Editorial

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Acanthamoeba Keratitis: Diagnosis and Treatment

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Introduction

Acanthamoeba species are the causative agent of a sight threatening infection of the cornea known as *Acanthamoeba* keratitis, caused by the free-living amoeba *Acanthamoeba* spp., and is a sight-threatening corneal infection that presents with corneal ulcerations. It was first reported in 1973 [1]. *Acanthamoeba* are ubiquitous protozoa that exist in 2 forms: Trophozoites (the active form) and cysts (the inactive form). Cysts are notoriously difficult to kill and this is one reason why this infection is so difficult to eradicate. Only one class of medications is known to have cystocidal activity, the biguanides. The incidence of *Acanthamoeba* keratitis in this study was found to be 1.04% and the incidence in other reported Indian series ranges from 0.34 to 1.4% [2-5].

The incidence of *Acanthamoeba* keratitis appears to be increasing because of its frequent association with contact lens wear, which represents the cause of >85% of *Acanthamoeba* keratitis cases, especially in developed countries [6-8]. Members of the genus *Acanthamoeba* are ubiquitous and can be isolated from well, tap, bottled and swimming pool water, as well as sand, dust, human nasal and throat secretions, and animal stools. The life cycle of *Acanthamoeba* consists of a trophozoite and a cyst stage [9].

Diagnosis and Detection

The detection can be done in laboratory using non nutrient agar saline plate seeded with gram negative bacteria such as *Escherichia coli*. The PCR is used to confirm the diagnosis especially when the contact lenses are involved. Molecular methods also available for detection and identification of Acanthamoeba, these methods are also suitable for both clinical and epidemiological purposes [10,11]. The fluorescent *in situ* hybridization technique has also been successfully employed for the purpose detection [12]. **Figure 1** shows the infected eye.

Treatment and Case Studies

Acanthamoeba is difficult to treat, but effective management can save ones eye. Topical anti-infective agents used in early-stage, surgical intervention is necessary in later stages. Propamidine 0.1% and neomycin 1% shows good activity against AK Since then, two or more topical anti-amoebic agents are used throughout the day. Polyhexamethylene Biguanide (PHMB, 0.02%) and chlorhexidine (0.02%), are effective in both monotherapy and combination therapy with a diamidine [13].

Case studies show that the *Acanthamoeba* keratitis is successfully treated in the person having the contact lens using six month

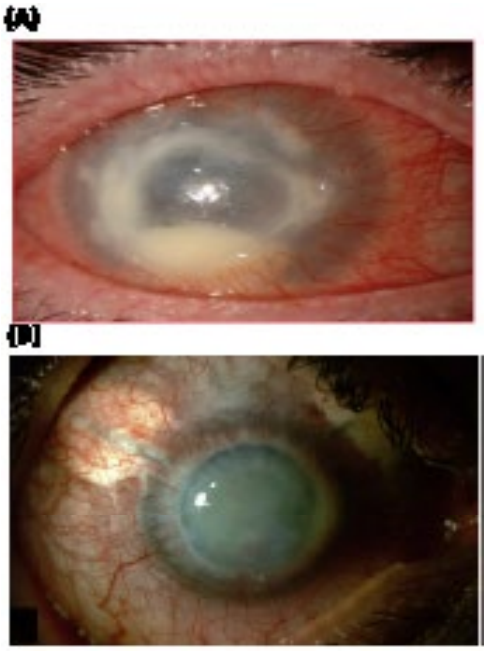

Figure 1 Infected eye.

therapy with topical Miconazole, Metronidazole, Prednisolone and neomycin as well as oral ketokonazole. In another case of person without contact lens having burning sensation
the additional use of Propamidine in the above therapy shows the improvement in the corneal ulcer. In another case where topical Tobramycin and Cefazolin added in the therapy [14]. The combination of Dibromopropamidine and Propamidine isethionate ointment and drops and neomycin drops are used successfully in the 44 years old patient having corneal infection from *Acanthamoeba* species [15].

Bilateral *Acanthamoeba* keratitis was successfully treated with Chlorhexidine, Polyhexamethylene biguanide, Propamidine isethionate in combination with Atropine and Dibromopropamidine an improvement was noted at which point Atropine and Dibromopropamidine were stopped while Fluorometholone acetate, Acyclovir and Ciprofloxacin were prescribed and patient was discharged [16]. Few studies state that addition of the neomycin-polymyxin B also gives the good result [17].

Prevention

Mostly the Contact lens wearers need to take precaution while cleaning the lenses should never use the tap water and saline to clean. As the treatment is toxic and lengthy so they should visit if they find out some sign of inflammation. And those without lenses they should not wash their eyes with lake or sea water.

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