Fungal keratitis caused by *Scopulariopsis brevicaulis*: successful treatment with topical amphotericin B and chloramphenicol without the need for surgical debridement

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A 41-year-old man presented with a 24 hour history of a painful right eye. Nineteen months previously he had splashed molten lead into this eye. He had subsequently undergone mucous membrane grafting to repair scarred conjunctival fornices. A vascularised cornea remained with associated cicatricial entropion preventing eyelid closure. He underwent further upper fornix reconstruction using mucous membrane grafts 3 months before this admission.

On admission topical treatment included hypromellose 0.3%, six times daily, chloramphenicol 0.5%, four times daily, and simple eye ointment at night. Visual acuity was perception of light. There was upper lid symblepharon with a formed fornix. The lower fornix was negligible. The cornea was keratinised with a central 2 mm diameter ulcer. Corneal scrapings were taken for microscopy and culture; microscopy revealed no organisms. Topical methicillin drops $\frac{1}{2}$ hourly and oral ciprofloxacin 500 mg twice daily were commenced. After 4 days, because of a poor clinical response, treatment was changed to topical ofloxacin and methicillin six times daily. On day 5 *Scopulariopsis brevicaulis* was isolated and topical amphotericin B, 4 mg/ml in distilled water, $\frac{1}{2}$ hourly, was commenced. On day 6, the topical amphotericin B concentration was reduced to 2 mg/ml because of ocular irritation (a recognised complication of amphotericin B¹). On day 7, results of fungal antibiotic disc sensitivity testing revealed that the organism was resistant to amphotericin B, 5-flucytosine, fluconazole, clotrimazole, miconazole, econazole, and nystatin, and sensitive to none. At this stage, owing to one report that the effectiveness of amphotericin B against *S. brevicaulis* was improved in the presence of chloramphenicol,² and as the clinical condition was unchanged after 2 days of topical amphotericin B alone, treatment was changed to topical amphotericin B 2 mg/ml and chloramphenicol 1%, hourly by day and 2 hourly by night; other antibiotics were discontinued. The following day the ulcer size was reduced. On day 11, the patient was asymptomatic and the ulcer had resolved. On day 15, the amphotericin B and chloramphenicol drops were discontinued. Fungal culture of toe and finger nail clippings was negative.

Comment

Scopulariopsis brevicaulis is a saprophytic organism found in soil³ and other substrates world-

wide. It belongs to the deuteromycotina or fungi imperfecti and grows on Sabouraud's dextrose agar. It is most frequently associated with human nail infections.⁴ Sporadic ocular infections previously reported include keratomycosis following penetrating eye injury⁵ and endophthalmitis after retinal detachment surgery.⁶ In this case the loss of the normal ocular surface defence mechanisms following the molten lead injury presumably predisposed the patient to infection, the most likely route of infection being indirect soil contamination.

Despite a lack of in vitro activity of amphotericin B and chloramphenicol both alone and in combination against this fungus, their use in vivo was associated with rapid resolution of infection. Amphotericin B acts by binding to ergosterol in fungal cell membranes causing leakage of cell contents. Chloramphenicol inhibits bacterial protein synthesis by binding to the 50S ribosomal subunit; its mode of action on fungi may be similar. The increased effectiveness of amphotericin B in the presence of chloramphenicol may be due to their differing sites of action, cell membrane leakage caused by amphotericin B facilitating access of chloramphenicol to the ribosomes. Corneal vascularisation, allowing access of blood factors, may also have aided recovery.

This case illustrates the importance of fungal culture and liaison with the microbiologist in the diagnosis of corneal ulceration. It demonstrates successful treatment of mycotic ulceration in a vascularised cornea with amphotericin B and chloramphenicol without the need for surgical debridement.

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