A Rare Case of Keratomycosis Due to Myriodontium keratinophilum

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Abstract

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.

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.

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.

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 conidal arrangement consistent with that of Myriodontium keratinophilum 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 media5,6 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 keratinophilum in man has been a case of frontal sinusitis published in 1985.9 Myriodontium keratinophilum was first reported in 1978 as a new species by Sampson and Polonelli.10 The name of this organism has been recorded as Myriodontium keratinophilum 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 keratinophilum and Myriodontium sp. SW150.

It has been isolated from the soil in various parts of India12-20, Italy21, California22, from feathers of pigeons in Maharashtra23 and from the penis of a bull in Germany24, also from hair of shrews and cats in the United Kingdom. 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.

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