Fusarium keratitis in a patient with alcohol dependence

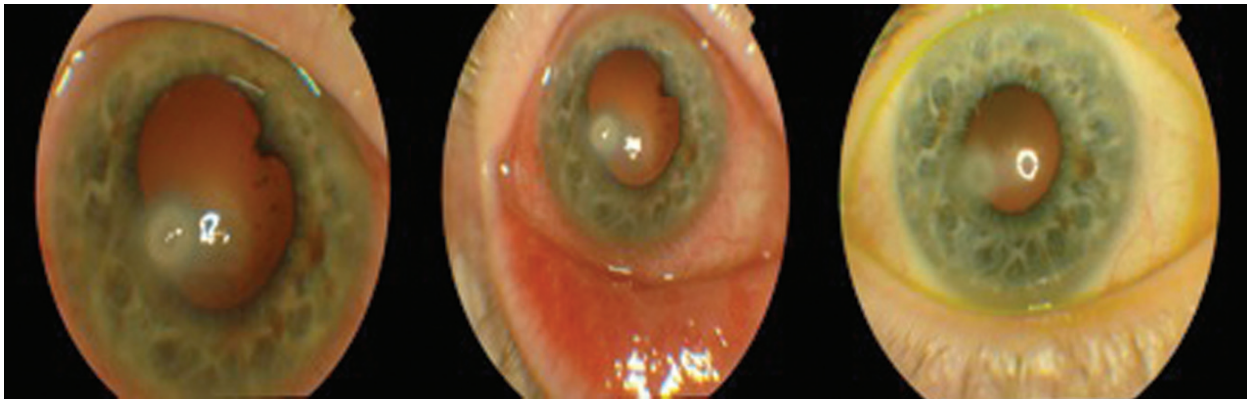

Figure 1: Anterior segment images from initial presentation, four days post treatment commencement and at two months.

Treatment of fungal keratitis secondary to the Fusarium species remains a challenge. Although relatively more common in warmer climates, this corneal infection is rare in the UK. Most cases have been reported in farmers and are often preceded by trauma. We report a case of a 44-year-old male Caucasian whose rigid gas permeable contact lens wear, alcohol dependence syndrome and drug misuse may have predisposed him to this persistent keratitis.

A 44-year-old male presented to eye casualty under the influence of alcohol with a two month history of discomfort of his right eye secondary to a contact lens related corneal ulcer. He initially refused investigation and was therefore treated with topical Ofloxacin. When his condition proved refractory to this treatment he agreed to be admitted for further investigation. Corneal scrapes were taken and the patient's contact lenses were sent for microbiological investigations, initial results from which suggested the possibility of a fungal infection. This led to the commencement of oral fluconazole as well as topical econazole drops.

The keratitis showed only limited response to the above therapy and further microbiological advice was sought. The fungal culture had begun to show signs of 'filaments / moulds' and recommendations were made to alter treatment to systemic voriconazole and topical amphotericin or voriconazole. Unfortunately topical voriconazole would not be available for at least 10 days and so therapy with amphotericin was commenced. Cultures from the corneal scrapes confirmed the presence of Fusarium species and with the support of our microbiology colleagues we were able to arrange for topical voriconazole drops to be formulated locally from an intravenous preparation.

Once on the combination of topical and systemic voriconazole the keratitis steadily improved. The therapy was slowly tapered and was stopped at four months. This was done very cautiously due to poor attendance and concerns of poor compliance linked to alcohol dependence and drug misuse. A trial of topical predsol 0.5% was given after week eight to reduce stromal inflammation and reduce subsequent scarring. The patient was monitored to ensure this had no adverse effect on the keratitis. Vision improved from counting fingers at initial presentation to 6/24 – 6/9 with pinhole at four months. At six months follow-up findings remain stable and he had minimal visual blurring.

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Confirmed diagnosis of Fusarium fungal keratitis (FK) is difficult to obtain as cultures and biopsies of the anterior stroma can be negative due to the tendency of filamentary fungi to proliferate in the posterior corneal stroma. A delay in isolating the infective agent often contributes to the poor outcome as does the limited efficacy of existing antifungal therapies [1].

The most common cause of FK is ocular injury from wooden objects or other vegetable matter [2,3]. Immunosuppression, contact lenses and prolonged use of topical steroids are significant risk factors for FK [4]. Topical steroids have been shown to increase the rate of conjunctival colonisation promoting fungal replication and corneal invasion by lowering the host's inflammatory response. Similarly, systemic steroids promote fungal keratitis by rendering the host immunocompromised [5,6].

Therefore, FK tends to occur in patients who have been exposed to

trauma or who are either locally or systemically immunocompromised. This case highlights that alcohol and drug misuse can be responsible for such immunocompromise and this does not appear to be highlighted previously in the literature. Our patient was known to have a history of very significant alcohol and drug misuse which we believe increased his susceptibility to a fungal organism when combined with his contact lens wear. The risk may have been further increased by his likely poor contact lens hygiene.

Voriconazole is increasingly used in clinical practice to treat FK, mostly on the basis of in vitro and anecdotal results [1]. Voriconazole has a broad spectrum of activity against yeast, and dematiaceous or filamentous fungi [7]. It is available commercially for systemic administration in the form of oral and intravenous formulations. Oral voriconazole has high bioavailability and demonstrates good penetration into the different parts of the eye [8]. Topical voriconazole eye drops have been demonstrated to show good penetration through the cornea into the aqueous humour [9].

This case highlights that although topical voriconazole can be obtained from the pharmaceutical manufacturing units of tertiary centres this may result in delay, so other hospital eye units should be aware that this formulation can actually be made from the intravenous preparation to ensure the drug is immediately available to ensure the required prompt treatment of this sight-threatening infection.

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