

A rare case of fungal corneal ulcer

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ABSTRACT

We report an unusual case of pigmented corneal ulcer caused by *Curvularia* species in a 60-year-old farmer from Southeast Asia who presented with pain and redness with reduced vision in the right eye for the past 2 weeks. The examination revealed an ulcer in the paracentral region of the cornea with a feathery margin, heaped-up infiltrates, and pigment deposits on the ulcer. Stromal edema and Descemet membrane folds were present. A non-mobile hypopyon was present in the anterior chamber with a cataractous lens and normal dilated retina examination. The corneal scraping was done under topical anesthesia and sent for potassium hydroxide mount, sabouraud dextrose agar (SDA) culture, and lactophenol cotton blue (LPCB). The SDA and LPCB revealed dematiaceous fungi favoring *Curvularia lunata*. He was started on oral and topical anti-fungal and anti-biotic, anti-glaucoma and Cycloplegic eye drops. On follow-up, the ulcer showed significant improvement minimal scarring, and hypopyon with no pigment deposits. Pigmented corneal ulcer is an unusual presentation of fungal keratitis. Timely recognition, investigations, and treatment by ophthalmologists are crucial in the management of fungal corneal ulcers as fungal culture results take a serious amount of time. *Curvularia* is an uncommon species causing pigmentary fungal keratitis and responded best with antifungals in our patient.

Key words: Fungal corneal ulcer, Pigmented, Sabouraud dextrose agar

Fungal keratitis is distinctive in many ways. The etiopathogenesis, presentation, diagnostic tests, response to treatment, and the sequelae differ from other corneal infections. *Curvularia* is classified as a dematiaceous mold and is most commonly found amongst soil and vegetable matter in warm and humid climates. Dematiaceous fungi account for up to 8–17% of cases, particularly in tropical regions [1]. *Curvularia* is a prevalent member of the darkly pigmented fungi that received its current name in 1933 [2] and that is related to the sexual teleomorph *Cochlibolus*. This genus of filamentous spreads by airborne spores. Some of the *Curvularia* species are phytopathogens. Smudges of blackish dust-like *Curvularia* growth are seen on stored grains and dead plant material. Several *Curvularia* species are zoopathogenic. Wound infection is the most common disease caused by *Curvularia* and ranges from onychomycosis to skin ulceration and subcutaneous mycetoma bronchopulmonary disease [3,4]. The clinical presentation of fungal keratitis is non-specific and may be confused with indolent ulcer of viral and bacterial origin. Allergic sinusitis, lung abscesses, brain, liver, and connective tissue are invasive human *Curvularia* infections. Nosocomial infections include


dialysis-related peritonitis and post-surgical endocarditis [5]. Infections of the cornea, reported in 1959 [6], was the first human disease proved to be caused by *Curvularia*. Other ocular infections consist of conjunctivitis [7], dacryocystitis [8,9], sino-orbital cellulitis [10], and endophthalmitis. The cornea is the most commonly affected site.

Our case describes the rare presentation of the fungal corneal ulcer, its clinical spectrum, treatment, and resource of learning.

CASE REPORT

A 60-year-old farmer presented to our outpatient department with a history of pain, redness, and reduced vision in the right eye past 2 weeks which was gradually progressive.

His pulse rate was 70 beats/min, blood pressure was 122/80 mm of Hg, and respiratory rate was 16 breaths/min. Systemic examination was normal. The visual acuity in the right eye was counting fingers. His right eye examination revealed an ulcer measuring 2.5 × 2.5 mm present at 7 O' clock in the paracentral region of the cornea. The ulcer had feathery margins with heaped-up infiltrates and brown pigment deposits (Fig. 1a). Stromal edema with Descemet membrane folds around the corneal

Access this article online	
Received - 26 February 2025 Initial Review - 10 March 2025 Accepted - 22 April 2025	Quick Response code 
DOI: 10.32677/ijcr.v11i5.5063	

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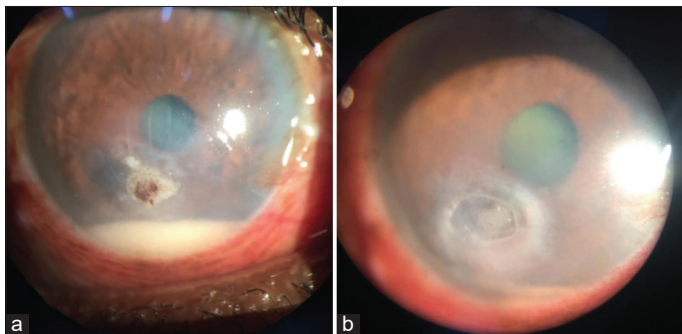


Figure 1: (a) *Curvularia keratitis* with feathery margins with heaped up infiltrates and brown pigment deposits, stromal edema with Descemet membrane folds and non-mobile hypopyon; (b) At 2nd week follow-up the ulcer showed improvement, pigment deposits over the ulcer, stromal edema was reduced

ulcer was present. A non-mobile hypopyon of 2 mm was present in the anterior chamber (Fig. 1). The lens showed cataractous changes and the dilated retinal examination was normal. The visual acuity in the left eye was 6/9 and the anterior segment was normal. Dilated fundus examination was normal in both eyes.

The corneal scraping under topical anesthesia on a potassium hydroxide mount revealed positive for fungal elements. The sabouraud dextrose agar (SDA) showed dark olive green to brown or black velvety texture colonies (Fig. 2) after 10–12 days identified as *Curvularia lunata*. The lactophenol cotton blue (LPCB) showed large conidia measuring 8–14 × 21–35 μm containing four cells and appear curved due to swelling of the central wall (Fig. 3).

The patient was started on oral antibiotic itraconazole 100 mg twice a day for 2 weeks. Topical eye drops natamycin 5%, moxifloxacin, homide, and timolol were started. The patient was followed up after 1 week and responded well to the given treatment. At 2nd week follow-up, the ulcer showed improvement, pigment deposits over the ulcer, stromal edema, and hypopyon were almost minimal (Fig. 1b). Cataract surgery was advised for reduced vision in both eyes at a later visit.

DISCUSSION

We present a case of fungal keratitis with characteristic brown pigment deposits over the defect caused by *C. lunata*. Although typically considered relatively rare, fungal keratitis can account for up to 50% of microbial keratitis cases depending on geographic location [11,12]. Dematiaceous fungi are predominantly found in soil or associated with plants, especially in tropical and subtropical regions [13,14]. Significant risk factors were also corneal trauma from organic materials and male gender [14]. In our case, the patient is a farmer by occupation hailing from tropical regions of southeast Asia. The classic appearance of fungal ulcers includes feathery or serrated borders, elevated epithelial slough or infiltration, and non-yellow coloration [15,16]. Our patient presented with similar feathery margins, and heaped-up infiltrates and brown pigment deposits over the defect.

For the confirmatory diagnosis, the fungal keratitis requires laboratory investigations, involving corneal smears and culturing.

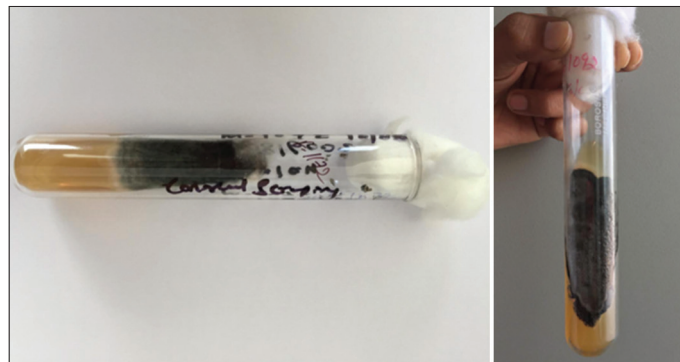


Figure 2: Dark olive green to brown or black velvety texture colonies after 10–12 days identified as *Curvularia lunata*

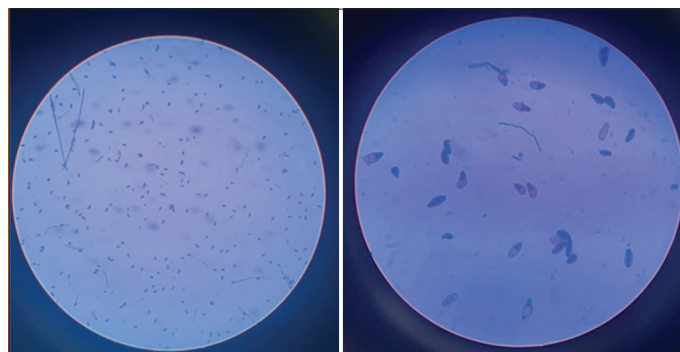


Figure 3: The lactophenol cotton blue with large conidia measuring 8–14 × 21–35 μm containing four cells and appear curved due to swelling of the central wall

According to the limited published literature, fungal keratitis culture is the gold standard technique. Our case report highlights the importance of culture reporting in identifying the organism. Culture media for fungal organisms include Sabouraud agar, potato dextrose, brain-heart infusion broth, and blood agar [16]. The culture media we used in this patient was SDA which revealed dark olive green to brown or black velvety texture colonies. The morphology of the fungi microscopically revealed large conidia measuring 8–14 × 21–35 μm containing four cells and appear curved due to swelling of the central wall on LPCB-confirmed *C. lunata*.

The treatment includes antifungals. Topical natamycin 5% has broad spectrum coverage that is dose dependent, and is the only food and drug administration approved topical medication for mycotic keratitis [12]. The treatment duration is much longer than for other corneal infections in general, treatment for fungal keratitis may last 12 weeks, while more specifically, cases of *Curvularia* keratitis are treated for a mean duration of 40 days [16]. The other sensitive antifungals include ketoconazole and itraconazole. In 15–20% of typically more severe cases, medical management fails, and lamellar keratectomy or therapeutic keratoplasty may be required [16]. Our patient best responded to topical natamycin 5% and oral itraconazole 100 mg in 2 weeks and surgical treatment was not required.

CONCLUSION

Fungal keratitis rarely infects healthy, intact ocular tissues unlike other virulent organisms, and diagnosis is delayed. This case report

of pigmented *Curvularia* keratitis highlights the importance of clinical knowledge, diagnostic testing, and treatment modulation, and visual morbidity can be reduced if timely action is taken.

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Funding: Nil; Conflicts of interest: Nil.

How to cite this article: Nanda L, Rajula H. A rare case of fungal corneal ulcer. *Indian J Case Reports*. 2025; 11(5):225-227.