FUNGAL KERATITIS CAUSED BY PSEUDALLESCHERIA BOYDII (SCEDOSPORIUM APIOSPERMUM)

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SUMMARY

Keratitis is rarely caused by fungi. Filamentous fungal keratitis is often preceded by corneal trauma and occurs mostly in previously healthy individuals.
We studied a case of posttraumatic keratitis caused by Pseudallescheria Boydii, which belongs to the group of filamentous fungi.

RÉSUMÉ

La kératite est rarement d'étiologie mycotique. Chez des individus sains, la kératomycose filamenteuse est souvent précédée par un traumatisme cornéen. Nous avons étudié un cas de kératomycose filamenteuse causé par Pseudallescheria Boydii.

KEY WORDS

Fungal Keratitis, Pseudallescheria Boydii.

MOTS CLÉS

Kératomycose filamenteuse, Pseudallescheria Boydii.

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INTRODUCTION

Keratitis is rarely caused by fungi. Fungi of the yeast variety are more frequently opportunistic than filamentous fungi and are seen in chronic corneal disease, contact lens wearers, and immunocompromised patients. Filamentous fungal keratitis is often preceded by corneal trauma and occurs mostly in previously healthy individuals.

We studied a case of posttraumatic keratitis caused by Pseudallescheria Boydii, which belongs to the group of filamentous fungi.

CASE REPORT

A 45 year old female presented with a keratitis in the right eye. Three days earlier, an unwashed glass-particle had hit her right eye in a glass recycling factory. Initially it caused only minor discomfort, but the situation deteriorated over a three day period and a painful red eye with poor vision developed. Visual acuity was reduced to counting fingers. Slitlamp examination showed a central corneal ulcer with indistinct elevated margins and a surrounding ring-shaped stromal infiltrate. There was marked anterior chamber inflammation with a large hypopyon. We performed a first corneal scraping, which was negative for bacteria and fungi. Intensive treatment with broad spectrum antibiotics and cycloplegics was started. A repeated scraping revealed a large amount of filamentous fungi on GIEMSA staining. Debridement of the necrotic corneal tissue was performed and treatment was modified to topical Amphotericin B 0.2% hourly and oral Itraconazole 400 mg daily. Three weeks later, the causative fungus was identified as Pseudallescheria Boydii. We added topical Natamycin 2.5% hourly and topical Miconazole 1% hourly. Despite the intensive and broadspectrum treatment, a progressively enlarging corneal infiltrate was noticed after an initial period of improvement. A penetrating keratoplasty was performed five weeks after the initial injury. Microscopic examination of the excised cornea showed infiltration by multiple septate filamentous fungi in the middle and deep stromal layers, with an overlying necrotic and acute non-granulomatous inflammatory infiltrate and an intact but folded Descemet's membrane *(fig1+2)*. Topical Natamycin 2.5% qds and topical steroids were continued for one month after surgery. The

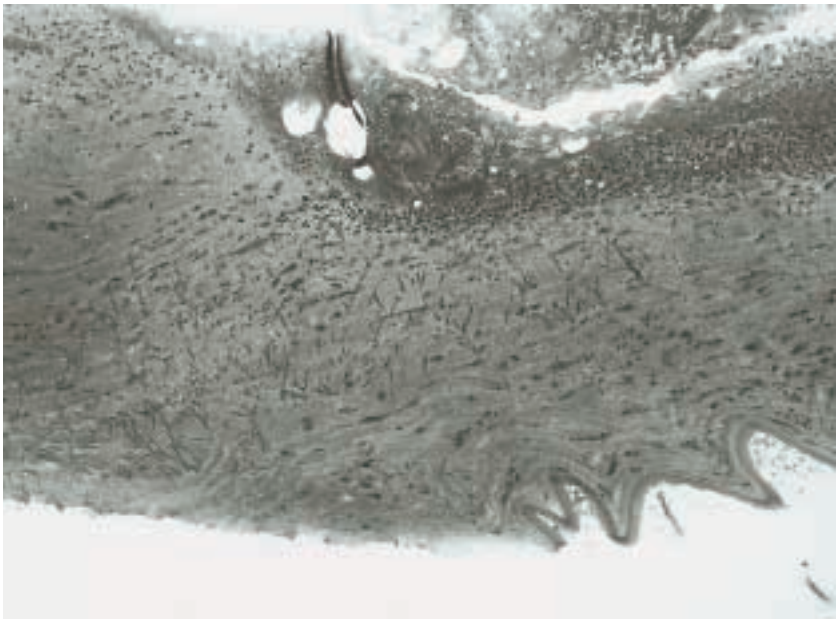

Fig 1: Microscopic section of infected cornea shows ulceration of stroma and epithelium, infiltration by leucocytes and PAS positive hyphae in stroma (x100, PAS staining).

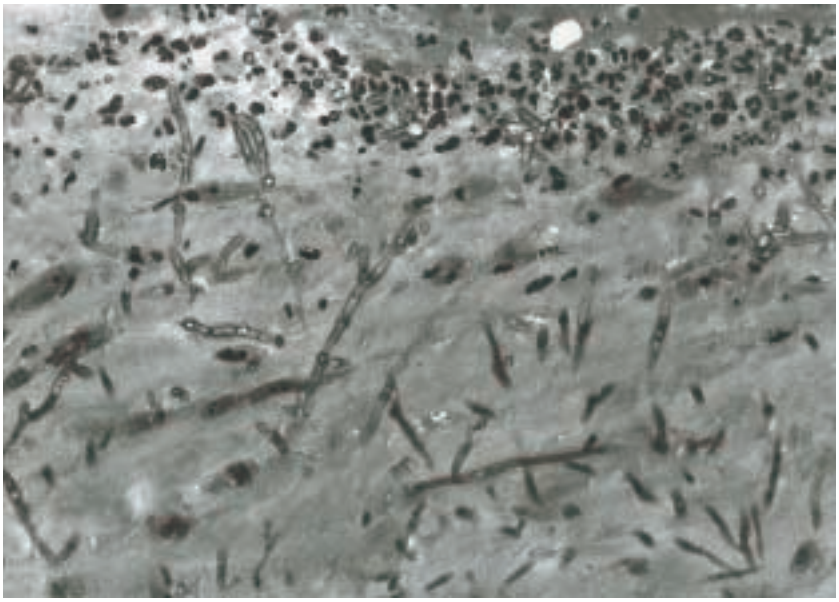

Fig 2: Details of hyphae in stroma (x520, Toluidine staining)

Itraconazole tablets were continued for two months on a tapering schedule.
This treatment eradicated the fungal infection. One and a half year later on examination, visual acuity was 0.2 and biomicroscopy showed a clear corneal graft, a quiet anterior chamber and some posterior capsular opacities.

DISCUSSION

Pseudallescheria Boydii is found throughout the world in soil, decaying organic substances and water. It is a very rare cause of filamentous fungal keratitis. The first report of Pseudallescheria Boydii was made in 1955 and since then only fourteen cases have been described in world literature.[1,3,4,5,7]
In 1979, the Food and Drug Administration approved the clinical use of broad spectrum antifungal agents like Natamycin and Miconazole. These drugs were used in the five most recent case reports of Pseudallescheria Boydii keratitis. In two of these five cases, still an enucleation was required. [1,3] This was most probably due to the intensive use of corticosteroids prior to the diagnosis of fungal involvement: diminished host resistance by steroids allowes deep invasion of fungi. If a history of trauma by vegetable matter is present, fungal keratitis should always be considered and the use of corticosteroids avoided. The presence of filamentous fungi is easily missed because of the relative absence of fungi in the superficial stromal layers, and the difficulty of culturing them. Therefore repeated, vigorous corneal scraping and/or corneal biopsy is required to confirm a suspected fungal keratitis. The treatment of fungal keratitis remains a challenge for each ophthalmologist. At present Natamycin is the recommended first line drug.[2] In deeper fungal infections and those not responding to Natamycin, additional topical therapy, such as Miconazole and Amphotericin B, is required. Pseudallescheria Boydii, however, is often considered to be resistant to Amphotericin B, but the frequency with which this occurs is not well described.[6] Antifungals are hydrophobic and thus poor penetration of topical antifungals is the rule. Therefore the routine use of systemic antifungals, in particular Itraconazole and Fluconazole, is justified in severe or deep keratitis. Even with optimal medical therapy surgical intervention may be required to eradicate the infection: such measures may include debridement, keratectomy with conjunctival flap and penetrating keratoplasty.[2]

REFERENCES

(1) BLOOM P.A., LAIDLAW D.A.H., EASTY D.L., et al. – Treatment failure in a case of fungal keratitis caused by Pseudallescheria Boydii. Br J Ophthalmol 1992; 76: 367-368.

(2) KAUFMAN H.E., BARRON B.A., MC DONALD M.B. – The Cornea. 2nd ed. 1998. Newton: Liesegang. Fungal keratitis: 231-241.

(3) MILLS R., GARRETT G. – Pseudallescheria Boydii keratitis. Australian and New Zealand J Ophthalmol 1992; 2: 253-256.

(4) PAUTLER E., ROBERTS R.W., BEAMER P.R. – Mycotic infection of the eye. Monosporium Apiospermum associated with corneal ulcer. Arch Ophthalmol 1955; 53: 385-389.

(5) RUBEN S. – Pseudallescheria Boydii keratitis. Acta Ophthalmol 1991; 69: 684-686.

(6) WALSH T.J., PETER J., MC COUGH D.A., et al. – Activities of Amphotericin B and antifungal Azoles alone and in combination against Pseudallescheria Boydii. Antimicrobial Agents and Chemotherapy 1995; 39: 1361-1364.

(7) ZAPATER R.C., ALBESI E.J. – Corneal Monosporiosis. A review and report of one case. Ophthalmologica 1979; 178: 142-147.

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