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Research Paper

Candida dubliniensis keratitis: a case report and literature review

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ABSTRACT: *Fungal keratitis or keratomycosis is less often involved in ocular infections than bacterial keratitis, but its prognosis remains more reserved.*
Fungal keratitis caused by Candida albicans has been incriminated in corneal infections for a long time. Nowadays, new species of Candida such as C. tropicalis, C. parapsilosis, C. kruséi are isolated in ophthalmological specimens. But Candida dubliniensis keratitis remains rare in the literature.
We report the first case of Candida dubliniensis corneal abscess diagnosed in the department of parasitology and mycology of the Hassan II University Hospital in Fez. The patient was 77 years old, with no previous medical history, had repeated red eyes and had been taking topical non steroidal anti-inflammatory drugs for three years, and was admitted to the ophthalmology department for the management of endophthalmitis of the left eye complicating a corneal abscess with a hypopion
KEYWORDS: *keratitis, Candida dubliniensis, corneal abscess.*

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I. INTRODUCTION

Candida dubliniensis, a yeast closely related to *Candida albicans* due to the fact that they share many phenotypic and genotypic characters. It was first described (in 1995) as an opportunistic pathogen responsible for oral candidiasis in patients with AIDS.

We report for the first time a case of corneal abscess due to *Candida dubliniensis* diagnosed in the department of parasitology and mycology of the Hassan II University Hospital of Fez.

II. OBSERVATION

The patient was 77 years old and lived in Fez. He had no previous medical or surgical history and his ophthalmological history included repeated red eyes and the use of non-steroidal anti-inflammatory drugs for three years, without any history of trauma or eye surgery. The history of the disease goes back to one week before his admission with the installation of redness with pain and decrease of the visual acuity.

Ophthalmological examination of the left eye showed positive light perception, ectropion, conjunctival hyperemia with perikeratitis circle, mucopurulent secretions. On the posterior segment, there was an axial epithelial-stromal corneal ulcer making 4mm/ 6mm infiltrated on a pathological dystrophic cornea with hypopion (Figure1).

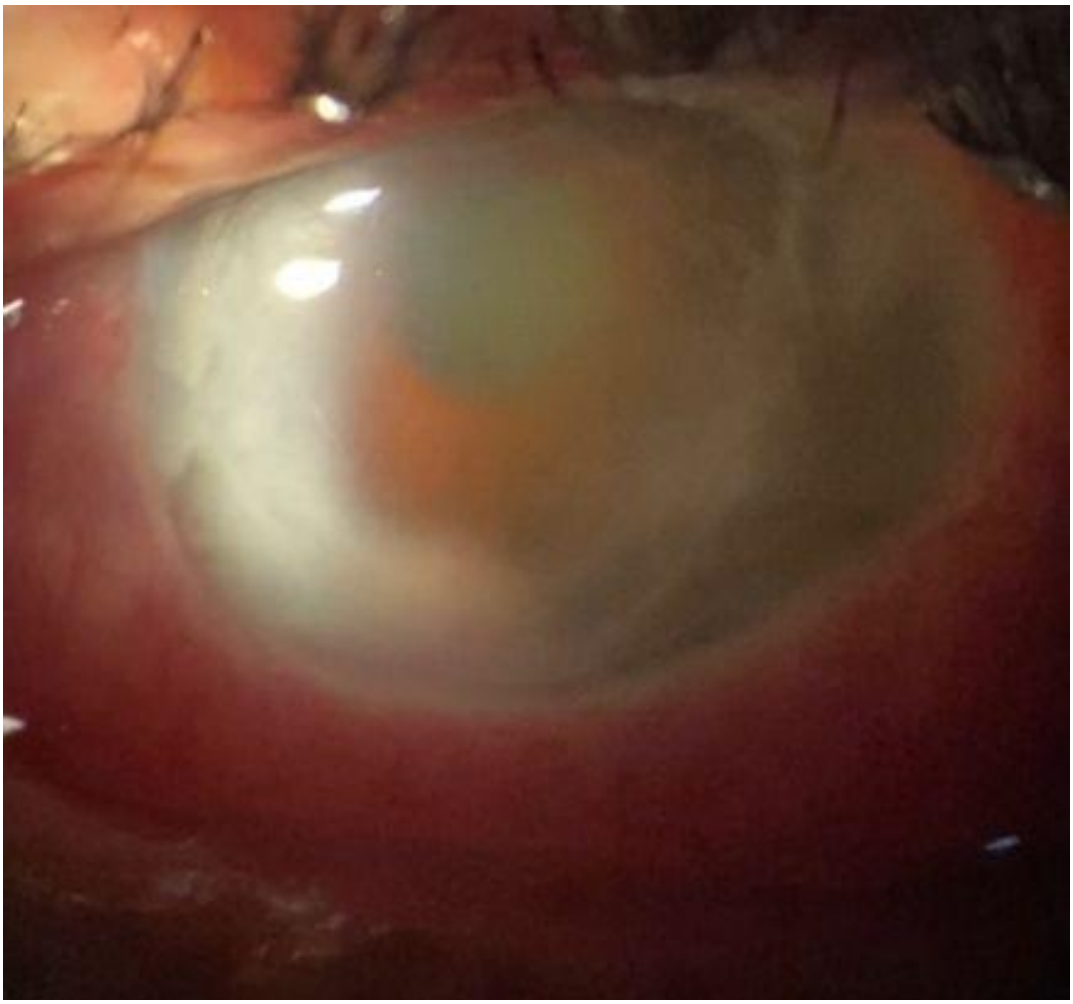

Figure 1: Peripheral epithelial-stromal corneal abscess with peri-lesional edema and a strong inflammatory reaction

The rest of the somatic examination was normal.

The diagnosis of corneal abscess with hypopion of the left eye was retained. The decision of doctors was to hospitalize the patient and put him on a therapeutic protocol for the abscess. When the patient did not improve under antibiotics, the mycological origin was strongly suspected. A mycological sample was taken and found to be a Candida dubliniensis corneal abscess, the patient was treated with voriconazole. The evolution was marked by a good improvement of the abscess with progressive regression of the hypopion.

III. MYCOLOGICAL EXAMINATION

The received swab was suspended in a few drops of physiological water, vortexed and used for mycological study (direct examination and culture).

The direct examination in the fresh state showed the presence of yeasts.

The culture was performed on Sabouraud Chloramphenicol (SC) and Sabouraud Actidione (SA) media at 37°C and 27°C. Three days later, colonies appeared whitish, smooth and creamy on both sides. (Figure 2)

Figure 2: Appearance of colonies on Sabouraud medium chloramphenicol

A direct slide-to-slide examination was performed on the culture showing the presence of thin-walled yeasts. (Figure 3)

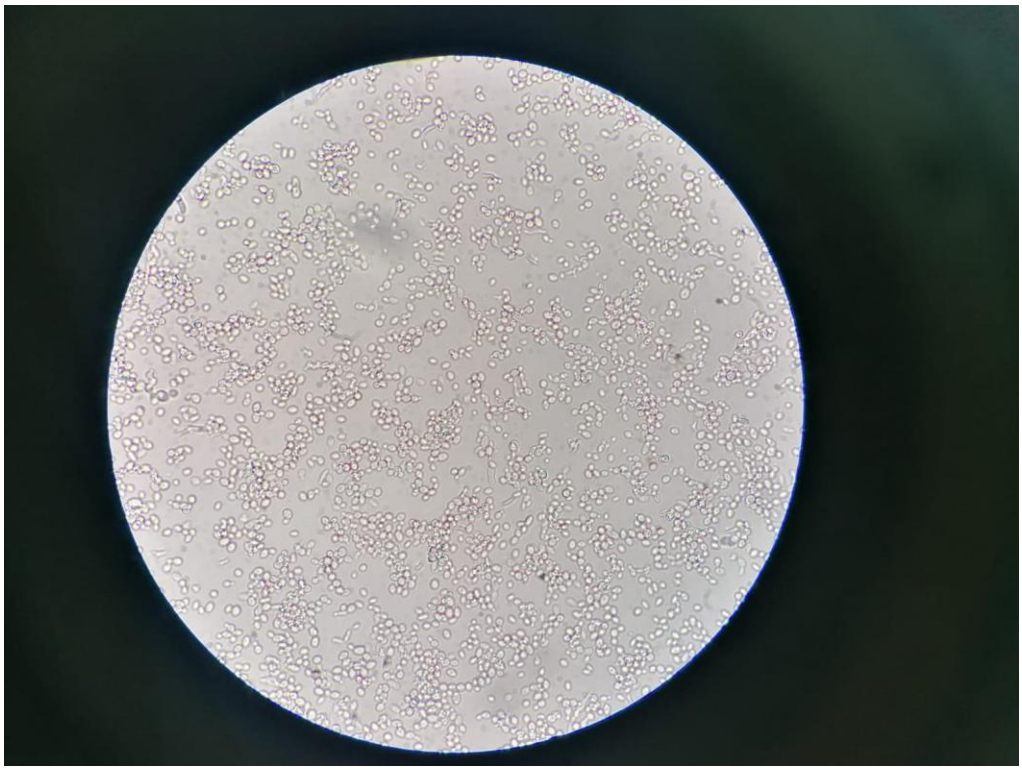

Figure 3: Direct examination: aspect of blastospores, magnification X 400
(photo of the service of Parasitology Mycology, Hassan II Hospital, Fez)

The germ tube test was positive.
These yeasts were identified using the AUXACOLOR TM 2 gallery, an identification system based on the assimilation of sugars (Figure 4). After 48 hours of incubation, the code obtained corresponded to *Candida dubliniensis*. Subsequently, the resistance to antifungal agents was tested in vitro.

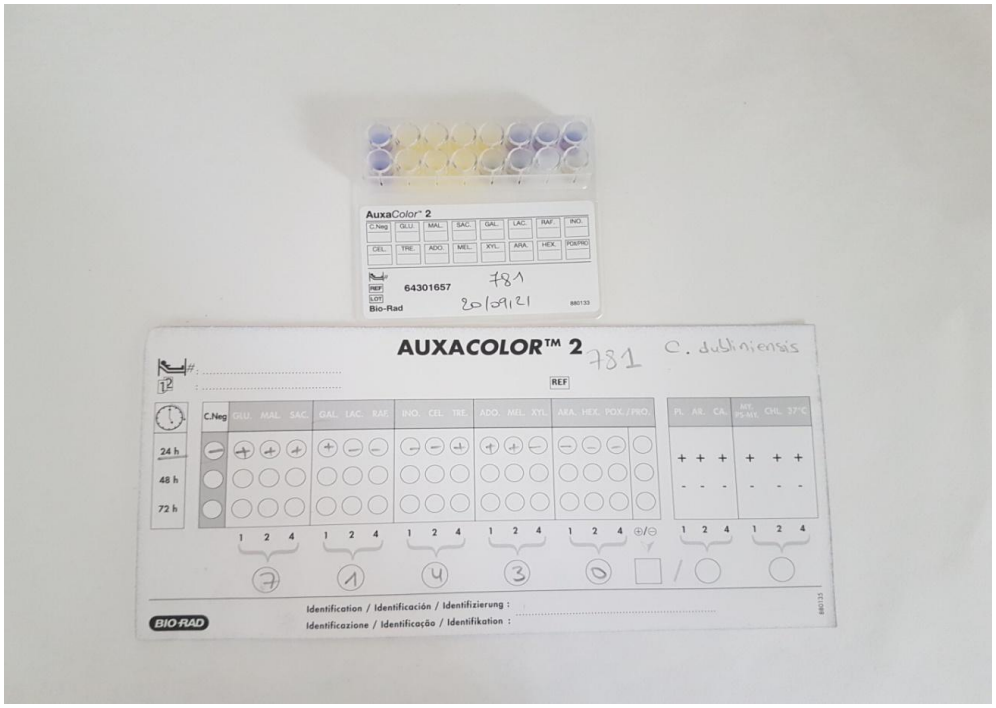

Figure 4: AUXACOLOR TM biochemical identification gallery

IV. DISCUSSION

Candida dubliniensis is yeast that was first isolated in Dublin, Ireland in 1995 by Sullivan et al who described unusual oral *Candida* isolates from HIV/AIDS patients with recurrent oral *Candida* infections (1) (2). It is very closely related to its more famous cousin, *Candida albicans*, and shares many phenotypic characteristics, including the ability to produce hyphae and chlamydospores (3). Given their similarities, distinguishing between these two closely related species has always been difficult. However, multiple recent studies and advances in technology have improved the diagnostic yield and distinction between the two species (4) (5).

Only two cases of *Candida dubliniensis* keratitis have been described worldwide by Oostra TD et al in 2018, and Torosian and Mauger T in 2019, the latter reported a combined *Candida dubliniensis* and *Candida albicans* keratitis following a chemical injury. Both were reported in the United States of America. Apart from this, no cases of *Candida dubliniensis* keratitis have been described in Morocco, the Maghreb, Africa or the rest of the world. On the other hand, *Candida dubliniensis* has been known to be a potential causative organism of endophthalmitis, described multiple times in the ophthalmological literature in North America since 2012 (6) (7) (8).

Other studies have shown that *C. dubliniensis and C. albicans* differ not only phenotypically, but also in terms of epidemiology, virulence characteristics, and the ability of *C. dubliniensis* to develop resistance to fluconazole (8) in a multifactorial manner similar to that of *Candida albicans*, including both efflux transporter up-regulation and mutations in the gene encoding lanosterol demethylase (6). In our case, the sensitivity to fluconazole was preserved as were the two other cases of *Candida dubliniensis* keratitis described worldwide by Oostra TD et al and by Justin Torosian and Thomas Mauger in the United States of America (6) (7).

In recent years, the progress made in the conventional identification of yeasts by morphological, biochemical and/or immunological methods or matrix-assisted laser desorption/ionization-time-of-flight mass spectrometry (MALDI-TOF or MT-MS) available in developed countries has improved the identification of new species of Candida that were long unknown (10).

V. CONCLUSION

If the bacterial origin of keratitis is much more frequent, keratitis of fungal origin must always be evoked especially in a context of immunodepression (use of corticoids or trauma by a plant...)

Fungal keratitis caused by Candida albicans has been incriminated in corneal infections for a long time. Nowadays, new species of Candida such as *C. tropicalis*, *C. parapsilosis*, *C.kruséi* are isolated in ophthalmological specimens. But *Candida dubliniensis* keratitis remains rare in the literature.

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