

Hazardous contact: a case of visual loss following *Pseudomonas* keratitis from novelty contact lens wear

Yi-Chiao Li, Alina Zeldovich, Brian J Chua, Neil J Rowe, Frank J Martin and Kathleen A McClellan

Keratitis remains a significant risk of wearing contact lenses, despite advances over the past 10 years such as disposable and silicone hydrogel lenses. The incidence of severe keratitis from extended hydrogel lens wear was estimated at 96.4 (95% CI, 37.5–254.2) per 10 000 lens wearers in a British study.¹ Even among users of daily disposable hydrogel lenses, the incidence of severe keratitis was 4.9 (95% CI, 2.5–9.6) per 10 000 lens wearers.

Contact lens keratitis is precipitated by microtrauma from lens wear, which allows pathogens (*Pseudomonas aeruginosa*, *Acanthamoeba* spp., *Streptococcus* spp., *Staphylococcus* spp., *Serratia* spp., *Fusarium* spp., *Aspergillus* spp., *Curvularia* spp., Herpes simplex virus, and others) to invade the damaged cornea. *Pseudomonas aeruginosa* is one of the most virulent and common pathogenic organisms. It possesses virulence factors that facilitate survival and growth in the human cornea, including bacterial cell surface adherence factors and secreted cytotoxins that destroy corneal epithelium.² The host immune response further damages the cornea,³ leading to scarring and loss of visual acuity and function. A *Pseudomonas* corneal ulcer is usually located centrally, and infection develops and progresses rapidly. Among people with contact lens keratitis, *Pseudomonas* accounts for the largest mean diameter of corneal ulcers, the highest mean number of days in hospital, the greatest mean number of outpatient visits, and the poorest visual acuity outcome.⁴

Poor contact lens hygiene is a well known risk factor for keratitis.^{5,6} However, the importance of contact lens hygiene is still poorly appreciated by the community. In a survey of contact lens keratitis in New South Wales, 40% of keratitis patients reported poor hygiene.⁷ In a study of contact lens users in Auckland, 81% of cosmetic contact lens cases were contaminated with various pathogens.⁸

Colour and novelty contact lenses are becoming increasingly popular, and can be purchased from outlets such as beauty shops, markets, surf shops and auction websites. This leads to unsafe practices such as wearing lenses overnight, sharing of lenses, and poor lens hygiene. Contact lens care and hygiene play an important part in the prevention of keratitis, and education regarding contact lens hygiene remains an important task for eye care professionals.

Medical practitioners and their patients need to be aware of the hazards associated with contact lens wear. Any contact lens wearer

Clinical record

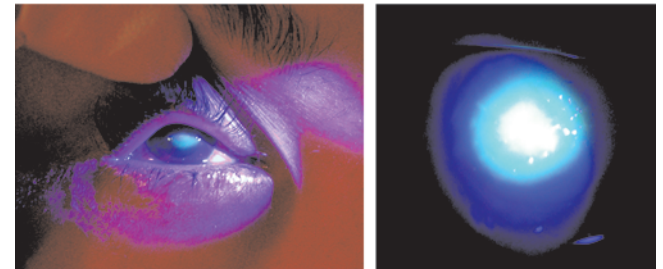
A 13-year-old girl with no significant medical history was referred to our tertiary hospital for the management of a left corneal abscess. She had borrowed a girlfriend's coloured plano contact lenses over the preceding weekend.

On Monday, the patient presented to her general practitioner with a red and painful left eye and was subsequently assessed by a community ophthalmologist. Topical chloramphenicol was commenced, but after review 24 hours later the patient was referred to us with deteriorating visual acuity, increasing pain, and purulent ocular discharge.

On admission, the patient's left visual acuity was light perception. A large central necrotic corneal abscess and hypopyon were found on slit-lamp examination. Corneal scrapings were taken and the contact lens case submitted for microscopy, Gram stain and bacterial, fungal and viral culture. Intensive (every 15 minutes) fortified gentamicin and cephalothin were commenced in addition to oral ciprofloxacin. Gentamicin- and tobramycin-sensitive *Pseudomonas aeruginosa* was isolated 48 hours after admission, and the therapy was changed to gentamicin and tobramycin.

The patient's symptoms, hypopyon, and corneal infiltrate size abated, and the residual ulcer after scraping re-epithelialised. She was discharged after 3 weeks with marked corneal thinning and dense residual scarring (Figure), limiting visual acuity to count fingers at 30 cm.

Fluorescein staining of a central corneal scar after *Pseudomonas* keratitis



A: View with the naked eye

B: Slit-lamp view

presenting with a red eye not relieved by lens removal may have potentially serious keratitis. The patient should be referred to an ophthalmologist for urgent review and prompt treatment, to prevent serious visual loss.

Competing interests

None identified.

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Lessons from practice

- Contact lens keratitis is a potentially vision-destroying infection.
- *Pseudomonas* keratitis progresses rapidly and often results in significant scarring and visual loss.
- Lens wearers presenting with a red eye should be referred early for specialist care.
- Contact lens wearers need to be properly educated regarding contact lens handling and hygiene and made aware of the serious risk of keratitis. ♦

LESSONS FROM PRACTICE

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