A non-contact lens related Acanthamoeba keratitis

Lalana Sansopha*
Wasee Tulvatana**

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Acanthamoeba keratitis is a damaging infection of the cornea caused by protozoa, Acanthamoeba species. A 65-year-old woman who did not use contact lens, suffered from severe pain and progressively poor vision of her left eye after a trauma from dust. She was primarily treated with antifungal agents and antibiotics which resulted in no improvement. Finally, her eye was eviscerated owing to painful and uncontrollable infection. Histopathologic examination of the cornea showed acanthamoebas. This report recommended the need for increased suspicion of Acanthamoeba keratitis in patient who does not present with pathognomonic clinical features.

Keywords: Acanthamoeba keratitis, Poor visual acuity, Uncontrollable infection.

Reprint request : Sansopha L, Department of Pathology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.
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* Department of Pathology, Faculty of Medicine, Chulalongkorn University
** Department of Ophthalmology, Faculty of Medicine, Chulalongkorn University
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โรคกระดาสีเด็กโรคพิษสุราใจ, Acanthamoeba ก่อให้เกิดการติดเชื้อที่รุนแรง จนถึงขั้นอาจเสียชีวิตได้ ในผู้ป่วยหญิงอายุ 65 ปี เศษตัวกระดาสีเด็กโรคพิษสุราใจ แล้วมีอาการคันแดง ปวดตา และตาสว่าง ละเอียด ผู้ป่วยได้รับการรักษาด้วยยาดับช่องตาและยาล้างตา แต่อาการไม่ดีขึ้น ปวดตาหาย ละเอียด ผู้ป่วยมีภาวะ light perception การศึกษาทางพฤติกรรมของการกระดาสีเด็กโรคพิษสุราใจว่ามี cyst และ trophozoite ของ Acanthamoeba การรายงานผู้ป่วยรายนี้มีข้อถกประเด็นเพื่อให้แพทย์ผู้ดูแลรักษาได้ นักเรียนโรค และแพทย์ผู้ป่วยที่มีอาการขึ้น evangelical การกระดาสีเด็กโรคพิษสุราใจ แล้วอาการไม่ดีขึ้น
Acanthamoeba keratitis has been recently described as an epidemic and is recognized in almost every part of the world. Evidence from several studies have suggested that soft contact lens wear as its great risk factor, although some studies have reported the development of Acanthamoeba keratitis in patient who have no apparent predisposing factor.\(^{(1,2)}\) Most of the report focusing on contact lens related Acanthamoeba keratitis, therefore ophthalmologists may hesitate to diagnose this disease in patient who does not wear contact lens.

**Case report**

A 65-year-old woman presented with redness, pain and decreased visual acuity of her left eye for 20 days. She gave a history of trauma with dust and presented with redness, watering and diffuse infiltrate exhibiting corneal opacity. She was treated as fungal infection with amphotericin B and fluconazole eyedrops every hour and 100 mg. Itraconazole. Later vancomycin eyedrops and amikin eyedrops were added, there was no clinical improvement. Her visual acuity was reduced to light projection. Corneal scrapings for potassium hydroxide (KOH), Gomori methenamine silver (GMS), Gram’s stain and culture were negative results. Her left eye was eviscerated owing to painful, progressively decreased visual acuity from light projection to light perception and uncontrollable infection.

The submitted left cornea measured 0.7 cm. in greatest dimension and revealed opacity. Histopathological examination of the cornea showed a large ulcer of anterior cornea with totally absence of epithelium and Bowman’s membrane. Whereas the anterior chamber reaction with hypopyon was noted (Figure 1). The corneal stroma was diffusely infiltrated with neutrophils and a number of organisms in which trophozoites and cysts of acanthamoeba were also revealed (Figure 2,3 ).

**Discussion**

Acanthamoeba keratitis in non-contact lens wearers has developed into a distinctive disease of the eye, although it is still an uncommon, ophthalmic problem.\(^{(1,3,12)}\) It is now established that Acanthamoeba can directly infect the cornea in various ways and with varying intensity. Generally, trauma with either
vegetative matter, stone, dust and contaminated contact lens solutions resulting in serious visual impairment or even a loss of the eye.

Acanthamoebas occur worldwide in water, dust and on plants and undergo life-cycle alterations between cysts and trophozoites. They are small, free-living amoebas which their trophozoites encyst in an unfavorable environment. The cysts are very resistant to dryness, cold and various antimicrobial agents. When the environment is favorable, the amoebas excyst within 3 days. Both pathogenic and nonpathogenic species of the amoebas are now recognized as micro-organisms commonly present, for instance, soil, water, dust, air filters, human and animal feces, tissues and organs of diseased hosts and cooling towers.

When trauma is severe enough to cause corneal abrasion, a more rapid process usually develops, with corneal ulcerations, increasing corneal infiltration and clouding, iritis and scleritis, severe pain, hypopyon, and marked loss of vision. Where no obvious trauma has occurred, the early corneal findings may be non-specific or suggestive of herpes simplex infection. In some patients the condition waxes and wanes and reappears before taking a rapidly progression into corneal abscess, characterized by unique ring-shape morphology of definite diagnostic significance.

A recent report indicates that elevated corneal epithelial lines are another clinical sign in acanthamoeba corneal infection.

In general, pathologic studies of involved cornea show destruction of the anterior cornea, with infiltration of acute inflammatory cells into the
superficial and middle layers of the corneal stroma. Usually, infiltrating amoebic organisms between the lamellae of the cornea are apparent. In size, a single amoeba is measured 15-20 μm in diameter. The organism exhibits an irregular polygonal cyst wall. Gomori methenamine silver stain and periodic acid-schiff stain are valuable for outlining the cyst wall.

Diagnosis is based on the demonstration of acanthamoebic cysts or trophozoites in corneal scraping by smear examination and/or culture.\(^{(9,12)}\)

Acanthamoeba infections are highly resistant to chemotherapeutic agents, especially in encysted stage. Several reports describe a combined therapy \(^{(1,7,13)}\) of 2 or 3 biocides such as polyhexamethylene biguanine and chlorhexidine digluconate, sometime with antibacterial antibiotics and/or surgical removal by deep lamellar keratectomy and conjunctival flap.\(^{(6)}\)

In this case, the patient presented with redness, pain and decreased in vision which were non-specific clinical features. Subsequently, the patient was treated for presumed bacterial and fungal keratitis. Finally, the patient's left eye was eviscerated owing to the failed treatment. The presence of corneal ulcer and the history of trauma pointed toward fungal etiology which lacked the clinical signs, such as excessive pain, a radial keratoneuritis and in a later phase a stromal ring infiltrate, at presentation and included unsatisfactory microbiological examination which was a cause for the underdiagnosis. In addition, there is a wide variability in virulence among the strains of acanthamoeba\(^{(6,11-13)}\) in different geographical areas, as well as differences in host immune responses\(^{(3)}\), which may contribute to the variability in their clinical presentation.

In this case, the disease was already advanced at its presentation; its pathognomonic clinical features were not seen. The disease progression was rapid and the visual outcome was usually poor. The ophthalmologists should have been aware, should have recognized and made proper management of the devastating corneal disease in non-contact lens wearers.

**References**


