

A Rare Case of Keratomycosis Due to *Myriodontium keratinophilum*

Shivani Kochhar¹, Vishnu Swarup Gupta¹, Harinder Singh Sethi², Malini R. Capoor²

¹Dept. of Ophthalmology, Hamdard Institute of Medical Sciences and Research, New Delhi, India

²Dept. of Ophthalmology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

Purpose: To report a rare case of keratomycosis due to *Myriodontium keratinophilum*, which has not been previously reported.

Materials and Methods: A 60 year old male patient with pseudophakic bullous keratopathy with rupture bullae and history of use of bandaged contact lens developed a corneal ulcer. Corneal scraping from the base and edge of the ulcer was obtained under slit lamp magnification and smear sent for various aerobic and anaerobic bacterial and fungal cultures such as Gram stain, Giemsa stain, KOH mount, Lacto-phenol Cotton-blue mount, culture on Brain-heart infusion based blood agar, chocolate agar and Sabouraud Dextrose Agar (SDA) to identify the type and time of growth to be able to diagnose the pathognomonic agent causing the keratitis.

Abstract

Result: Positive smears and cultures from the corneal scrapings identified the causative agent as *Myriodontium Keratinophilum*. The clinical improvement was significant with meticulous use of hourly topical natamycin, and oral fluconazole twice a day. The corneal ulcer resolved with the formation of leucomatous corneal opacity. The patient was further registered for penetrating keratoplasty.

Conclusion: This case report lays emphasis on a thorough microbiological work up to provide insightful information thereby expanding our knowledge and spawning new research organisms which may not have been reported earlier. We hereby report a culture proven case of fungal keratitis due to a very rare species; *Myriodontium keratinophilum*.

Delhi J Ophthalmol 2018;29;54-56; Doi <http://dx.doi.org/10.7869/djo.399>

Keywords: Fungal keratitis, *Myriodontium keratinophilum*, Fungal Corneal ulcer

Introduction

A 60 year old man operated for left eye cataract surgery 2 years back, presented with left eye diminished vision, pain, redness and watering for 2 days. He was diagnosed as pseudophakic bullous keratopathy with ruptured bullae, was prescribed bandaged contact lenses, topical antibiotic and a topical low dose steroid with weekly follow up. He showed improvement by the 6th week of continuous treatment, and therefore BCL was removed. He returned 2 weeks later with severe pain, blurring of vision, watering and lid swelling. On examination, the left eye had vision of hand movement close to face and intact light perception in all 4 quadrants. Lids showed inflammatory edema. Circumcorneal injection was seen with a central corneal ulcer of 4 mm × 4 mm and an epithelial defect of 2 mm. It was not associated with hypopyon, satellite lesions or endothelial plaque. Anterior chamber showed no contents. Posterior segment details could not be seen on slit lamp examination. On ultrasound, posterior segment was anechoic.

Materials and Methods

Corneal scraping was obtained from the base and edge of the ulcer using a sterile surgical blade (# 15 on a Bard Parker handle) under topical anesthesia (0.5% proparacaine hydrochloride) and slit-lamp magnification. The sample was sent for bacteriological, mycological and acanthamoeba examination.

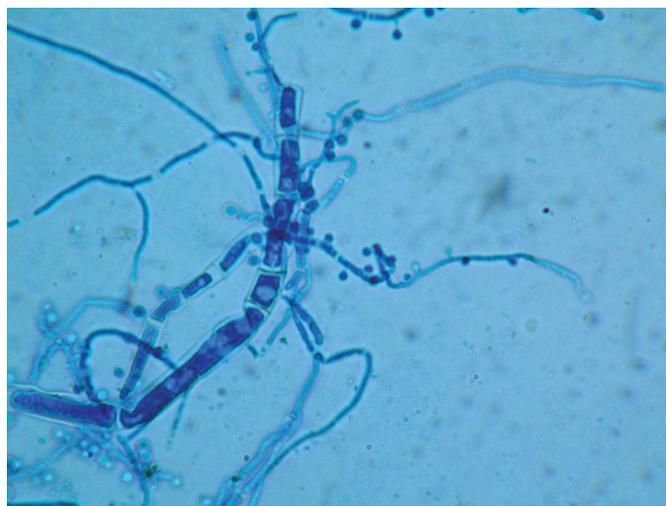


Figure 1: Lacto-phenol Cotton-blue mount revealed fungal hyphae which branched non-dichotomously and produced a few single celled conidia on denticles along the side of hyphae consistent with that of *Myriodontium keratinophilum* species.

Gram stain revealed Gram positive hyphae. KOH (potassium hydroxide) revealed fungal hyphae. Giemsa stain was negative for acanthamoeba. Culture on brain-heart infusion based blood agar, chocolate agar and Sabouraud dextrose agar (SDA) revealed the growth of a white mould after 9, 9 and 11 days, respectively, of incubation at 25 degree Celsius.

The Lacto-phenol Cotton-blue mount revealed fungal hyphae which branched non-dichotomously and produced a few single celled conidia on denticles along the side of hyphae. Slide culture was put up to identify the fungus, it revealed conidial arrangement consistent with that of *Myriodontium keratophilum* species (Figure 1).

The patient was hospitalized and received topical natamycin 5% drops every hour, fortified cefazolin 5% 2 hourly, fortified tobramycin 2 hourly and oral fluconazole 200 mg BD. The fungal lesion was scraped and curetted to eliminate superficial necrotic tissue. The treatment was carried out for 6 weeks.

Result

A 60 year old male patient with pseudophakic bullous keratopathy developed fungal corneal ulcer due to a rare species. With continuous 6 weeks of aggressive antifungal treatment with drugs that showed in vitro sensitivity to the organism, the patient showed clinical resolution of the ulcer with disappearance of symptoms. A leucomatous corneal opacity with a small zone of central thinning was formed. Therefore the patient was planned for penetrating keratoplasty.

Discussion

Definitive diagnosis and therapy for microbial keratitis can be arrived at only by microbiological evaluation therefore corneal scraping for smear and culture is recommended before initiating the treatment.^{1,2} Though some of the clinical features of keratitis are suggestive of fungal infection, none of them can be considered absolutely pathognomonic.³ Despite the advent of various newer techniques, culture remains the cornerstone of diagnosis of most cases of microbial keratitis.⁴ It is otherwise ideal to inoculate onto several media^{5,6} though Sabouraud dextrose agar (SDA) has been the most preferred culture medium for fungus by clinicians.^{7,8} To the best of our knowledge, this is the first case of infection in the eye and the second case of infection with this species in man to be published. The first case report of infection with *Myriodontium keratophilum* in man has been a case of frontal sinusitis published in 1985.⁹ *Myriodontium keratophilum* was first reported in 1978 as a new species by Sampson and Polonelli.¹⁰ The name of this organism has been recorded as *Myriodontium keratophilum* Sampson and Polonelli 1978 and belongs to Kingdom Fungi, Phylum Ascomycota, Class Ascomycetes and Genus *Myriodontium*.¹¹ The National Centre for Biotechnology Information (NCBI) has provided the following taxonomic lineage for the organism:

Root > Eukaryota > Fungi/Metazoa group > Fungi
> Dikarya > Ascomycota > Pezizomycotina >
Eurotiomycetes > Eurotiomycetidae > Onygenales
> Mitosporic Onygenales > *Myriodontium* >
Myriodontium keratophilum and *Myriodontium*
sp. SW150.

It has been isolated from the soil in various parts of India¹²⁻²⁰, Italy⁹, California⁹, from feathers of pigeons in Maharashtra²¹ and from the penis of a bull in Germany⁹, also from hair of shrews and cats in the United Kingdom⁹. The species therefore appears to be widespread in nature. Though

only one case with infection in man has been reported and published in the literature so far.

We followed a very meticulous and aggressive treatment strategy based on in vitro sensitivity the organism showed to the two drugs, namely natamycin and Amphotericin B. It showed favourable results by resolving the fungal infection and reducing the clinical symptoms.

References

1. Levey SB, Katz HR, Abrams DA, et al. The role of cultures in the management of ulcerative keratitis. *Cornea* 1997; 16:383-6.
2. Hyndiuk RA, Eiferman RA, Caldwell DR, et al. Comparison of ciprofloxacin ophthalmic solution 0.3% to fortified tobramycin-cefazolin in treating bacterial corneal ulcers. Ciprofloxacin Bacterial Keratitis Study Group. *Ophthalmology* 1996; 103:1854-62; discussion: 1862-3.
3. Thomas PA, Leck AK, Myatt M. Characteristic clinical features as an aid to the diagnosis of suppurative keratitis caused by filamentous fungi. *Br J Ophthalmol* 2005; 89:1554-8.
4. Thomas PA. Current Perspectives on Ophthalmic Mycoses. *Clin Microbiol Rev* 2003; 16:730-97.
5. Jones DB, Liesegang TJ, Robinson NM. Cumitech 13: laboratory diagnosis of ocular infections. *American Society of Microbiology: Washington DC* 1981.
6. Matoba AY. Infectious keratitis. In: Garratt, editor. Focal points: clinical modules for ophthalmologist. *American Academy of Ophthalmology: San Francisco* 1992; 10-8.
7. Merz WG, Roberts GD. Detection and recovery of fungi from clinical specimens. In: Murray PR, Baron EJ, Pfaller MA, Tenover FC, Tenover RH, editors. Manual of clinical microbiology. ASM Press: Washington DC 1995; 709-22.
8. Silva JO, Franceschini SA, Lavrador MA, et al. Performance of selective and differential media in the primary isolation of yeasts from different biological samples. *Mycopathologia* 2004; 157:29-36.
9. A G Maran, K Kwong, L J Milne, et al. Frontal sinusitis caused by *Myriodontium keratophilum*. *Br Med J (Clin Res Ed)* 1985; 290: 207.
10. Sampson RA, Polonelli L. *Myriodontium keratophilum*. Genet sp nov. *Persoonia* 1978; 9:505-9.
11. Catalogue of life 2007 annual checklist: species Fungorum.
12. Deshmukh SK. Keratinophilic fungi isolated from soils of Mumbai, India. *Mycopathologia* 1999; 146:115-6.
13. Deshmukh SK. Isolation of dermatophytes and other keratinophilic fungi from the vicinity of salt pan soils of Mumbai, India. *Mycopathologia* 2004; 157:2657.
14. Deshmukh SK, Verekar SA. Keratinophilic fungi from the vicinity of meteorite crater soils of Lonar (India). *Mycopathologia* 2006; 162:303-6.
15. Deshmukh SK, Agrawal SC. Isolation of dermatophytes and other keratinophilic fungi from soils of Jammu, India. *PMID*: 15180153.
16. Deshmukh SK. Incidence of keratinophilic fungi from selected soils of Kerala state (India). *Mycopathologia* 2002; 156:177-81
17. Deshmukh SK, Agrawal SC, Jain PC. Isolation of dermatophytes and other keratinophilic fungi from soils of Mysore India. *Mycoses* 2000; 43:55-7.
18. Deshmukh SK. Isolation of dermatophytes and other keratinophilic fungi from soil of Mussoorie (India). *Mykosen* 1985; 28:98-101.
19. Deshmukh SK, Agrawal SC. Prevalence of dermatophytes and other keratinophilic fungi in soils of Madhya Pradesh (India). *Mykosen* 1983; 26:574-7.
20. Deshmukh SK, Verekar SA. Incidence of keratinophilic fungi from the soils of Vedanthangal Water Bird Sanctuary (India). *Mycoses* 2010 Apr 6.
21. Deshmukh SK. Keratinophilic fungi on feathers of pigeon in Maharashtra, India. *Mycoses* 2004; 47:213-5.

Cite This Article as: Kochhar S, Gupta VS, Sethi HS, Capoor MR. A Rare Case of Keratomycosis Due to *Myriodontium keratinophilum*.

Acknowledgments: Nil

Conflict of interest: None declared

Source of Funding: None

Date of Submission: 07 June 2018

Date of Acceptance: 21 June 2018

Address for correspondence

Shivani Kochhar DO, DNB, MNAMS

D 614, Ram Vihar, Sector 30,

Noida 201031, UP, India

Email id: shivani131@gmail.com



Quick Response Code