

Our Patient's Eyes are Red: Is it a Contact Lens Related Infection? (Contact Lens Related Microbial Keratitis)

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Introduction

Treatment of corneal infections needs to be aggressive to achieve control of infection and also associated ocular inflammation.

It requires

- Objective identification of the microorganism responsible for the infection
- Use of appropriate anti-microbial in adequate dose and frequency

Microbial keratitis is associated with contact lens wear. Bacterial binding to the contact lens material is a precursor to the development of Microbial Keratitis. It is influenced by properties of the material and the bacteria. In order for bacteria to infiltrate the cornea there must be some degree of corneal damage, usually caused by trauma or hypoxia.¹

Descriptive Case

A 23-year-old gentleman was referred

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to our Ocular Inflammation Specialist at the Out Patient Services at Taparia Institute of Ophthalmology, Bombay Hospital, Mumbai with complaints of Redness, Pain, Watering for 4 days. There was no history of trauma. There was a history of Contact lens wear. The patient worked at a departmental store and would have his weekly off on Thursday and would use a coloured cosmetic contact lens on every Thursday. He regularly followed the cleaning regimen and cleaned his lenses prior to use with cleaning solution. He had 2 pairs of Contact Lens. On the week prior to presentation, he did not clean his contact lens. He used Contact lens Pair No. 1; was uncomfortable in left eye after 3 hours of use. He then used Contact lens Pair No. 2. He was symptomatic since the next day. On presentation with a diagnosis of Microbial Keratitis he was on empirical treatment.

Left eye

- 5 % Natamycin eye drops hourly.
- 0.3% Moxifloxacin eye drops hourly
- 1% Atropine eye drops thrice a day

His vision was finger counting 4 feet in the left eye.

Investigations included a full Microbiology work up including smear from Corneal scrapings for Gram's Stain, KOH Mount, Culture and Antibiotic Sensitivity. Along with that, both the

Contact Lenses, their cases and their Solutions were sent for Culture and Antibiotic Sensitivity. Corneal Scraping (the result of which was immediately available showed Gram Negative Bacilli (Fig 2); which allowed us to start the patient on appropriate anti-microbial therapy including:

Left Eye

- Ceftazidime eye drops ½ hourly
- Fortified Tobramycin eye drops ½ hourly
- 2% Homatropine eye drops twice a day

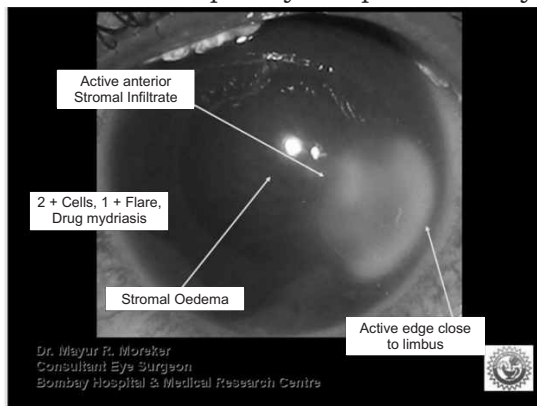


Fig 1: Clinical Picture of a 23-year-old gentleman with Contact lens related Microbial Keratitis with an anterior stromal corneal infiltrate with stromal oedema and active edge close to the limbus.



Fig 2: Slide showing Gram Negative Bacilli in Gram's Stain from Corneal Scraping of a 23-year-old gentleman with Contact lens related Microbial Keratitis.

The corneal infiltrate showed

resolution by Day 4.

Meanwhile the Microbiology work up from Corneal Scrapings was available.

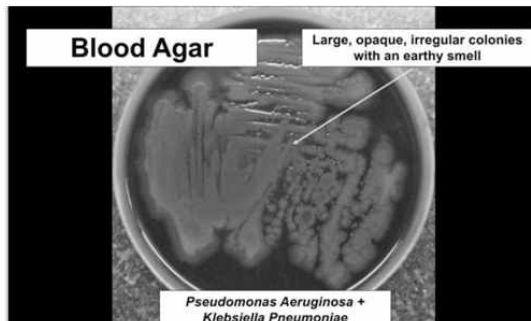


Fig 3: Blood Agar Plate showing Large Opaque, irregular colonies with an earthy smell - Identified as a combination of Pseudomonas Aeruginosa + Klebsiella Pneumoniae

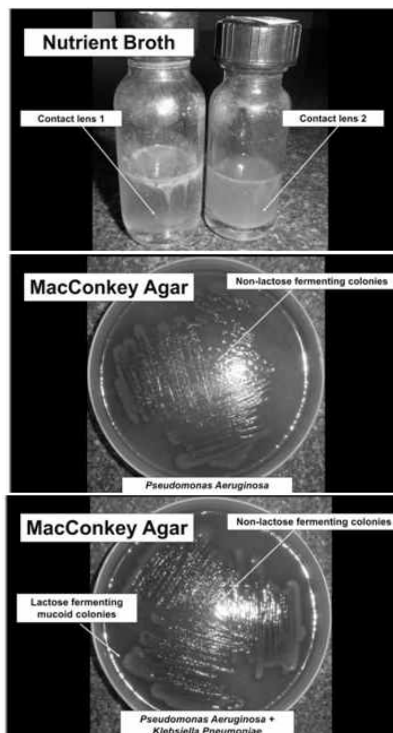


Fig 4,5,6: Nutrient Broth showing a turbidity in both cultures of both Contact Lens 1 and 2 with MacConkey Agar growing Pseudomonas Aeruginosa in Contact Lens 1 and a combination of Pseudomonas Aeruginosa + Klebsiella Pneumoniae in Contact Lens 2.

Once the corneal infiltrate showed healing edges a topical steroid was judiciously added to the treatment regimen; Fluorometholone eye drops 4 times a day. Meanwhile the Microbiology work up from Contact Lens and Solutions was available (Figs. 4,5,6).

The Cultures from the case and solution of the Contact Lenses showed no growth.

Sub-cultures from the above cultures showed Gram Negative Bacilli (Fig 7) with a favourable Antibiotic Sensitivity (Fig 8).

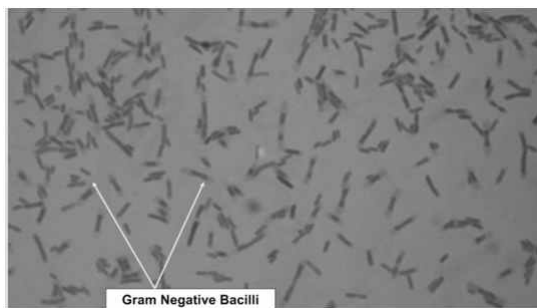


Fig 7: Sub-Cultures from the above lens cultures showing Gram Negative Bacilli

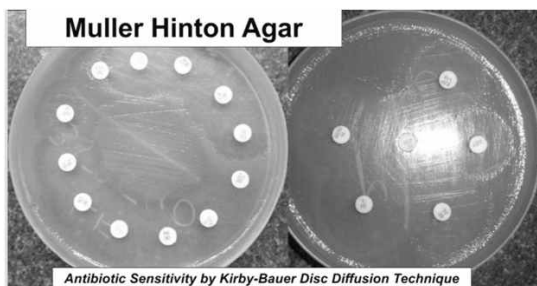


Fig 8: Antibiotic Sensitivity by disc Diffusion Technique

By Day 30 of treatment, the microbial keratitis had resolved with a vision of 20/20; although with difficulty owing to a Corneal Scar.

Acanthamoeba is described in literature as a cause of Contact Lens

related Infections.^{2,3}

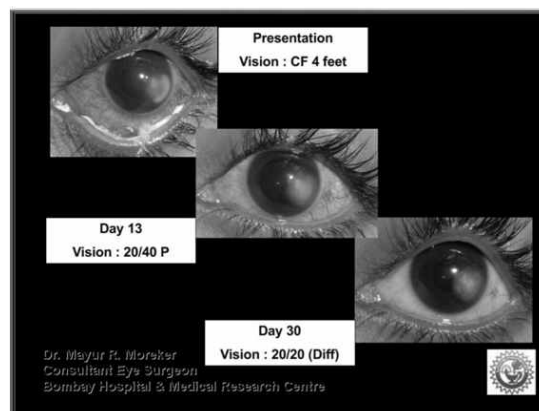


Fig 9: Clinical Pictures of a 23-year-old gentleman with Contact lens related Microbial Keratitis - Pictures in sequence in the one month of treatment

In India, the aetiological organism is different. In a study, corneal scrapes and CL-care products were collected and were subjected to microbiological evaluation. Gram-negative bacilli alone were recovered from the corneal scrapes of all (100%) patients, all (100%) CL storage case wells and also from CL-care solution of 17.14% of the 35 patients.⁴

Behaviours Among Contact Lens Wearers

Most of the 45 million contact lens wearers in the United States practice at least some behaviours that put them at risk for serious eye infections. Surveys of contact lens wearers and eye care providers were conducted in 2018. One third of lens wearers recalled never hearing any lens care recommendations. However most eye care providers reported sharing recommendations always or most of the time. Eye care providers play an important role in the health of their contact lens-wearing patients and can

share health communication messages with their patients to help educate them about healthy wear and care habits.⁵

Take Home Message

1. Red Eyes in patients especially after contact lens wear should never be ignored.
2. Appropriate referral to an Ophthalmologist, Cornea Specialist with a Microbiology back up is essential.
3. The microbiologist can aid an ophthalmologist change empirical treatment based on only clinical suspicion to a more appropriate "targeted" treatment based on urgent microbiology sampling of the corneal scraping / corneal button.
4. Judicious use of topical steroids should be attempted only after onset of resolution of Microbial Keratitis with a microbiology back up showing sensitive organisms.
5. Previous studies have identified health behaviours that can reduce the risk for contact lens-associated eye infections (e.g., not sleeping in lenses, not exposing lenses to water, and using fresh disinfecting solution to store lenses).^{6,7} Although eye care providers report mentioning these

behaviours to their patients frequently, patients report hearing the messages less frequently, suggesting that these messages need reinforcement.

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Dual antiplatelets after minor stroke and TIA

The Clopidogrel in High-Risk Patients with Acute Nondisabling Cerebrovascular Events (CHANCE) trial was devised to see if strokes in the three month period after a relatively minor ischaemic event could be reduced by adding clopidogrel to aspirin. The trial was stopped early for benefit after recruiting 4881 patients across 269 sites. The chance of benefit, though, was very small for any individual: a reduction in the absolute risk of major brain ischaemia from 6.5% (aspirin only) to 5% with added clopidogrel. Most of this happened in the first week. And there was a downside: major haemorrhage occurred in 0.9% of the combination group compared with 0.4% with aspirin alone.

The BMJ, May 2018, 283