ACANTHAMOEBA INFECTION AS A CAUSE OF SEVERE KERATITIS IN A SOFT CONTACT LENS WEARER IN JAMAICA

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Abstract. We report the case of a 29-year-old Jamaican patient who presented with severe pain, redness, and swelling of both eyes. She was a regular soft contact lens wearer who did not maintain standard lens care. She was treated for a possible microbial/viral keratitis using topical ciprofloxacin drops, topical acyclovir ointment, and topical atropine drops. The response was inadequate, and scrapings from her cornea, contact lens cases, and both lenses revealed Acanthamoeba on microscopy, which was shown to be Acanthamoeba polyphaga using polymerase chain reaction. She was treated using chlorhexidine 0.02% hourly, ciprofloxacin every 4 hours, and atropine 1% every 12 hours, along with oral ketoconazole 200 mg twice daily with a dramatic response. However, she subsequently suffered slow corneal epithelial regrowth with severe scarring, vascularization, and cortical lens opacification and was referred for penetrating keratoplasty and cataract surgery. This is the first case of severe keratitis caused by Acanthamoeba to be reported from Jamaica and demonstrates that this emerging pathogen can be a cause of severe keratitis in the tropics.

INTRODUCTION

The free-living protozoan Acanthamoeba is recognized as an agent of corneal disease, especially keratitis. It may also cause a rare form of encephalitis referred to as granulomatous amoebic encephalitis (GAE). Furthermore, the organism is opportunistic in immunosuppressed patients (especially AIDS) in whom it causes disseminated fatal disease, otitis, chronic sinusitis, and skin ulcers.

At least eight species of Acanthamoeba have been implicated in human infections: A. astronyxis, A. castellani, A. culbertsoni, A. polyphaga, A. hatchetti, A. rhysodes, A. lugdunensis, A. palestinensis, A. griffini, and A. quina.

Although Acanthamoeba keratitis may result from accidental eye trauma, most cases are associated with contact lens wearers, with soft contact lenses having the highest risk. More than 90% of cases of Acanthamoeba keratitis in Great Britain between 1992 and 1996 were attributed to contact lens wear. This is because the parasite thrives in contact lens cases, contaminated cleaning solution, and on the lens itself.

We present a case of Acanthamoeba keratitis in an adult from Kingston, Jamaica.

CASE REPORT

A 29-year-old female was referred to the Ophthalmology Department, University Hospital of the West Indies, Kingston, Jamaica, with a 3-week history of severe pain, redness, and swelling of both eyes. She was known to be myopic and was a regular soft contact lens wearer who did not maintain standard lens care. She was started on treatment of a possible microbial/viral keratitis using topical ciprofloxacin drops, topical acyclovir ointment, and topical atropine drops for relief of ciliary spasm. The response was inadequate, and Acanthamoeba was suspected to be the etiological agent of her illness. She was referred for adjustment and intensification of her medications as an inpatient.

On clinical examination, her best-corrected visual acuity was 6/12 and 6/18 in her right and left eye, respectively. The lids were edematous, and both conjunctivae were hyperemic and edematous. Her right cornea had a dendritiform ulcer with a surrounding stromal infiltrate and there was perineural infiltration superiorly. The left cornea had punctate epithelial involvement only. A few cells were seen in her right anterior chamber, and both pupils were iatrogenically dilated. The remainder of the examination was essentially normal.

Scrapings from her right cornea, the contact lens cases, and both lenses were sent to the microbiology laboratory for analysis. Multiple bacteria were isolated, and Acanthamoeba was visualized after trichrome staining of material from the corneal scraping. The polymerase chain reaction (PCR) was used to identify the species of Acanthamoeba that was isolated. Heavy mixed growth of Acinetobacter spp., Chryseobacterium spp., and Serratia marcescens was isolated. The latter two organisms were resistant to amoxicillin clavulanic acid and ampicillin, while all were sensitive to amikacin, ciprofloxacin, ceftazidime, crotimoxazole, and gentamicin.

PCR was carried out using the method of Vodkin and others. Briefly, two different Acanthamoeba strains from the American Type Culture Collection (ATCC) were used as the positive control. Acanthamoeba isolates from the contact lens storage cases were cultivated on 2% non-nutrient agar plates at 25°C after filtration using a vacuum manifold system fitted with a filtration membrane of 0.45 μm (Millipore, Bedford, MA). DNA was extracted from the cultured amoebae and PCR performed using a genus-specific primer pair designed by Vodkin and others and species-specific primers designed by Ortega-Rivas and others. Amplifications were performed, essentially as previously described. PCR analysis revealed that the infecting species was Acanthamoeba polyphaga (Figure 1).

Initial treatment comprised topical chlorhexidine 0.02% hourly, ciprofloxacin every 4 hours, and atropine 1% every 12 hours, along with oral ketoconazole 200 mg twice daily. The response was dramatic, and the frequency of the medications was tapered. She was discharged on Day 8 for outpatient follow-up. She had reactivation in her right eye and had to be readmitted 5 days later, at which time there was a large epi...
Infections are thought to begin with contamination of contact lens storage cases with Acanthamoeba from household water supplies. Subsequent contaminated contact lenses act as the vehicle to reach and adhere to the corneal epithelium. In the case under review, keratitis was initially thought to be of bacterial origin. However, the bacteria isolated are not associated with dendritiform lesions, and the infection did not respond after the use of antibiotics to which the organisms were sensitive. Furthermore, the course of the disease is in keeping with Acanthamoeba infection, especially the reemergence of disease in the eye after treatment. This signals a new wave of trophozoites in the absence of antiparasitic therapy.

This case serves as an illustration that Acanthamoeba is an emerging cause of severe disease and that at least one species associated with severe keratitis is endemic in the Caribbean.

REFERENCES


