



RESEARCH ARTICLE

ACANTHAMOEBA KERATITIS

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ABSTRACT

Acanthamoeba is a free living ubiquitous amoeba that is responsible for a small but increasing number of cases of keratitis. The infection is associated with minimal corneal trauma and soft contact lens wear. It typically presents as a unilateral central or paracentral corneal infiltrate, often with a ring shaped peripheral infiltrate. The lesion is often confused with fungal, bacterial, or herpetic keratitis. One of the most important features of the disease is severe pain, which is atypical for herpes simplex. The pathognomonic sign for acanthamoeba is radial neuritis or inflammation around the corneal nerve caused by the parasite. The most important step in prevention of acanthamoeba keratitis is effective education of patients about care of contact lens. Successful therapy hinges on early recognition and aggressive therapy with appropriate topical anti-amoebic medication often in conjunction with penetrating keratoplasty.

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INTRODUCTION

Acanthamoeba castellanii are free living amoeba that are found in soil, fresh water, well water, sea water, brackish water, sewage and air.¹

Acanthamoeba keratitis was first recognised in 1973. Besides various sources of contamination such as mild trauma associated with vegetable matter, an insect, wind blown contaminant, salt water, diving etc, contact lens wear has emerged as the leading predisposing factor in the causation of acanthamoeba keratitis.²

In the United States, 85% cases of acanthamoeba keratitis are associated with contact lens wear.³ The first case of Acanthamoeba keratitis published in international literature, diagnosed by culture of corneal scrapings was from Aravind Eye Hospital, Madurai, India in 1990.⁴

Acanthamoeba species have been cultured from contact lens (both hard and soft lenses), saline solutions, distilled water and solution in soft contact lens cases.⁵ But acanthamoeba may be a cause of keratitis in patients who do not wear contact lens indicating that it may develop from environmental source.⁶

Clinical Features

The symptoms of Acanthamoeba keratitis include severe pain, tearing, photophobia, blepharospasm, blurred vision, foreign body sensation and diminished corneal sensation.⁷

Corneal changes that can be seen are fine epithelial and subepithelial opacities, corneal epithelial stippling and microcystic edema. Disciform central/paracentral stromal infiltrate with an overlying epithelial defect may be seen and an area of clear / mild edematous peripheral cornea separating infiltrate from limbus. Acanthamoeba has predilection for nerve tissue. Therefore "radial keratoneuritis" with infiltrates along corneal nerves is pathognomonic, which may explain the decreased corneal sensation. Acanthamoeba keratitis usually involves nongranulomatous anterior uveitis.⁸



Central stromal infiltrate with overlying epithelial defect.¹⁴

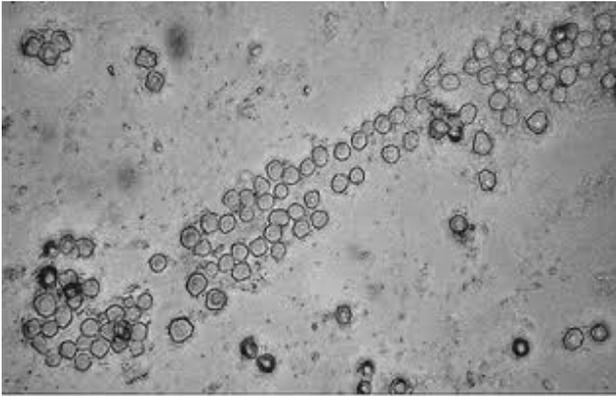
Diagnosis

Staining of corneal scrapings using periodic acid-schiff / calcofluor white, gram and giemsa stains may demonstrate acanthamoeba cysts. Culture is done in non-nutrient agar seeded

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with dead E Coli. Immunohistochemistry, PCR, invivo confocal microscopy may be necessary for diagnosis.⁹



Acanthamoeba cyst in nonnutrient agar seeded with dead E Coli.¹⁴

Treatment

Current medical therapy for Acanthamoeba keratitis includes use of topical 0.1% propamidine isethionate, 0.15% dibromopropamidine isethionate, polyhexamethylene biguanide 0.02%, miconazole 1%, neosporin 1%, and systemic ketacanazole.¹⁰

Ocular pain associated with the disease should be controlled with retrobulbar injection of alcohol. If the diagnosis is made early, the disease may be eliminated by simple epithelial debridement and topical medication.¹¹

Interpretation of results of medical or surgical therapy is difficult because there are cases reported that have achieved successful visual outcome through medical therapy alone, following penetrating keratoplasty without medical therapy or by a combination of medical and surgical treatment. Cryotherapy to the host cornea before a penetrating keratoplasty decrease recurrence of infection after penetrating keratoplasty.^{12,13}

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