

# Contact lens-related *Fusarium* keratitis: a case report

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## SUMMARY

We aim to highlight the key factors for a good outcome of fungal keratitis. We describe a case of contact lens-related *Fusarium* keratitis in a young girl. After identification of *Fusarium* spp under direct microscopic examination and in culture, a prolonged treatment with topic natamycin 5% was started and administered

for five months with *restitutio ad integrum* of the eye. Prompt microbiological diagnosis and a specific and prolonged treatment are essential for correct management of *Fusarium* keratitis.

**Keywords:** *Fusarium*, keratitis, fungus, infection, eye.

## INTRODUCTION

Fungal infections of the eye represent a diagnostic and therapeutic challenge for ophthalmologists. Cornea is the most frequent localization and the main etiologic agents are *Fusarium* spp., *Aspergillus* spp. and *Candida* spp.

*Candida* is the main etiologic agent of keratitis. Fungal infections of the cornea can develop in patients with systemic diseases (e.g., diabetes) or with modifications of the ocular surface, for example in presence of corneal ulcers caused by *Herpes simplex* virus infection or in people wearing contact lenses [1].

In the last years filamentous fungi infections (firstly by *Fusarium* spp., followed by *Aspergillus* spp.) are increasing because of the large use of contact lenses [2]. Main challenges for ophthalmologists consist of an early diagnosis, the microbiological isolation of the pathogen and an effective

local treatment. The more critical feature in the diagnosis is the correct microbiological identification which nowadays takes advantage of direct microscopic examination and microbiological culture, but also molecular biology techniques can be used.

An early diagnosis and a prompt treatment can avoid serious complications like blindness [1].

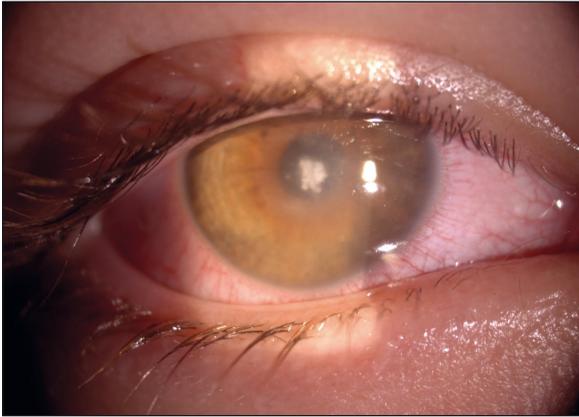
## CASE REPORT

A healthy 16-year-old Italian girl was admitted to the Ophthalmology ward of Manerbio Hospital in August 2015 with a corneal abscess in the right eye (Figure 1). The girl used to wear contact lenses. After corneal epithelial scraping a local empirical therapy with atropine, ofloxacin and povidone-iodine was started. Two days later the Microbiology laboratory communicated the identification of a filamentous fungus of the genus *Fusarium* spp at the direct microscopic examination and culture of scraping and contact lens disinfection solution (Figures 2 and 3). A local specific therapy with natamycin 5% was started. Patient

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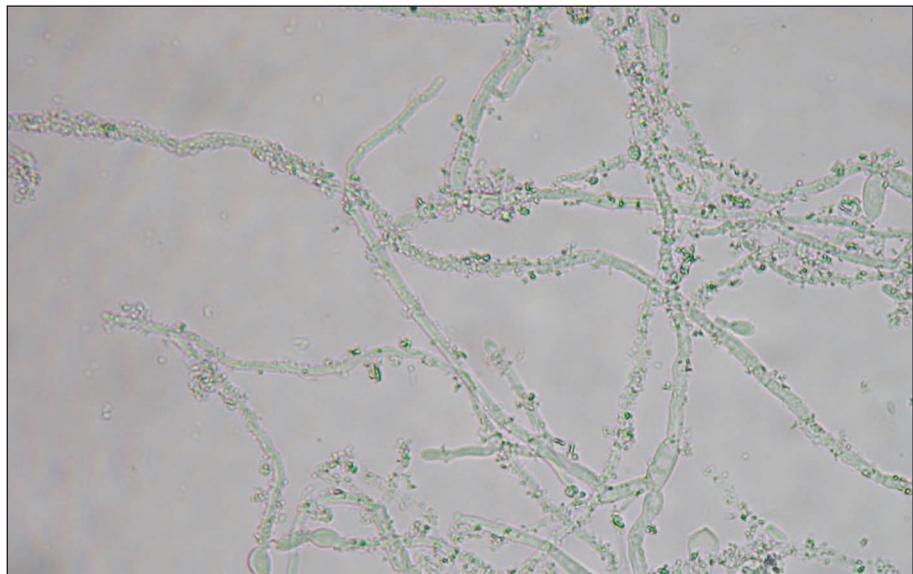
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**Figure 1** - Corneal abscess in the right eye.

was discharged one week after, continuing local therapy with natamycin 5%, levofloxacin and atropine. Natamycin was administered every hour for the first three days, then gradually reduced at weekly intervals. The patient was weekly evaluated by an ophthalmologist for the first two months and then every two weeks until the end of the follow-up. The therapy was definitively interrupted five months later. The size of the corneal abscess gradually reduced without leaving corneal leukomas in the optical zone and the patient completely recovered her visual function (*i.e.*, Best Corrected Visual Acuity, BCVA, 1.0).

**Figure 2** - Direct microscopic examination of contact lens disinfection solution. Enlargement 400x.

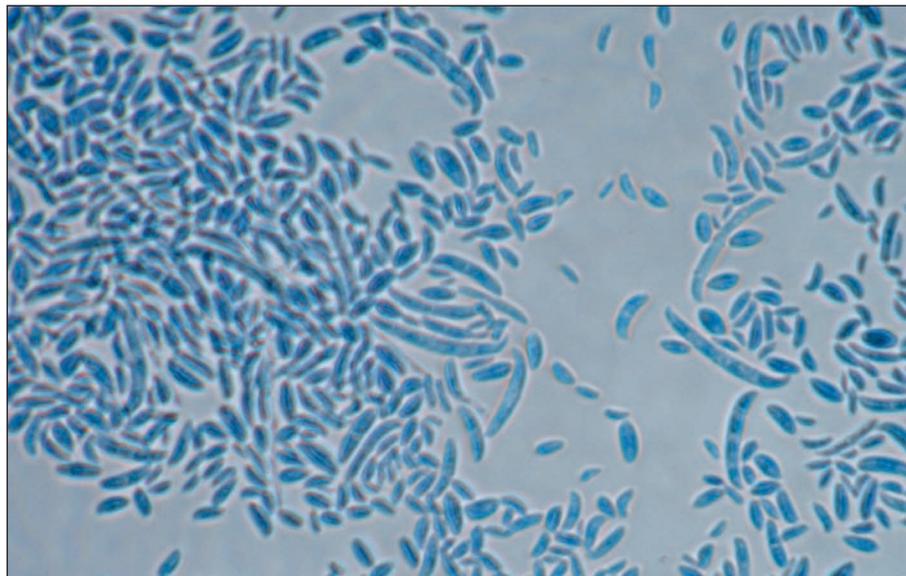


## ■ DISCUSSION

Several cases of *Fusarium* keratitis with poor outcome are reported in literature: an erroneous diagnosis or ineffective treatment can lead to keratoplasty or enucleation [3, 4].

A prompt and correct microbiological diagnosis is a critical point. We presented this case to highlight how a strict collaboration between microbiologists and ophthalmologists can lead to an excellent outcome. Another challenge is represented by the insufficient efficacy of available therapies, for the lack of drugs, the low penetration in ocular tissues and the emergence of multidrug-resistance strains [3-5]. In particular, resistance to azoles is spreading. Natamycin 5% was found to be superior to voriconazole and therefore it represents the first line-treatment for keratitis caused by filamentous fungi [2]. We do not perform an *in vitro* sensitivity test routinely at our hospital, so we promptly started an empirical first line-therapy with topical 5% natamycin.

Therapy should generally be continued until there is resolution of active fungal keratitis. Prolonged therapies of several months of duration with gradual reduction of the dosage are necessary to assure the elimination of the replicating organisms [2]. Mechanical removal of corneal epithelium can facilitate drug penetration. Oral azoles (voriconazole, itraconazole, fluconazole)



**Figure 3** - Microscopic examination of colonies of *Fusarium* spp. stained with Lactophenol cotton blue. Enlargement 400x.

can be associated when the infectious process involves the deepest layers. In the most serious cases where pus in the anterior chamber is present, subconjunctival injections of fluconazole can be administered. Penetrating keratoplasty can be performed in patients who do not respond or where a corneal perforation occurs [1].

**Conflict of interest.** The authors have no conflicts of interest to disclose.

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