Keratitis due to *Colletotrichum dematium* – A Case Report

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**Abstract**

*Colletotrichum dematium* has been rarely reported from India before. The present case, a farmer, developed peripheral corneal ulcer five days following trauma with plant. At presentation his visual acuity was 6/60 (unaided) and 6/24P with pinhole. Slit lamp and fluorescent stain examination revealed paracentral corneal ulcer with irregular margins, stromal infiltration and multiple epithelial defects. Microbiological examination of corneal samples confirmed the initial diagnosis of fungal corneal ulcer and the fungus was identified as *C. dematium*. Patient was treated with topical natamycin and ciprofloxacin. Patient left against medical advice and was lost to follow up. This report emphasizes that *Colletotrichum* keratitis may not be rare. Early diagnosis may help in institution of specific therapy early in the disease.

**Key words**: *C. dematium, keratitis*

Corneal infections worldwide are a leading cause of ocular morbidity and blindness. Early diagnosis and treatment are important in preventing further complications like hypopyon formation and endophthalmitis or loss of vision. Mycotic keratitis has emerged to be a major ophthalmic problem since its recognition in 1879. A large number of hyphomycetes (phaeoid and hyaline moulds), yeasts and Zygomycetes have been reported to cause mycotic keratitis. The frequency and spectrum of fungal members involved varies from place to place as several factors like climate, age, sex, geographical and socioeconomic conditions play a significant role in modulating the incidence and prevalence. Among the hyaline hyphomycetes, *Aspergillus* and *Fusarium* spp., and among the phaeoids, *Curvularia* spp. have been observed to be the leading cause of fungal keratitis in south India.

Keratitis due to *Colletotrichum dematium* is rare and on review of literature (including PubMed) we found that to the best of our knowledge this is the third report of mycotic keratitis due to this fungus from India, the others being from Tiruchirapalli and Hyderabad.

**Case Report**

A 27-year-old male farmer presented in the ophthalmology clinic with history of pain, watering and gradual but progressive loss of vision of right eye following injury with a branch of a soyabean plant 5 days back. He also complained of foreign body sensation since the last 4 days. He had used norfloxacin eye drops topically and antiinflammatory tablets systemically after injury, without much relief. Nothing relevant was recorded in his personal, family or past history except for the fact that he had received injury to the same eye 10 years back by a cow tail for which he took treatment from a local practitioner but had no problem till 5 days back. Nothing relevant was detected on general physical examination and all his routine biochemical and haematological investigations were within normal limits.

On examination the right eye showed mild oedema of both eyelids. Examination under slit lamp and fluorescent stain revealed a paracentral corneal ulcer of size 3x4mm, 2mm inside the limbus in the superotemporal quadrant. The ulcer had irregular margins and leathery slough at base with 30-40% stromal infiltrates. Multiple epithelial defects with superficial infiltration were seen in areas surrounding the ulcer. No vascularisation or pigmentation was noted. In anterior chamber flare and cells were present but no hypopyon or hyphaema was seen. Lens was clear and no abnormality was detected on fundus examination. The vision was 6/60 unaided and 6/24 P with pinhole. A provisional diagnosis of fungal corneal ulcer was made. No abnormality was observed in the left eye.

The patient was admitted, visual prognosis was explained and he was put on oral ciprofloxacin (500mg BD), oral diamox (250 mg QID), oral alkalisne syrup (1/2 tsp TDS), oral vit C (500 mg OD), A and D (OD) while topically he was prescribed ciprofloxacin (4 hourly), natamycin (2 hourly), timolol 0.5% (BD), atropine 1% (BD) and neosporin (BD).
Although majority of opportunistic mycoses due to filamentous fungi are caused by fungi that bear their conidia free (Aspergillus, Fusarium), there are increasing reports of cutaneous/subcutaneous and invasive disease due to the Coelomycetes which produce conidia in fruiting body called conidiomata.

Coelomycetous fungi are parasites and saprobes of terrestrial vascular plants inhabiting twigs, branches and leaves of various plant hosts. They may also be parasites of other fungi and are ubiquitous in soil, salt and freshwater environment and sewage. Coelomycetes have been traditionally grouped into order Melanconiales (produce cup shaped conidiomata: acervuli and the conidiogenous cells form a palisade on surface of conidiomata) and Sphaeropsidales (produce round conidiomata: pycnidia and the conidiogenous cells line the inner cavity wall). The genus Colletotrichum is a typical plant pathogen which is included in order Melanconiales of Coelomycetous fungi because of formation of cup shaped conidiomata. Currently, of the several hundred species described, only four have been associated with human infections. These are C. dematium, C. gloeosporioides, C. coccodes and C. graminicola. Colletotrichum keratitis is rare and a thorough search of literature, both manual and through PubMed revealed that the above mentioned species of Colletotrichum have been previously implicated as etiological agent in 33 patients with keratitis. From South India there has been one report of 7 cases of Colletotrichum keratitis is rare and a thorough search of literature, both manual and through PubMed revealed that the above mentioned species of Colletotrichum have been previously implicated as etiological agent in 33 patients with keratitis. The other report is also from South India. Since conidia are within fruiting bodies, conidiomata, infection is acquired by traumatic implantation as was seen in our case also. Antecedent ocular trauma was the principal risk factor observed in cases described earlier. Besides ocular trauma, insulin dependent
diabetes mellitus, prolonged local steroids and prior use of antivirals were found to be other risk factors.\textsuperscript{4} \textit{Colletotrichum} corneal ulcer with dendritic presentations may initially be misdiagnosed as viral keratitis.\textsuperscript{4} The present case was clinically diagnosed as fungal keratitis on his first visit and put on antifungal treatment.

Once the fungus is isolated the various species of \textit{Colletotrichum} can be differentiated on the basis of morphology, more so on natural substrate than in culture.\textsuperscript{7} \textit{C.dematium} has characteristic nonseptate falcate conidia which help to distinguish them from other species. \textit{Fusarium} spp. also produces falcate conidia but in contrast to \textit{C.dematium} they are septate and lack the characteristic conidiomata and appressoria. The latter are flat, dark pigmented swellings at the end of hyphae (Figure: D) and this the fungus uses to attach itself to the host surface before penetrating.\textsuperscript{7} Incubation of all mycological cultures for an additional period of two weeks has been suggested,\textsuperscript{4} especially if such falcate conidia are only being observed to allow formation of conidiomata and appressoria, which are in abundance in older cultures. Various media i.e., water agar with added plant tissue, carnation leaf agar\textsuperscript{4} and oatmeal agar\textsuperscript{4} have been recommended to promote their production. However, we were able to demonstrate them in cornmeal agar slide culture.

\textit{In vitro} antifungal susceptibility testing of our isolate could not be performed, however, fungus testing laboratory, University of Texas in their study found maximum susceptibility of \textit{Colletotrichum} spp., isolated from various sites (19 strains tested) to amphotericin B.\textsuperscript{8} Previous studies have reported complete resolution of \textit{Colletotrichum} corneal ulcer with good visual recovery following natamycin or amphotericin B or combined therapy with natamycin and/or amphotericin B with azole, 5 fluycytosine or ciprofloxacin.\textsuperscript{4} Surgical treatment (TPK) followed by medical treatment may be required especially if the lesion is deep and/or there has been a delay in starting treatment.\textsuperscript{4} The present case was put on natamycin and ciprofloxacin within a week of injury but the outcome could not be determined as the patient was lost to follow up. Since the Coelomycetes are refractory to antifungal therapy long term dosing regimens are required for eradication.\textsuperscript{8} The average duration of medical therapy with natamycin and ciprofloxacin for complete resolution in 5 of the 7 cases reported from India earlier was 47 +/- 14 days.\textsuperscript{4}

The present case is reported to create awareness that \textit{Colletotrichum} keratitis may not be rare and that its risk factors are similar to that of other filamentous fungal keratitis. Careful examination of the culture can help speciate the fungus easily.

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\textbf{References}