

# A case of phaeohyphomycosis causing keratitis due to *Curvularia lunata*

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Received January 5, 2015. Accepted March 2, 2015

## Abstract

Phaeohyphomycosis causes a variety of infections such as sinusitis, keratitis, superficial, subcutaneous, pulmonary, and occasionally disseminated diseases. Keratitis due to *Curvularia* is highest among the dematiaceous fungi. It is the third most prevalent filamentous hyphomycetes in corneal isolates. Very few cases of human diseases caused by this particular fungus in a rural area have been documented. We report a case of an adult who developed locally invasive disease corneal ulcer due to sharp injury while driving.

**KEY WORDS:** Phaeohyphomycosis, keratitis, *Curvularia lunata*

## Introduction

Phaeohyphomycetes, Dematiaceae, and the genus *Curvularia* produce a spectrum of emerging fungal infections. Keratitis due to *Curvularia* is highest among the dematiaceous fungi.<sup>[1]</sup> It is the third most prevalent filamentous hyphomycetes in corneal isolates.<sup>[2]</sup> It is widely distributed plant pathogen causing leaf spots, seedling blight, and seed germination failure. *Curvularia lunata*, a mitosporic fungi causing keratitis due to corneal injury and is less reported in medical history, especially from a rural area.

## Case Report

A 27-year-old man attended our outpatient Department of Ophthalmology for having irritation, redness, and watering in the left eye and pain in the eyes for the past 4 days. There was history of a sharp object injury while driving after which

all the symptoms and signs appeared. Patient was not a diabetic, does not had any other chronic illness, no previous episode, not on any medication, neither undergone any operative procedures. No other risk factors apart from the injury due to sharp object were identified.

On examination, general condition of the patient was good. He was afebrile and his blood pressure was recorded as 110/80 mm Hg. Respiratory rate was recorded as 16/min. He was not icterus and did not show clubbing or lymphadenopathy. The systemic examination was inconclusive.

Ophthalmic examination, anterior segment of the left eye, showed a corneal ulcer [Figure 1] with infiltrate measuring 4 × 6 mm involving central and paracentral zone of cornea. There was no hypopyon, satellite lesion, or endothelial plaque. Anterior chamber showed grade 3 reaction.

Microbiological examinations of swab were performed. The swab was subjected to gram stain, Giemsa stain, and KOH, which showed the presence of fungal hyphae and the preliminary report was sent. The material was then inoculated onto bacterial and fungal culture plates and incubated at 37 and 25°C, respectively. It was also inoculated into blood agar, chocolate agar, and brain heart infusion (BHI) agar and incubated at 37°C.

The material from Sabouraud's dextrose agar (SDA) subjected to the microscopic examination showed the presence of conidophores, which were erect, unbranched, septate, flexuous in the apical part, with flat dark brown scars. Conidia were multicellular, smoothwalled, olivaceous brown, ovoidal to broadly clavate, curved at subterminal cell from the base,

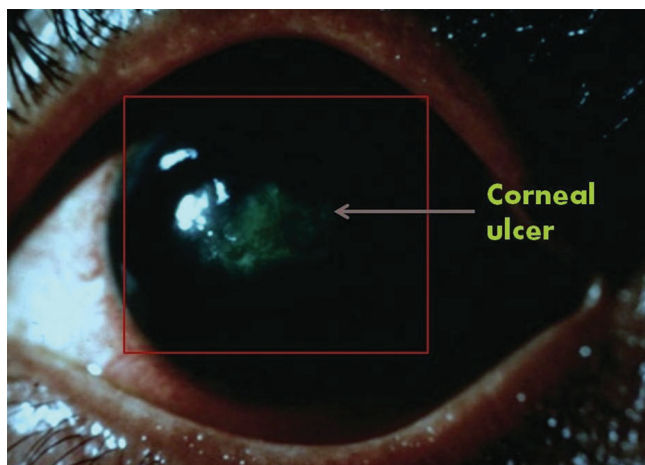
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Website: <http://www.ijmsph.com>

DOI: 10.5455/ijmsph.2015.05012015218

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**Figure 1:** Corneal ulcer of the patient.



**Figure 2:** *Curvularia lunata* isolated from the corneal swab.

and had three septa [Figure 2]. The subterminal cell was swollen and distinctly larger and darker than the remaining cells. The growth from chocolate agar and BHI agar was also sent for cytological study, which also confirmed the presence of earlier-mentioned microscopic picture.

The patient was put on topical natamycin 4 mg/mL for 1 month. Review after 1 week showed no improvement and was not relieved of signs and symptoms. Then he was put on oral itraconazole 200 mg/day. After this treatment, the patient's symptoms subsided and his vision was improved. He was advised to continue oral and topical antifungal for 1 month.

He resumed his normal visual acuity after continuous therapy for 2 months and the vision improved to 6/36 in the injured eye.

## Discussion

Of the total corneal scrapings received in microbiology lab, the fungal cause of keratitis was 95.4%.<sup>[3]</sup> Among the fungal isolates, *Fusarium* (37.2%), *Aspergillus* (30%), and *Curvularia* (2.8 %) are common. There was higher incidence of fungal keratitis during monsoon and winter than during summer.<sup>[4]</sup> It was also found that prevalence of fungal ulcer in males is three times higher than that in females.<sup>[5]</sup> Superficial feathery infiltrate of the central cornea to suppurative ulcerative infection of the peripheral cornea is the usual manifestation.

The presentations of our clinical ocular infection described by authors resembled *C. lunata*. Speciation was according to the microscopic picture of conidia.<sup>[6]</sup> Our clinical case was the corneal ulceration associated with superficial outdoor feathery infiltration.<sup>[7]</sup>

*C. lunata* was identified by the fact that it produced dark hyphal masses projecting from the surface that are visible with naked eye. Culture on SDA produced rapid growth within 5 days. Colonies black with a black reverse. It was well differentiated from *Curvularia geniculata*, which is characterized by having four septa and five cells.

The conidia differ from *Drechslera* by having a central cell, that is, darker than the end cells, a thinner cell wall, narrower septations between the cells, and a distinct curve. The end cells are pale brown, well differentiated from *Alternaria*, since conidiophores are of variable length. Sometimes they are branched and are large, brown, and having both transverse and longitudinal septations. They are usually rather round at the end, near the conidiophores, and narrow at the far end, producing a club-like shape.

## Conclusion

Early prompt diagnosis and effective meticulous management held key for successful outcome. Our clinical scenario further strengthens and establishes the etiological agent as *C. lunata* causing keratitis. Fifteen percent of treatable blindness that occurs in developing countries such as India due to corneal opacity is preventable by early stage diagnosis and institution of prompt therapy. Possibility of these emerging agents though less common should be borne in mind because fungal infections of the eye are the growing threat with substantial morbidity.<sup>[8]</sup>

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**How to cite this article:** Banukumar S, Edwin B, Kannan I. A case of phaeohyphomycosis causing keratitis due to *Curvularia lunata*. Int J Med Sci Public Health 2015;4: 1159-1161

**Source of Support:** Nil, **Conflict of Interest:** None declared.