



Treatment of intraocular spread of *acanthamoeba* after tectonic corneal graft in *acanthamoeba* keratitis

Francisco Arnalich-Montiel¹ · Maria Reyes-Batlle² · Rogelio López-Vélez³ · Jacob Lorenzo-Morales²

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The number of reports on anterior chamber detection of *Acanthamoeba* by PCR in the course of *Acanthamoeba* keratitis (AK) has risen, frequently following recent tectonic keratoplasty [1–3]. Topical biguanide or diamidines do not enter the AC [4] and are cytotoxic when used intraocularly. Herein we report the use of intracameral voriconazole, with proven cysticidal activity in AK [5, 6], for intraocular dissemination of *Acanthamoeba*, in two consecutive patients.

Case reports

Case 1

A 56-year-old male with late-diagnosis culture-positive AK in the right eye (3 months from symptom onset) developed, despite the use of combined topical chlorhexidine and propamidine, severe melting with corneal perforation requiring a 9-mm PK. Postoperative treatment included topical chlorhexidine, moxifloxacin, dexamethasone, oral prednisolone and tacrolimus. An increased Tyndall reaction, mutton fat keratic precipitates and ciliary hyperemia appeared on day 5; vitreous remained clear. An AC tap was positive for T4 *Acanthamoeba* and 100 µg/0.1 ml voriconazole was administered intracameral. Oral immunosuppression was stopped and oral voriconazole 200 mg BDS with 1% topical voriconazole QDS were started. Intracameral voriconazole administration plus AC tap were repeated three days,

1 week and 1 month after diagnosis. The last tap confirmed the absence of *Acanthamoeba* (Fig. 1). At 4 years' follow up, the AC is inflammation free.

Case 2

A 60-year-old female with late-diagnosis culture-positive AK in the right eye (4 months from symptom onset) developed, despite the use of combined topical chlorhexidine and propamidine, central melting with perforation requiring 9.5 mm PK. Postoperative treatment was as in previous case. Increased Tyndall reaction and mutton fat keratic precipitates were detected 3 weeks later; vitreous remained clear. An aqueous tap was taken and intracameral voriconazole administered at the same dose as in case 1. Culture and PCR of the AC tap showed T4 *Acanthamoeba*. Intracameral voriconazole administration and AC tap were repeated 10 days, and 1 month later together with a new limbus-to-limbus graft to treat disease recurrence outside the graft margins. This last tap showed no amoeba in the AC (Fig. 1). Six months after the last graft, it remains clear, with no signs of AC inflammation (Fig. 2).

Comment

Acanthamoeba spp. rarely progress beyond the cornea due to an intense neutrophil reaction against intraocular trophozoites, although they are capable of passing through Descemet's Membrane in vitro [7]. Tectonic keratoplasty may predispose to intraocular dissemination of the amoeba by means of a temporary disruption of Descemet's Membrane and the use of oral immunosuppression postoperatively, which can jeopardize the innate immune response.

It is probably an underreported complication confounded with sterile inflammation facilitated by corneal tectonic graft, nevertheless, prompt identification in cases with postoperative AC inflammation is paramount. We documented the successful treatment of two cases of

✉ Francisco Arnalich-Montiel
farnalich@gmail.com

¹ Cornea Unit, Ophthalmology Department, Ramón y Cajal Hospital, Madrid, Spain

² University Institute of Tropical Diseases of the Canary Islands, University of La Laguna, Tenerife, Spain

³ Tropical Medicine & Clinical Parasitology, Infectious Diseases Department, Ramón y Cajal Hospital, Madrid, Spain

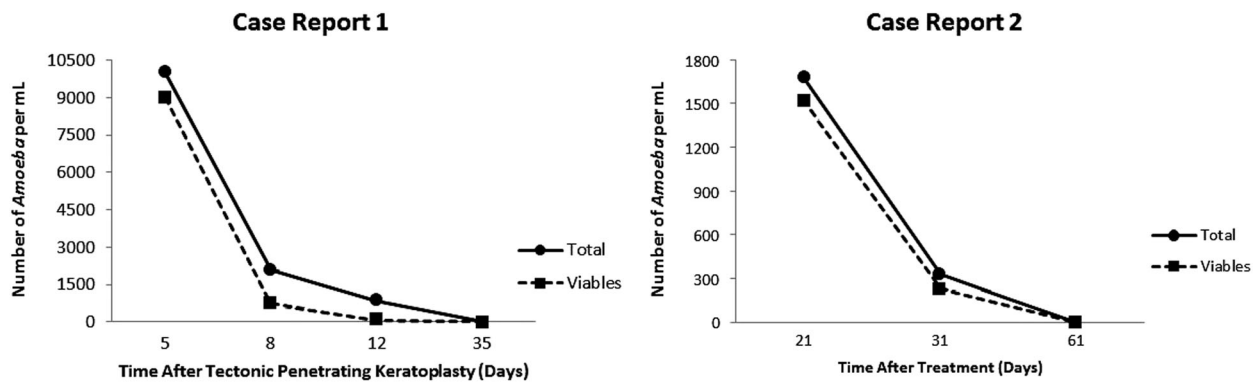


Fig. 1 Evolution of total and viable *Acanthamoeba* concentrations using direct microscopic examination in an aliquot of 0.1 ml of aqueous humor from the time of the tectonic penetrating keratoplasty to the resolution of the case report 1 and case report 2

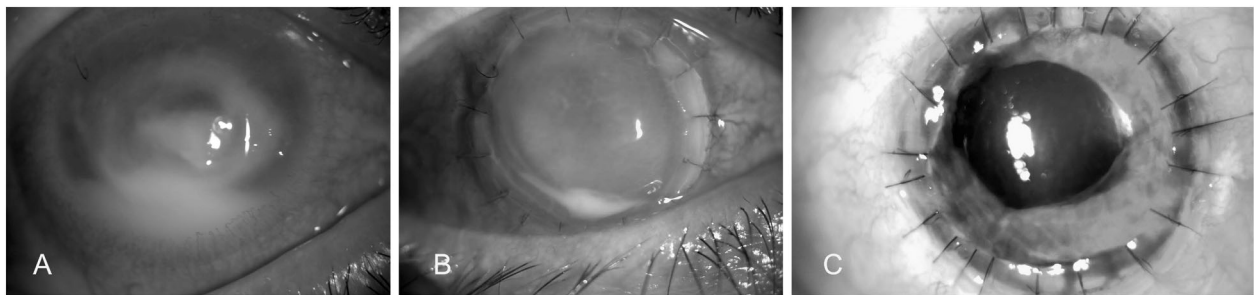


Fig. 2 Anterior segment photograph of the right eye of patient 2, just before the corneal graft (a) 4 weeks after the therapeutic penetrating keratoplasty with corneal edema, endothelial plaque, and PCR positive

for *Acanthamoeba* in the aqueous humor (b), and after the second corneal graft with absence of amoeba in the aqueous humor (c)

dissemination of amoeba into the AC following tectonic keratoplasty with 3–4 repeated intracameral injections of 100 µg/0.1 ml voriconazole over a 1 month period of time. We suggest repeating the injection within the first week after the first dose, and then according to the clinical response every week or every 2 weeks until negativization of aqueous taps with PCR can be documented.

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Compliance with ethical standards

Conflict of interest: The authors declare that they have no conflict of interest.

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