Journal of Clinical & Experimental Ophthalmology

Vose et al., J Clin Exp Ophthalmol 2015, 6:4
DOI: 10.4172/2155-9570.1000456

Case Report Open Access

# Acanthamoeba Keratitis in an HIV Positive Daily Disposable Contact Lens Wearer

**Mark Vose**[1], **Wynne Ci Voon Chong**[2*], **Richard Bonshek**[1], **Malcolm Armstrong**[1], **Fiona Carley**[1] **and Andrew Tullo**[1]

[1]*Central Lancashire Teaching Hospital NHS Trust, Preston, United Kingdom*

[2]*University of Manchester Manchester Medical School, United Kingdom*

[*]**Corresponding author:** Wynne Ci Voon Chong, Medical student, University of Manchester Manchester Medical School, Preston, Lancashire, United Kingdom, Tel: +447762650122; E-mail: wynnechong@hotmail.com

**Received date:** May 25, 2015; **Accepted date:** July 29, 2015; **Published date:** Aug 01, 2015



**Abstract**

A 43 year old HIV positive myopic man presented with a linear epithelial lesion of his right cornea and a visual acuity of 6/6. A longstanding retinal detachment in the left eye had resulted in a vision of count fingers (CF). Over the next three months, the patient's visual acuity in his right eye dropped to CF. The case illustrates some typical difficulties involved in diagnosing Acanthamoeba keratitis and demonstrates that therapeutic deep lamellar keratoplasty may be useful as an initial surgical option when medical management fails to control infection.

**Keywords:** HIV positive; Acanthamoeba keratitis; Contact lens; Deep lamellar keratoplasty

## Introduction

*Acanthamoeba* is an ubiquitous protozoan existing both as a mobile trophozoite or cyst. Sub-clinical exposure is thought to occur as healthy individuals may harbour *Acanthamoeba* in the nose and throat [1]. There have been case reports of disseminated infection from *Acanthamoeba* in immunocompromised patients [2,3]. It is also known that there is a strong association between Acanthamoeba keratitis and contact lens use [4]. This case report of Acanthamoeba keratitis in a daily disposable contact lens wearer with coexistent Human Immunodeficiency Virus (HIV) infection illustrates the difficulties involved in making the correct diagnosis, establishing laboratory confirmation and managing the clinical consequences.

## Case report

A 43 year old myopic man presented with a linear epithelial lesion of his right cornea and a visual acuity of 6/6. He had been wearing daily disposable contact lenses for 2 years. The vision in his left eye was counting fingers only due to a long-standing spontaneous detachment/reattachment of the retina. The patient was known to have been HIV positive for at least 10 years and remained well on no antiretroviral treatment. The viral load was 40,000 copies per ml (High) and the CD4 count was within normal range at 450 cells/mm$^3$.

He was commenced on Chloramphenicol ointment with little effect. One week later, he returned and was treated for herpes simplex keratitis with secondary bacterial infection. Microbiological investigations including culture for bacteria, *Acanthamoeba* and virus were negative.

Over the next two months, the patient received a combination of Acyclovir ointment, Predsol 0.05% drops and Ofloxacin. His visual acuity dropped to 6/36 and the patient was referred to the corneal unit; within a week he had developed a ring ulcer. A clinical diagnosis of Acanthamoeba keratitis was made and a corneal biopsy and histology confirmed the presence of trophozoites, subsequently speciated as *A. polyphaga*.

Despite aggressive treatment with Chlorhexidine, Brolene and Polyhexamethylene biguanide (PHMB), the patient's vision continued to deteriorate (Count Fingers). The epithelial defect increased in size and a central abscess formed (Figure 1).

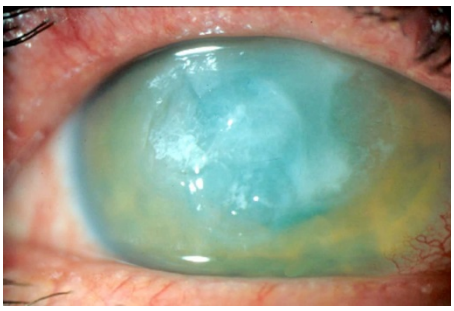

**Figure 1:** Central corneal abscess (post biopsy).

Oral Itraconazole 150 mg/day was commenced with little effect. One month later, the patient's vision had reduced to hand movements. A deep lamellar graft was performed with a view to minimizing the infection without entertaining the predictable risks of penetrating keratoplasty in an inflamed eye. No *Acanthamoeba* cysts or trophozoites, or any other micro-organisms were found on histological and microbiological examination of the host lamella. The patient remained on PHMB, Chloramphenicol and Maxidex minims for the next six months with no signs of active inflammation. He maintained a visual acuity of 6/60. However, there was gradual opacification of the lamellar graft with a drop in visual acuity (Figure 2).

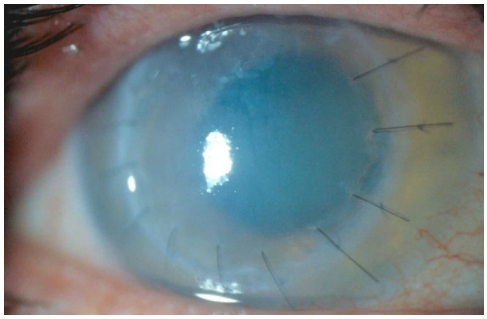

**Figure 2:** Failed lamellar graft.

Eight months after the onset of symptoms the patient underwent full thickness penetrating keratoplasty (PK), when he was noted to have developed an associated nuclear cataract and mydriasis. The final penetrating keratoplasty specimen was reported as free of cysts and trophozoites. Despite a clear corneal graft, vision was still reduced to 6/24 eight months after PK. Phacoemulsification cataract surgery with intraocular lens insertion has improved vision to 6/9 with spectacle correction (Figure 3).

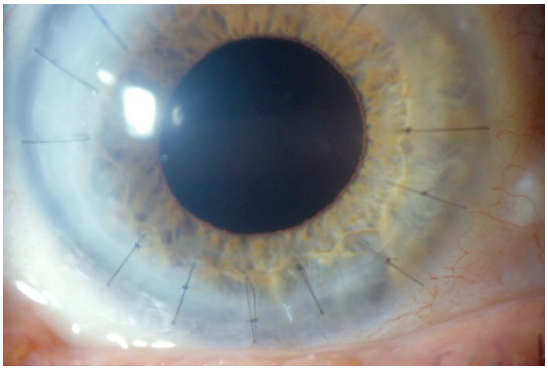

**Figure 3:** Full thickness PK with cataract surgery and intraocular lens.

## Discussion

The most established risk factor for Acanthamoeba keratitis is contact lens use. It is also associated with the use of contaminated home-made saline solution for storage and cleaning of contact lens [7]. The contaminated solution becomes a medium for the growth of microorganisms such as bacteria and yeast, which provides an ideal environment for the development of *Acanthamoeba*. The amoebae attach to the contact lens and can infect the corneal stroma through a small corneal abrasion [7].

This patient admitted to reusing his daily "disposable" contact lenses. Acanthamoeba keratitis has been described previously [4] in patients using such contact lenses. He claimed that he used saline for storage overnight and denied the use of tap water. He admits to wearing contact lenses whilst in the shower and bath. There was no history of eye trauma, exposure to contaminated soil or use of contact lens whilst engaging in water sport activities and hot tub use.

Poor hygiene practices and the inappropriate handling of contact lens increase the potential risk of dissemination from other areas of colonization. *Acanthamoeba* has been isolated from nasal swabs of healthy individuals [1]. The HIV status of this patient could have also contributed to the infection. *Acanthamoeba* is a known opportunistic organism in HIV-infected patients.10 There is also evidence that HIV positive individuals are more prone to paranasal sinus disease and lesions in the ear, nose and throat [8,9]. It is therefore possible to extrapolate that dissemination from the nasal sinus and passages might have played a role in the initial corneal infection.

It is worth noting that there was no history of opportunistic infection in our patient. It appears that HIV infection may be coincidental rather than influential on causation or clinical features. Nevertheless, there was a notable absence of severe pain in our patient, often described as out of proportion to clinical findings, despite normal corneal sensation and the absence of peri-neural infiltrates, pathognomonic for acanthamoebal infection [3]. A lack of typical symptoms in Acanthamoeba keratitis have been described in previous case reports as well.

The lack of severe pain in our patient could be attributed to a high pain threshold. His HIV status could have also altered his pain perception. Pain sensation arises from inflamed tissue driven by the immune system. Due to the pathophysiology of an HIV infection, compromised leucocyte function can subdue the process of inflammation. This may have contributed to the lack of pain in the patient's infected eye.

Our patient had very poor vision in his left eye due to a spontaneous detachment/ reattachment of the retina (count fingers). Three months after presentation, his acuities were HM right eye and count fingers left eye. He was 43 years old, self-employed and desperate for some form of visual improvement. The idea of performing a full thickness PK in an inflamed eye was not entertained, as the chances of graft failure would be too high [3]. The patient was to remain on treatment with Chlorhexidine, PHMB and Brolene for at least six months [3].

We obtained a retinal opinion from our professorial department with regard to improving the vision in the non-affected left eye. This was deemed to be not possible. It was decided that best way of achieving a short term visual improvement and establishing some control over the infection was to perform a lamellar graft. This took place 3 months after the patient's initial presentation.

The patient was pleased with the visual outcome from the lamellar graft (6/60) and remained on Chlorhexidine, PHMB and Brolene for the next six months. Topical steroids (Prednisolone 0.5% minims) were used throughout.

After six months on this treatment the lamellar graft opacified, but a quiet eye was achieved. The hosts' final PK specimen was reported as free of trophozoites and cysts. The patient then underwent a full thickness PK with a subsequent improvement in acuity to 6/24.

The limiting factors in terms of improving visual acuity were pupil mydriasis and the development of cataract, presumably from drop toxicity.

Eight months after the full thickness PK the graft remained quiet and so phaco- emulsification cataract surgery with intraocular lens implantation was performed, targeting low myopia. The patient's final best-corrected visual acuity was 6/9 and he was pleased with the final visual result. He maintains his self-employment status.

## Conclusion

In common with other cases, the diagnosis was delayed by misinterpretation of the dendriform lesion and an initial improvement on topical antibiotics, followed by worsening of the clinical picture [5]. It was not until the classic ring ulcer appeared that a firm clinical diagnosis was made. Laboratory confirmation was not achieved with standard microbiological techniques and a corneal biopsy was required for definitive diagnosis [6]. Apart from the absence of severe pain, our patient's eye behaved in much the same way as would be expected of an immunocompetent host. The case illustrates some typical difficulties involved in diagnosing Acanthamoeba keratitis and demonstrates that therapeutic deep lamellar keratoplasty may be useful as an initial surgical option when medical management is failing to control infection.

## References

1. Wang SS, Feldman HA (1967) Isolation of hartmannella species from human throats. N Engl J Med 277: 1174-1179.
2. Sison JP, Kemper CA, Loveless M, McShane D, Visvesvara GS, et al. (1995) Disseminated acanthamoeba infection in patients with AIDS: case reports and review. Clin Infect Dis 20: 1207-1216.
3. Bacon AS, Frazer DG, Dart JK, Matheson M, Ficker LA, et al. (1993) A review of 72 consecutive cases of Acanthamoeba keratitis, 1984-1992. Eye (Lond) 7 : 719-725.
4. Woodruff SA, Dart JK (1999) Acanthamoeba keratitis occurring with daily disposable contact lens wear. Br J Ophthalmol 83: 1088-1089.
5. Schaumberg DA, Snow KK, Dana MR (1998) The epidemic of Acanthamoeba keratitis: where do we stand? Cornea 17: 3-10.
6. Tabin G, Taylor H, Snibson G, Murchison A, Gushchin A, et al. (2001) Atypical presentation of Acanthamoeba keratitis. Cornea 20: 757-759.
7. Hiti K, Walochnik J, Haller-Schober EM, Faschinger C, Aspöck H (2002) Viability of Acanthamoeba after exposure to a multipurpose disinfecting contact lens solution and two hydrogen peroxide systems. Br J Ophthalmol 86: 144-146.
8. Grant A, von Schoenberg M, Grant HR, Miller RF (1993) Paranasal sinus disease in HIV antibody positive patients. Genitourin Med 69: 208-212.
9. Opoku-Buabeng J, Dompreh A2 (2012) Ear, nose and throat lesions in hiv/aids patients in komfo anokye teaching hospital, kumasi, ghana. J West Afr Coll Surg 2: 27-39.
10. Tandon R, Vajpayee RB, Gupta V, Vajpayee M, Satpathy G, et al. (2003) Polymicrobial keratitis in an HIV-positive patient. Indian J Ophthalmol 51: 87-88.