

A CASE OF MYCOTIC KERATITIS CAUSED BY *FUSARIUM SOLANI*

Junia Soares HAMDAN(1), Maria Aparecida de RESENDE(1), Sarah Piancastelli FRANZOT(1), Daniel Vieira DIAS(2), Evelin Márcia VIANA(1) & Agnes Kiesling CASALI(1)

SUMMARY

A 36-year-old black man, without history of systemic disease or ocular trauma developed a corneal infection in his left eye. He was treated with antibacterial antibiotic and corticosteroids for one month prior to diagnosis. Fungal hyphae and chlamydoconidia were found in a KOH preparation of the corneal scrapings, and positive cultures for *Fusarium solani* were obtained in Sabouraud dextrose agar. It is emphasized the cautious use of antibiotics and steroids in corneal diseases, and the need of considering the involvement of opportunistic fungi in the etiology of these infections.

KEYWORDS: Keratomycosis; Ocular infection; *Fusarium solani*; Fungal infection.

INTRODUCTION

Fungal infections of the eye have been observed and reported with increasing frequency during the past few decades⁵. This has been attributed to therapy with antibiotics, corticosteroids, and the use of contaminated solutions and ointment^{4, 11, 14}. Furthermore, better diagnostic methods, and the recognition of the fact that several species of saprophytic fungi have the ability to infect the eye have also contributed to increase the number of reported cases^{5, 15}.

A great variety of fungi may be the etiological agents of keratomycosis. These may include some yeastlike species of *Candida* to many other fungi that are often soil saprophytes or plant parasites^{4, 11}. Examples of some genera isolated from corneal scrapings are: *Aspergillus* sp, *Curvularia* sp, *Drechslera* sp, *Fusarium* sp, *Paecilomyces* sp, and *Penicillium* sp^{1, 5, 6, 16-19}. Most commonly, infections

caused by these fungi result from direct injury to the eye by plant materials or by objects contaminated with soil that harbors the fungus⁷.

The present paper describes a case of corneal ulcer caused by *Fusarium solani*, and reinforces the need of considering the involvement of opportunistic fungi in the etiology of ocular mycoses.

CASE REPORT

A 36-year-old black man, seller, without neither history of systemic disease, ocular trauma nor a contact lens user, developed a corneal ulcer with suppuration process in his left eye for which he was treated for one month with chloramphenicol associated with steroids. As the therapy resulted ineffective, the patient was then referred to the Ophthalmology Department of Santa Casa Hospital (Belo Horizonte, MG). Upon examination, he complained of poor vision and severe ocular

(1) Department of Microbiology, Institute of Biological Sciences, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil.

(2) Department of Ophthalmology, Santa Casa Hospital, Belo Horizonte, MG, Brazil.

Correspondence to: JÚNIA SOARES HAMDAN, Departamento de Microbiologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais. Caixa Postal 486, 31270-901 Belo Horizonte, Minas Gerais, Brasil.

pain. A large ulcer could be seen in the cornea covering all of its surface, and it has already showed perforation. A hypopion was also clearly visible. The clinical picture, as well as the lack of a definite response to antibacterial therapy suggested then fungal infection. Thus, corneal scrapings were collected and submitted to mycological examination at Mycology Laboratory, Federal University of Minas Gerais. Coverslip preparations of scrapings in 20% KOH revealed abundant septate branching hyaline hyphae with chlamydoconidia (Fig. 1). Cultures on freshly prepared Sabouraud dextrose agar containing chloramphenicol (0.1 mg/ml) revealed, after three days of incubation at 25°C, a yellowish-brown colony. Microscopic examination of a section of the colony showed numerous bananalike, multiseptate macroconidia characteristic of the genus *Fusarium*. Species identification was performed through slide cell culture on Potato dextrose agar. The microscopic morphology, with particular emphasis on the type of sporulation, showed features identical with those of *Fusarium solani*³, where the presence of numerous oval microconidia and abundant 2-5 septate, fusoid to boat shaped macroconidia with pointed ends (Fig. 2) allowed us to identify this species as the etiological agent of the infection above described.

Once the fungal case of the infection had been established, antibiotics and corticoids were discontinued, and specific antimycotic treatment was administered. Topical therapy with natamycin and oral ketoconazole 400 mg/day was immediately started. Seventy-two hours later, definite improvement seemed to occur; the patient was free of pain, the hypopion disappeared and the fundus was seen more clearly. At this day, a penetrating keratoplasty with therapeutic finality was performed.



Fig. 1 - Branching septate hyaline hyphae with chlamydoconidia on direct microscopic examination of corneal scrapings (KOH, x500).

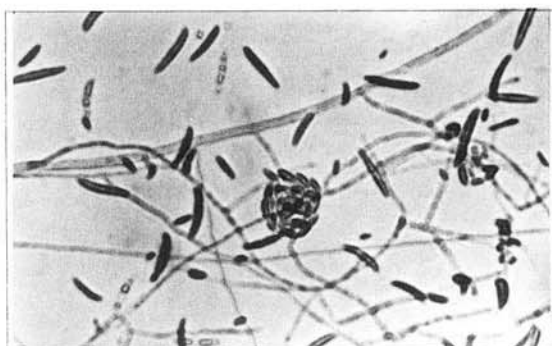


Fig. 2 - Microscopic appearance of fusiform-shaped, septate macroconidia of *Fusarium solani* (lactophenol methylene blue mount, x500).

COMMENTS

Fusarium species are filamentous nondermatophyte fungi, which belong to the class Deuteromycetes (Fungi Imperfecti), order Moniliales. They are commonly found in soil and are a frequent cause of disease in plants³. Human infections that may be caused by *Fusarium* sp are usually limited to cases of mycotic keratitis, onychomycosis, and colonization of burned skin. Colonization of deep tissues including endophthalmitis, skin and subcutaneous infection, osteomyelitis, septic arthritis, cystitis, peritonitis, and brain abscess, have been reported in patients with a break in the skin or an underlying immunosuppressive condition^{2, 12, 14}.

A variety of *Fusarium* species has been identified from corneal ulcers. The two most important are *F. oxysporum* and *F. solani*. This latter has been recorded to be a predominant etiological agent of mycotic keratitis in Nigeria, Spain and United States^{5, 10, 11}. A few cases of *Fusarium solani* keratitis has also been reported in Argentina¹⁹. The major predisposing factor in this infection appears to be corneal trauma with some kind of vegetable matter and large number of patients are agricultural workers, farmers or persons who are exposed to plants while gardening⁸. As our patient did not present history of trauma or debilitating systemic disease and was not included in occupational group of risk, we could not explain the precise origin of this case.

Whenever a case of keratitis is considered, immediate diagnostic studies are indicated; however, broad-spectrum antibacterial antibiotic coverage associated with corticosteroids are instituted in advance of a

specific microbial diagnosis. In mycotic infections the use of corticosteroids are strongly contraindicated as they may enhance the growth of the fungus, alter host resistance, and preclude a favorable outcome^{9, 15}. By these reasons, it is important to consider the fungal etiology of these infections, where the delayed diagnosis coupled with preliminary use of steroid therapy probably contributed to the poor outcome of the ocular disease in our case.

RESUMO

Um caso de ceratite micótica causada por *Fusarium solani*.

O caso estudado refere-se a paciente do sexo masculino, 36 anos, feoderma, sem história de doença sistêmica ou trauma ocular, apresentando úlcera comeana no olho esquerdo. Antes do estabelecimento do diagnóstico específico, o paciente foi tratado com antibiótico associado a corticosteróides durante um mês. O exame direto realizado a partir de raspado de córnea tratado com KOH revelou a presença de hifas fúngicas e clamidosporos, e o cultivo do material em ágar Sabouraud dextrose mostrou-se positivo para *Fusarium solani*. É enfatizada a necessidade do uso cauteloso de antibióticos e corticosteróides no tratamento de infecções da córnea, bem como de se considerar a possibilidade de etiologia fúngica destes quadros.

REFERENCES

1. AGRAWAL, P.K.; LAL, B.; WAHAB, S.; SRIVASTAVA, O.P. & MISRA, S.C. - Orbital paecilomycosis due to *Paecilomyces lilacinus* (THOM) SAMSOM. *Sabouraudia*, 17: 363-370, 1979.
2. ANAISSE, E.; KANTARJIAN, H.; JONES, P. et al. - *Fusarium* a newly recognized pathogen in immunosuppressed patients. *Cancer*, 57: 2141-2145, 1986.
3. BOOTH, C. - The genus *Fusarium*. Kew, Commonwealth Mycological Institute, 1971.
4. FISCHMAN, O. & CAMARGO, Z.P. - Micologia ocular. In: BELFORT Jr., R.; ALMADA, A. & TOMIMATSU, P., ed. *Doenças externas oculares*. São Paulo, Roca, 1981. p.35-39.
5. GUGNANI, M.C.; GUPTA, S. & TALWAR, R.S. - Role of opportunistic fungi in ocular infections in Nigeria. *Mycopathologia (Den Haag)*, 65: 155-166, 1978.
6. LACAZ, C. da S.; AZEVEDO, M.L.; VARGAS, A.A.; PORTO, E. & SALEBIAN, A. - Aspergilose orbitária por *Aspergillus flavus*. *Rev. paul. Med.*, 91: 64-67, 1978.
7. LACAZ, C. da S.; PORTO, E. & MARTINS, J.E.C. - Oculomicoses. In: LACAZ, C. da S.; PORTO, E. & MARTINS, J.E.C., ed. *Micologia médica*. São Paulo, Sarvier, 1991. p.452-457.
8. LIEBERMAN, T.W.; FERRY, A.P. & BOTTONE, E.J. - *Fusarium solani* endophthalmitis without primary corneal involvement. *Amer. J. Ophthalmol.*, 88: 764-767, 1979.
9. MOSIER, M.A.; LUSK, B.; PETTIT, T.H.; HOWARD, D.H. & RHODES, J. - Fungal endophthalmitis following intraocular lens implantation. *Amer. J. Ophthalmol.*, 83: 1-8, 1977.
10. O'DAY, D.M.; AKRABAWI, P.L.; HEAD, W.S. & RATNER, H.B. - Laboratory isolation techniques in human and experimental fungal infections. *Amer. J. Ophthalmol.*, 87: 688-693, 1979.
11. PALACIO-HERNANZ, A. - Queratomycosis. In: TORRES-RODRIGUEZ, J.M.; PALACIO-HERNANZ, A.; GUARRO-ARTIGAS, J.; NEGRONI-BRIZ, R. & PEREIRO-MIGUENS, M., ed. *Micologia médica*. Barcelona, Masson, 1993. p. 145-151.
12. RIPPON, J.W. - Hyalohyphomycosis. In: RIPPON, J.W., ed. *Medical mycology. The pathogenic fungi and the pathogenic actinomycetes*. Philadelphia, W.B. Saunders Company, 1988. p.714-716.
13. RODRIGUES, M.M. & MACLEOD, D. - Exogenous fungal endophthalmitis caused by *Paecilomyces*. *Amer. J. Ophthalmol.*, 79: 687-690, 1975.
14. ROGERS, A.L. & KENNEDY, M.J. - Opportunistic hyaline hyphomycetes. In: BALLOWS, A.; HAUSLER Jr., W.J.; HERRMAN, K.L.; ISENBERG, H.D. & SHADOMY, H.J., ed. *Manual of clinical microbiology*. Washington, American Society for Microbiology, 1991. p.659-673.
15. SUIE, T. & HAVENER, W.H. - Mycology of the eye: a review. *Amer. J. Ophthalmol.*, 53: 63-77, 1963.
16. WIND, C.A. & POLACK, F.M. - Keratomycosis due to *Curvularia lunata*. *Arch. Ophthalmol.*, 84: 694-696, 1970.
17. ZAPATER, R.C.; ALBESI, E.J. & GARCIA, G.H. - Mycotic keratitis by *Drechslera spicifera*. *Sabouraudia*, 13: 295-298, 1975.
18. ZAPATER, R.C.; ARRECHEA, A. & GUEVARA, V.H. - Queratomycosis por *Fusarium dimerum*. *Sabouraudia*, 10: 274-275, 1972.
19. ZAPATER, R.C.; BRUNZINI, M.A.; ALBESI, E.J. & ARTURI, C.A.S. - El genero *Fusarium* como agente etiológico de micosis oculares. *Arch. Oftal. B. Aires*, 51: 279-286, 1976.

Recebido para publicação em 04/07/1994.
Aceito para publicação em 25/08/1994.