Successful Monitoring and Treatment of Intraocular Dissemination of Acanthamoeba

Intraocular spread of Acanthamoeba after keratitis is rare, being previously documented and microbiologically confirmed in 1 case of chorioretinitis and 1 case of endophthalmitis. Both occurred several months following penetrating keratoplasty (PK), were initially treated as suspected sterile inflammations, did not receive specific oral or intraocular treatment for Acanthamoeba, and finally required evisceration.

We report the first documented case, to our knowledge, of successful management of intraocular Acanthamoeba dissemination. Intraocular and systemic treatment was monitored through microbiological testing and polymerase chain reaction analysis of serial aqueous taps.

Report of a Case. A 56-year-old man with Acanthamoeba keratitis and keratoconus underwent tectonic PK to treat keratitis that was unresponsive to chlorhexidine gluconate and eventually resulted in corneal perforation. Treatment after PK included topical chlorhexidine, moxifloxacin, cyclopentolate hydrochloride, and dexamethasone sodium phosphate as well as oral prednisolone (60 mg once daily) and tacrolimus (1 mg twice daily).

Five days after surgery, the patient reported blurred vision. The graft showed inferior edema, Descemet folds, mutton-fat keratic precipitates, and 4+ cells in the anterior chamber (AC) with a hypopyon (Figure 1A). Taps of the AC were taken and intravitreal vancomycin hydrochloride and dexamethasone sodium phosphate as well as oral prednisolone (60 mg once daily) and tacrolimus (1 mg twice daily).

The patient's maintenance regimen has been topical chlorhexidine, 0.02%, and voriconazole, 1%, 4 times daily with 200 mg of oral voriconazole twice daily for the last 6 months, without recurrence (Figure 1B). The corneal graft shows early signs of failure, and Descemet-stripping automated endothelial keratoplasty plus phacoemulsification is planned once clinical remission reaches 12 months.

Comment. We report the first case, to our knowledge, of a successful outcome in a patient with microbiological evidence of intraocular dissemination of Acanthamoeba. We believe success was based on 3 points that were
not emphasized in previously reported cases: (1) early diagnosis; (2) successful combination of topical, oral, and intraocular therapy with drugs that can reach therapeutic levels in aqueous and vitreous4,5 and are effective in vivo6 for other Acanthamoeba infections; and (3) guiding treatment by effective monitoring of the response by Acanthamoeba.

We think oral and topical administration of voriconazole must have achieved a sustained therapeutic dose and frequent administration of intraocular voriconazole produced high peak levels, increasing effectiveness. Topical chlorhexidine was used before the PK but the keratitis worsened, raising the question of its effectiveness in our patient. It is unknown whether topical chlorhexidine can reach aqueous therapeutic levels; however, rabbit studies have shown that frequent instillation of chlorhexidine, 0.02%, in epithelialized corneas7 produces concentrations 10 to 40 times lower than voriconazole but, in our experience, a similar 90% inhibitory concentration. Moreover, in the other described cases, topical antiseptics such as chlorhexidine used after PK did not prevent endophthalmitis. Therefore, we believe chlorhexidine did not play a major role in our case. The susceptibility of Acanthamoeba to trimethoprim/sulfamethoxazole, also used in our patient, is based on a few reports8; we have not tested the susceptibility of the patient’s strain and cannot be sure of its real contribution.

Francisco Arnalich-Montiel, MD, PhD
Carmen M. Martín-Navarro, PhD
Jorge L. Alió II, MD
Rogelio López-Vélez, MD, PhD
Enrique Martínez-Carretero, PhD
Basilio Valladares, PhD
José E. Piñero, PhD
Jacob Lorenzo-Morales, PhD

Author Affiliations: Cornea Unit, Department of Ophthalmology (Drs Arnalich-Montiel and Alió) and Tropical Medicine and Clinical Parasitology Unit, Department of Infectious Diseases (Dr López-Vélez), Ramón y Cajal Hospital, Madrid, and University Institute of Tropical Diseases and Public Health of the Canary Islands, University of La Laguna, Tenerife (Drs Martín-Navarro, Martínez-Carretero, Valladares, Piñero, and Lorenzo-Morales), Spain.

Correspondence: Dr Arnalich-Montiel, Servicio de Oftalmología, Hospital Ramón y Cajal de Madrid, Carretera de Colmenar Viejo km 9.100, 28034 Madrid, Spain (farnalich@gmail.com).

Conflict of Interest Disclosures: None reported.

Funding/Support: This work was supported in part by project RICET (project RD06/0021/0005 of the Program of Redes Temáticas de Investigación Cooperativa, Fondo de Investigación Sanitaria), Spanish Ministry of Health, and the project “Protozoosis emergentes por amebas de vida libre: aislamiento y caracterización molecular, identificación de cepas transportadas de otros agentes patógenos y búsqueda de quimioterapias” PO10/01298, Spanish Ministry of Science and Innovation. This work was also supported by grants to Dr Arnalich-Montiel from DGTA-TX, Ministerio de Sanidad y Consumo (Proyecto TRA-036), and Fundación Mutua Madrileña. Dr Lorenzo-Morales was supported by the Ramón y Cajal subprogram RYC-2011-08863 of the Spanish Ministry of Science and Innovation.


Topical Linezolid for Refractory Bilateral Mycobacterium chelonae Post–Laser-Assisted In Situ Keratomileusis Keratitis

Keratitis after laser-assisted in situ keratomileusis (LASIK) caused by Mycobacterium has been widely reported.1 Different regimens of antibiotic treatments have been published, but fourth-generation fluoroquinolones are the most effective drugs. However, management may be difficult owing to the delay in diagnosis, the long-term antibiotic treatment required in most cases, and the presence of multidrug-resistant pathogens.2 Systemic infection by multidrug-resistant Mycobacterium has been successfully treated with linezolid (Zyvoxid), an oxazolidinone antibiotic.3

We report a case of bilateral post-LASIK keratitis due to Mycobacterium chelonae resistant to fourth-

Figure 2. Evolution of total and viable Acanthamoeba concentrations in an aliquot of anterior chamber during follow-up until resolution.