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Acremonium Corneal Ulcer: A Threat to Patient's Eye

Dr. Sneha Sharad Bowalekar and Dr. Mohiuddin Qazi[2]

[1]Microbiologist (Part time), Dr. Lal Path Labs, MRL, Mumbai and SunLab Diagnostic Pvt. Ltd., Thane. & Resident doctor in Microbiology, Government Medical College, Nagpur, Maharashtra.
[2]Associate Professor in Microbiology, Government Medical College, Nagpur, Maharashtra.

Abstract: We present a case of Acremonium corneal ulcer which was treated with antifungal agents both topically as well as systemically. Superficial keratoplasty was performed in the course of the disease, but patient ended up with endophthalmitis. It thus brings to our notice that early diagnosis and treatment of fungal corneal ulcers crucial to its prognosis. In today's era, newer fungi are increasingly found responsible in introducing invasive infection at body sites. Prompt management of such infections starts from clinical suspicion, early microbiological diagnosis with direct staining techniques to presumptively identify fungal etiology and isolation and identification of fungus in culture.

Keywords: *Acremonium*, keratitis, natamycin, voriconazole

Introduction

Fungal keratitis can lead to perforation, loss of vision and if worsened, loss of an eye. Mycotic corneal ulcers are mostly caused by *Candida*, *Fusarium* and *Aspergillus species* [1] The genus *Acremonium* contains many species most are saprophytic isolated from dead plant material and soil and few of them pathogenic in humans.[2,3] Several species are recognised as opportunistic pathogens of man and animals causing mycetoma, mycotic keratitis and onychomycosis.[2,3]. Risk factors In immunocompetent individuals which predispose to fungal keratitis are topical steroid use, trauma with vegetative matter, contact lens wear and previous ocular surgery [4-6]. We discuss here a case of *Acremonium* fungal keratitis which complicated despite treatment.

*Author for Correspondence. E-mail: msqazi30@gmail.com.

Case Report

A 65 years old female, presented to ophthalmic outpatient department with complaints of watering, redness, pain and diminution of vision in left eye since 7 to 10 days. There was no history of trauma to the affected eye. Although, missed and trivial vegetative trauma can not be completely overlooked. There was no associated photophobia or diplopia. There was no significant past or personal history.

Ocular examination revealed presence of conjunctival oedema and 8x9 mm corneal ulcer with stromal infiltration. The eyelashes were matted with discharge. Anterior chamber showed presence of hypopyon. Signs of iritis were present. Fundus examination of left eye showed absence of glow. B scan of left eye revealed vitreous degeneration. The patient was prescribed with Natamycin 5% and Itraconazole eye drops. Conjunctival smear and corneal scrapping were sent for microbiological examination. Gram stained smear and potassium hydroxide mount of corneal scrapping showed the presence of mycelial fragments.

Figure 1: Gram stained smear of Corneal Scraping showing fungal hyphae

Figure 2: Potassium Hydroxide (KOH) mount of corneal scrapping showing fungal hyphae

After the findings were conveyed to the clinicians, Tab. Fluconazole 150 mg BD was added to the treatment regimen. Tab. Acetazolamide 250mg thrice daily was eventually added for secondary glaucoma. Also, the corneal scrappings were inoculated on two slants of Sabouraud's Dextrose Agar and were incubated at 23ºC and 37ºC. Four days later, whitish fluffy mould started to appear on both the slants which on further incubation showed orange pigmentation at reverse.

Figure 3: Sabouraud's Dextrose Agar showing fluffy white mould growth on obverse

Figure 4: Sabouraud's Dextrose Agar showing mould growth with orange coloured pigmentation on reverse

Slide culture for identification of the fungus was put up and the condiation pattern was observed. The fungus showed presence of slender hyaline hyphae and few phialidic conidiogenous cells which were erect arise singly and gradually tapering to the apex. The conidia were one-celled, hyaline, cylindrical and mostly aggregated in slimy heads at apex of phialides and in between hyphae. The conidia were also found lying laterally along the length of the hyphae.

Figure 5: Direct mount of Slide culture showing conidiation pattern

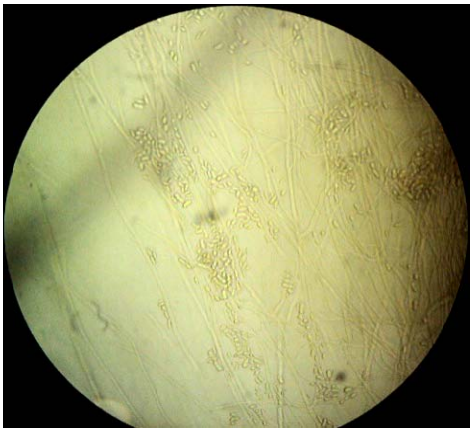
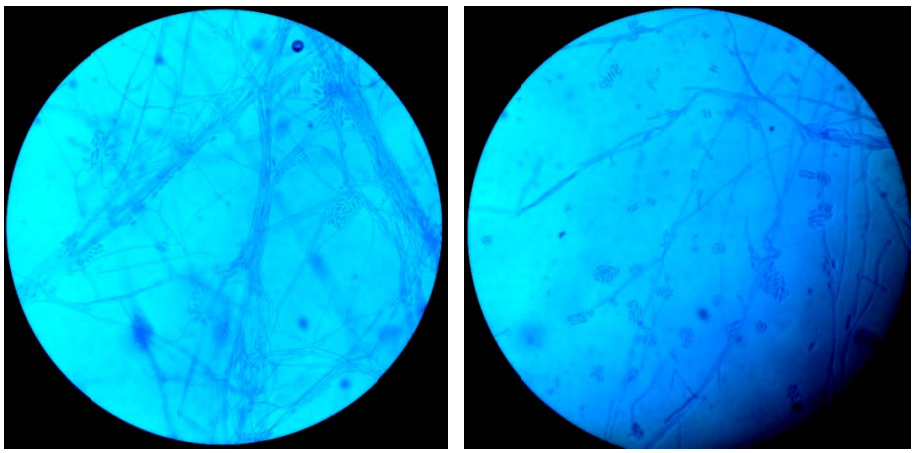


Figure 6: Lactophenol Cotton Blue (LPCB) mount of Slide Culture showing conidiation pattern of fungus



Eight days after admission to the hospital, the patient was operated for therapeutic keratoplasty for left eye following which she was continued on Tab. Fluconazole and Nystatin eye drops for a week. However, patient was referred to higher centre for vitrectomy due to occurrence of signs and symptoms of fungal endophthalmitis in her left eye.

Discussion

Keratomycosis is a frequently encountered entity particularly in tropical countries. Corneal opacification following various infections is a second major cause of blindness after cataract.

The list of filamentous fungi responsible for cases of infectious keratitis include Aspergillus, Fusarium, Curvularia, Acremonium, Paecilomyces, Penicillium, Alternaria, Fonsecaea, Pseudallescheria, Bipolaris and Aureobasidium. Occurrence of infection in the eye depends upon invasiveness and toxigenicity of the fungal strains, host factors, hypersensitivity reaction and underlying defect of neutrophils.

Mostly, a vegetative trauma drives the fungal inoculum onto corneal stroma leading to its coagulation necrosis. Our patient, being in advanced age where host immunity is compromised and coming from rural area,is predisposed for such trauma and infection following it. Late in the course of disease, hyphae may be seen penetrating the Descemet's membrane. Fungal hyphae could be found in neutrophilic exudate of hypopyon [7]. Acremonium fungi are saprophytic and environmental contaminants. [2]

Das et al [9] reported a total of 17 cases between 1971 and 2010 of worldwide clinical ocular infections caused by different species of Acremonium which described symptoms including keratitis and endophthalmitis in these patients. A review article lists a vast majority of clinical infections caused by Acremonium species including fungemia, onychomycosis, corneal ulcers, mycetoma are listed from worldwide occurrence. There are no sources in the current document [9].

Alfonso et al 10 reported four cases of Acremonium fungal keratitis associated with laser-assisted in situ keratomileusis (LASIK). Four cases of Acremonium keratitis are also reported in patients treated with Laser Assisted In-situ Keratomileusis (LASIK), emphasizing that maintenance of asepsis during surgeries is mandatory to prevent this serious complication [10].

Response to treatment depends on both antifungal therapy and surgical intervention. Topical Natamycin (5%) every hour is documented as a drug of choice [11]. Topical Amphoterecin-B and Fluconazole along with oral Fluconazole could be administered as a therapy too. Topical 5% natamycin could be added to this regime [12].

However, resistance to amphotericin-B in fungal corneal ulcers have been reported. [13 14]

In worsening cases with Acremonium keratitis, treatment must be escalated to topical natamycin and voriconazole, along with oral voriconazole as newer azoles are reported efficacious in fungal keratitis [12].

Voriconazole and Posaconazole, exhibit favorable in vitro activity against Acremonium species. Itraconazole has high MICs for Acremonium isolates [15]. Caspofungin is an alternative for cases refractory to voriconazole. [16]. In some patients due to advanced disease, interventions such as keratoplasty, evisceration or enucleation is required [6,17].

Conflict of interest statement: Authors have no conflicts of interest to declare.

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