Acta Scientific Ophthalmology (ISSN: 2582-3191)

Volume 7 Issue 7 July 2024

Case Report

# Presentation of Unilateral Acanthamoeba Keratitis

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**Received:** September 13, 2023

**Published:** June 03, 2024



## Abstract

**Introduction:** Acanthamoeba keratitis poses a significant threat to vision, particularly among habitual contact lens wearers. Early diagnosis is challenging due to overlapping symptoms with other keratitis types, necessitating prompt intervention to mitigate complications.

**Case Presentation:** We report a 14-year-old male contact lens user presenting with diminished vision and mild discomfort in the right eye. Clinical examination revealed corneal opacity and thinning, consistent with acanthamoeba keratitis. Treatment with antiamoebic agents yielded notable improvement in visual acuity.

**Discussion:** The rapid recovery and absence of characteristic signs ruled out alternative keratitis etiologies, including herpes and bacterial infections. Differential considerations encompassed fungal keratitis but lacked corroborative findings.

**Conclusion:** This case underscores the importance of considering acanthamoeba keratitis in unilateral corneal lesions, particularly in contact lens users. Early recognition and targeted therapy are paramount for favorable outcomes in ocular infections.

**Keywords:** Ocular Infection; Acanthamoeba Keratitis; Contact Lens Wearer; Case Presentation

## Introduction

Acanthamoeba keratitis is a rare but potentially vision-threatening and devastating ocular infection, seen mostly in habitual contact lens wearers [1]. The Acanthamoeba genus consists of more than 20 species and more than eight of these species have been reported to cause bilateral keratitis in humans, especially in developing countries where the majority can easily afford and/or use contact lenses. Acanthamoeba keratitis may be misdiagnosed as viral, bacterial, or fungal keratitis, because the signs and symptoms of the infections at the early stage may be similar which makes it tasking, especially without laboratory investigation [2]. Acanthamoeba classical presentation reported in contact lens wearers includes unilateral tearing, photophobia, severe pain, and a decrease in visual acuity. Hence if not properly managed at this early stage, it will lead to a white stroma ring infiltrate, radial keratoneuritis, corneal ulceration, and anterior uveitis with or without hypopyon [3].

## Case Presentation

The patient is a 14-year-old male who was referred to the corneal clinic, Makkah Specialist Eye Hospital Bauchi, Nigeria with reduced vision in his right eye and a history of mild pain, 5 days duration with no remarkable abnormalities in his left eye. He is a known soft contact lens (CL) wearer (RE custom soft toric CL) for 3 years and has been wearing soft CL since the diagnosis of right eye (RE) moderate myopic astigmatism and left eye (LE) emmetropia. His current CLs were obtained 9 months back. He discontinued CL wear due to discomfort and blurred vision on the RE. He had a history of bathing with CL on. He does the daily cleaning and soaking of his CLs in Refresh Multipurpose Solution (Optika Co. Ltd, Korea).

On examination, his uncorrected visual acuity (VA) was 6/60, N14 and 6/6, N5 in the right and left eye respectively, with pin-hole (PH) acuity of 6/36 in the RE.

Slit lamp examination revealed no abnormalities in the anterior chamber, iris, lens, vitreous, and fundus in both eyes (BE). However, there was a RE temporal paracentral corneal opacity measuring 1.5 X 1.5 mm with some surrounding mid-stromal haze which is similar to "dirty epithelium" and pseudodendritiformic epitheliopathy seen in an epithelial herpetic keratitis (dendritic or geographic). No keratic precipitates were observed (no uveitis) but there was corneal flattening with Chameleon-like epithelial changes and an inverse dome-shaped appearance within the stroma at the opacified area (with no round spot-like widenings at the endings of the epithelial erosions seen in herpetic epithelial keratitis) which led to induced irregular astigmatism. His RE was 365µm at its thinnest point with K values of 44.25 @ $105^0$/55.75 @ $17^0$. This led to 10.45 diopters of astigmatism. His LE was unremarkable on examination, and topographic imaging demonstrated K values of 45.15 @ $90^0$/45.15 @ $180^0$ with a thickness of 529µm. Slit lamp corneal imaging clearly and distinctively revealed positive for double-walled cysts consistent with acanthamoeba keratitis (bacterial or mycotic stromal infiltrates are thicker and typically mono-focal).

Chlorhexidine 0.02% and propamidine isethionate 1 mg/ml, one drop hourly while awake (6:00 – 24:00), tobramycin ointment 5x daily and topical prednisolone one drop twice daily were prescribed (RE) for the first two days (the visual acuity had improve 6/48) and then Chlorhexidine 0.02% and propamidine isethionate 1 mg/ml was reduced to every 2h and tobramycin which is reduced to 3x a day for another seven days. On follow-up, a week later, epithelial scraping samples were obtained for polymerase chain reaction (PCR) testing, which eventually returned negative. Gradual improvement was noted, and two weeks later unaided visual acuity improved to 6/24, and aided visual acuity was 6/6 in his RE.

## Discussion

The patient is a 14-year-old male with a history of contact lens use who presented with reduced VA in the right eye that was associated with pain. Examination revealed a central opacity and corneal thinning in the affected eye and additional workup revealed double-walled cysts on imaging, consistent with acanthamoeba keratitis [4]. With anti-amoebic treatment, the stromal loss and haze resolved and the visual acuity improved.

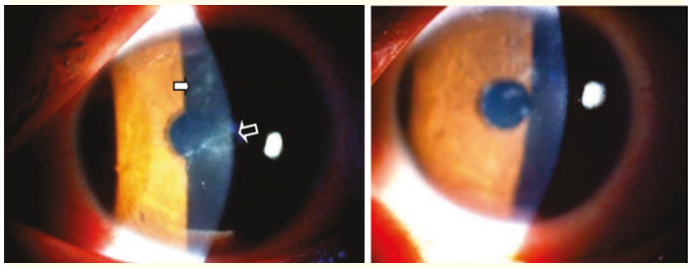

**Figure 1:** Before treatment, unilateral pseudodendrites and radial keratoneuritis were found. After 1 month of treatment, a mild corneal nebula was formed.

The patient had unilateral acanthamoeba keratitis with no prior history of herpetic keratitis in either eye or dendritic lesion, no keratic precipitates, no inflammation noted on examination, and a rapid recovery time [5]. These findings made HSV Keratitis unlikely [6]. Bacterial keratitis was considered but a lack of discharge, trauma, anterior chamber reactions, or conjunctival injection made this less likely [7]. Other organisms known to cause keratitis were also considered such as fungi, but a lack of characteristic signs (epithelial defect, satellite lesions, anterior chamber reaction, feathery borders, purulent secretion, or an immunocompromised state) also made this diagnosis less likely [8].

## Conclusion

A unique case of unilateral keratitis presented with signs and symptoms suggestive of unilateral acanthamoeba keratitis. This case report provides additional information on the possible occurrence of unilateral acanthamoeba keratitis and differential diagnosis in patients with similar presenting corneal lesions.

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