CASE REPORT

Mycotic keratitis caused by concurrent infections of exserohilum mcginnisii and candida parapsilosis

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Abstract

Background: Mycotic keratitis in human cornea has been rarely reported to be associated with a co-infection of filamentous fungi and yeast. This paper aims to report a case of mycotic keratitis concurrently infected by Exserohilum mcginnisii and Candida parapsilosis.

Case presentation: A Chinese female presented two superposed corneal infiltrates with different size and texture on her left eye. In vivo confocal microscopy showed hyper-reflective multiple linear with highly branching structures distributing in the anterior corneal stroma. Inoculations of the corneal lesion scrape concurrently grew two similar superposed colonies on Sabouraud dextrose and chocolate agar plate. The larger colony exhibited mould, cottony and floccose at the edge, while the smaller one showed creamy and shiny surface. Modified slide culture for mould revealed hyphae were septate, and conidia were brown, smooth-walled, cylindrical to slight clavate with 6 to 13 pseudosepta. Based on the morphology of microscopic and macroscopic characteristics, the mould was identified as Exserohilum mcginnisii. Smear of the non-mould colony showed ellipse or ovoid budding yeast-like cells with abundant pseudomycelium. Vitek Yeast Biochemical Card test identified the yeast as Candida parapsilosis. With treatment of combined oral itraconazole with topical amphotericin B, a complete resolution of the corneal infiltrate was achieved within 1.5 months.

Conclusion: This is the first documented case of human corneal infection by Exserohilum mcginnisii, and also the first report providing evidence of mycotic keratitis in human cornea concurrently infected by filamentous fungi and yeast.

Keywords: Mycotic keratitis, Exserohilum mcginnisii, Candida parapsilosis

Background

Majority of the pathogens isolated from human cornea with keratomycosis are hyaline fungi such as Fusarium, Aspergillus [1]. The dematiaceous fungi such as Alternaria, Curvularia, Exserohilum are uncommon causes of keratomycosis [1]. The Exserohilum spp. is usually associated with infections in paranasal sinus, skin and subcutaneous tissue, and is very rarely reported to cause keratomycosis [2]. Exserohilum mcginnisii has not yet been isolated as pathogen causing human corneal phaeohyphomycosis. Candida parapsilosis is an opportunistic pathogen that may cause human mycotic keratitis. We report herein a case of mycotic keratitis presented two superposed corneal infiltrates where Exserohilum mcginnisii and Candida parapsilosis were cultured simultaneously in the same culture plate.

Case presentation

A 49-year-old Chinese female felt foreign body sensation of her left eye on an occasion of weaving bamboo baskets. She visited the local ophthalmologist who prescribed her antibiotic eyedrops and intravenous Cefradine for suspicion of infectious keratitis. Nevertheless, she developed progressively exacerbating irritation, pain and remarkably decreased vision. Forty days later, the patient was referred to us. Initial examination exhibited two superposed corneal infiltrates. The larger infiltrate presented gray interlaced braid-grid texture and irregular featherly margin, mainly involving the anterior corneal stroma (Figure 1a). The smaller infiltrate, superimposing on the larger one,
manifested slight elevation in oval shape and gray color with rough surface (Figure 1a). In vivo confocal microscopy showed multiple linear and highly branching and intersecting hyper-reflective structures distributing mainly in the anterior stroma of the cornea (Figure 1b). Visual acuity was finger counting OS. No abnormalities were found in the right eye with visual acuity 20/16.

Clinical diagnosis of fungal keratitis was made at the initial visit. Scraping of the corneal lesion was performed for fungal and bacterial cultures. The patient was given oral itraconazole 300 mg daily, topical 0.15% amphotericin B eyedrops every 30 min, together with 0.3% Ofloxacin eyedrops 4 times daily. Two weeks later, the interlaced braid-grid infiltration with its feathery margin of the larger infiltrate regressed remarkably in the stroma. The smaller infiltrate also dwindled in size significantly. Both the larger and the smaller infiltrates completely resolved one more month later, resulting in corneal scarring involving the optical axis. No recurrence observed over 2 years of follow-up. At her final visit, uncorrected visual acuity of the left eye was 20/40.

Inoculations of the corneal lesion samples concurrently grew two similar superposed colonies on SDA and chocolate agar plates, in which the larger colony presented molds like hairy and floccose towards the edge (Figure 2a), whereas the smaller one was yeast-like colony with creamy and shiny surface (Figure 2a). We used a modified slide culture, a technique developed by us and reported elsewhere previously to observe the microscopic characteristics of the mould colony [1]. Examination of modified slide culture revealed that hyphae were septate, subhyaline to pale to mid brown. The conidiophores were simple, erect, with somewhat flexouse apical part. The conidia were brown, smooth-walled, cylindrical to slight clavate, 60–100 x 10-15 μm in size, with 6 to 13 pseudo septa (Figure 2b). The hila of the conidia were black and distinctly protuberant (arrow). The pale end cells of the conidia are not separated from the intercalary golden-brown cells by thick-walled distosepta (triangle). (original magnification x800). (c) In smearing of the non-mould colony, ellipse or ovoid budding yeast-like cells, 2.0-3.5 x 3.0-4.5 μm in size, and abundant pseudomycelium consisting of elongate cells, 2.0-3.5 x 10-15 μm in size are also observed. (original magnification x800).
isolated was laboratory of our hospital [5], and the results showed the
Inc., Hazelwood, Mo.) through substrate assimilation assay
we used Vitek Yeast Biochemical Card (YBC; bioMérieux,
protrude. Bipolaris
species, a short and a long one. Exserohilum
mcginnisii

and
mcginnisii

genus, there are three species:
Exserohilum hilum protrudes only slightly [4]. Among

conidia have 2

– 3 distosepta, and the hilum does not protrude. Bipolaris

species has 4–5 distosepta, and its hilum protrudes only slightly [4]. Among

Exserohilum

genus, there are three species: longirostratum, rostratum and mcginnisii. Exserohilum longirostratum has two
types of conidia, a short and a long one. Exserohilum

rostratum has unique characteristics of its conidia
with darkly pigmented bands at the ends, which

Exserohilum mcginnisii
does not share. Corneal
phaeohyphomycosis caused by Exserohilum rostratum
[6–8], and Exserohilum longirostratum [9] has previously
been described in several case reports. However, there is
no report that Exserohilum mcginnisii was the pathogen

in human keratomycosis. The case we report herein is the
first documented case of human corneal infection by
Exserohilum mcginnisii.

It is not rare in reports that Candida parapsilosis
can cause endophthalmitis [10,11], whereas Candida
parapsilosis causing corneal infection is not common.
Literature review indicates the manifestations of Candida
parapsilosis causing human myotic keratitis vary greatly,
including crystalline keratopathy, supportive keratitis,
yellow-white infiltrate with dry raised slough and feathery
edges, and severe necrotic stromal inflammation [12–15].
In our case, as compared with filamentous fungus of
Exserohilum mcginnisii causing intra-stromal infiltration,
Candida parapsilosis seems mainly grow in the superficial
cornea, exhibiting comparatively dense and rough lesion
with slight elevation on the corneal surface.

The isolated pathogens of Exserohilum Mcginnisii
and Candida parapsilosi from the patient were both
sensitive to itraconazole and amphoterycin B in vitro
drug sensitivity test (data not shown), which was correlated
well with the clinical result showing the corneal infiltrates
responding well to the medication of oral itraconazole
combined with topical amphoterycin B eyedrops in the
patient.

To conclusion, this is the first documented case of
human corneal infection by Exserohilum mcginnisii, and
also the first report providing definite evidence of
myotic keratitis in human cornea concurrently infected
by filamentous fungi and yeast.

Informed consent
A written informed consent was obtained from the patient
to publish this case report.

Competing interests
The authors declare that they have no competing interests.

Authors’ contributions
W-YQ: patient interaction and diagnosis, pathogen identification.
Y-FY: draft the manuscript. Both authors read and approved the final
manuscript.

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Disclosure
The authors have no conflict of interest with the submission.

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