of *S. apiospermum* keratitis remains a challenge [2].

## Case report

A 50 year old male presented with acute redness and pain in the right eye since 1 week. There was no history of trauma to the eye but the patient could recollect about fall of a foreign body in the eye, a couple of days prior to the symptoms, following which he had

rubbed his eye. There was no history of any systemic diseases/intake of immunosuppressive medicines. Slit lamp examination revealed a 2x3 mm dense central corneal infiltrate with epithelial defect. Vision in the right eye was reduced to counting fingers at 1 metre distance. The intraocular pressure was 18 mm of Hg in both the eyes. Lacrimal ducts were found to be patent.

Corneal scrapings were taken for 10% potassium hydroxide (KOH) staining and Sabouraud Dextrose

Agar (SDA) culture and blood agar. 10% KOH staining revealed filamentous fungus. Patient was thoroughly investigated with routine blood tests and for any of the conditions of immunosuppression including HIV. All reports were found to be within normal limits. An initial treatment of hourly 5% Natamycin eye drops, 1 drop every hour and fortified Cephtriazone was started along with cycloplegic eye drops ( Homatropine eye drops, 1%, one drop twice a day). Once the culture report revealed *Scedosporium apiospermum*, topical 5% natamycin alone was continued for 2 weeks. Initial improvement was seen till the second week following which symptoms began to worsen. The corneal ulcer had increased in size to 5x5 mm, irregular in size, elevated surface with a small hypopyon (Figure 1, 2). Oral Itraconazole 150mg, twice daily was started along with topical Voriconazole. Since Voriconazole eye drops are not available , it had to be constituted with Vozole, lyophilized powder available as 30mg dry powder. To this vial 3 ml of water for injection , provided with it, was added to give a concentration of 1% ( 10mg/ml). It is marketed by Aurolab. This treatment was continued for 2 weeks as there were signs of improvement in the form of decrease in the size of the infiltrate and reduction of pain, redness. However, after 2 weeks of this treatment, emergency tectonic keratoplasty had to be performed at the Regional

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Institute of Ophthalmology, Minto Eye Hospital, Bangalore, due to sudden perforation of the cornea. The corneal button could not be procured for histopathological confirmation as it was done at a different hospital. After 2 months of keratoplasty patient developed graft failure and finally resulted in the formation of an anterior staphyloma. At his last follow up one year later he had perception of light and accurate projection of rays with hand movement close to face.



**Figure 1. Corneal ulcer with hypopyon as seen after 2 weeks of treatment with topical 5% Natamycin**



**Figure 2. Corneal ulcer with hypopyon as seen after 3 weeks of treatment with topical 5% Natamycin**

## Discussion

Globally the incidence of fungal keratitis is rising and current therapies are often ineffective. New anti-fungal agents such as Voriconazole have been applied recently for the treatment of keratomycosis[3]. *Scedosporium apiospermum* is a common soil fungus and its environmental isolations have been made from sewage sludge, polluted streams and manure of poultry and cattle. Though it is known to infect humans it is an uncommon cause of mycotic keratitis. It may cause localized and disseminated opportunistic infections in immunocompromised patients and in immunocompetent patients after massive exposure and trauma[1]. Prognosis is generally poor either due to a delay in the diagnosis or due to resistance to routine anti-fungal medicines[4]. In spite of many reports of successful treatment of *Scedosporium apiospermum* keratitis with topical and oral Voriconazole, this case highlights the importance of early diagnosis and surgical intervention as the risk of perforation is very high. Review of literature has shown *Scedosporium apiospermum* keratitis responds variably to anti-fungal treatment and that it is difficult to predict how it will respond to treatment [1].

In the initial part of the presentation an empirical treatment of natamycin eye drops was started as filamentous fungus was seen on 10%KOH staining. Most common filamentous fungi causing keratitis were *Fusarium* and *Aspergillus*. Topical Natamycin has been found to be very effective in both these fungal keratitis. Initial 5 days were important for the start of topical Voriconazole as it would have resulted in faster improvement. It becomes very important to identify the earliest sign of failure of medical line of management and switch to surgical line. Our case could have been managed better if an early decision to start topical and oral Voriconazole would have been made once the culture reports showed a growth of *Scedosporium apiospermum*. The decision to go for therapeutic keratoplasty should have been made once the keratitis showed no further improvement in spite of 2 weeks of topical Voriconazole and oral Itraconazole[3].

Currently Voriconazole is unavailable for topical use and has to be freshly constituted using injection Voriconazole and water for injection. This

preparation can be stored between 2-8 °C. However it is also marketed as a dry lyophilized powder (Vozole by Aurolab) which is used as eye drops after adding water for injection. It has the advantage that it does not require any refrigeration. It requires intactness of corneal epithelium and being hepatotoxic, liver function tests are to be performed repeatedly. With recent studies it is shown that Voriconazole is a good first line anti-fungal in the treatment of *Scedosporium apiospermum* keratitis[1].

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