

# Bilateral eye pain after contact lens wear: an inadvertent case of chemical eye injury

## Introduction

There are around 4.1 million contact lens wearers in the UK [1]. While the vast majority of them do not experience any complications, over the past years there have been cases of acanthamoeba keratitis and multiple retained contact lenses widely reported in the national news. We hereby present an unusual case of inadvertent self-inflicted chemical eye injury in a contact lens wearer.

## Case report

A 23-year-old male medical student, who was a monthly contact lens wearer, was referred by the hospital emergency department to the eye casualty unit with excruciating pain in both eyes. He reported that earlier that day he soaked his contact lenses in commercially available contact lens cleansing solution for 30 minutes before putting them in both eyes, as per his usual practice. Despite noticing immediate redness and burning sensation in his eyes, he kept the contact lenses in for an hour, until his vision became cloudy – patient reported thinking there was 'smoke in the house'. He subsequently attended the hospital emergency department, where he was immediately given ocular irrigation with two litres of normal saline, after which a pH of seven was recorded.

At the eye casualty unit, his LogMAR visual acuities (VA) were 0.80 unaided, improving to 0.60 with pinhole in the right eye and 1.00 unaided, improving to 0.50 with pinhole in the left eye. Central corneal epithelial defects measuring 4.0mm x 3.5mm and 5.0mm x 4.5mm in the right and left eyes were noted (Figure 1). There were no limbal blanching, anterior chamber activities or sub-tarsal particulates otherwise. He was prescribed guttae dexamethasone 0.1% six times a day, guttae cyclopentolate 1% tid, guttae sodium hyaluronate 0.1% every half hour, chloramphenicol ointment qid, oral doxycycline 100mg od and oral vitamin C 1g bd. The patient made an uneventful recovery over the following days and on day five, his VA improved to 0.00 and 0.20 in the right and left eyes with glasses, with no detectable corneal epithelial defects. He was continued on a reducing regime of guttae dexamethasone 0.1% and discharged.

The bottle of cleaning solution was sent to the hospital biochemistry department, where its pH was measured at 6.2. The patient was given the cleaning solution at a high street optometry practice, in the mistaken belief that it was a contact lens cleaning solution, but it transpired that the spray bottle in fact contained 'lens' (spectacles) cleaning solution. Its ingredients, which was labelled in small fonts on the spray bottle, included anionic surfactant (<5%) and methylchloroisothiazolinone (0.015%).

## Discussion

When managing chemical eye injuries, initial steps include checking the ocular surface pH and irrigating the eye(s) with normal saline or, if unavailable, clean water, until pH becomes neutral (7.0) [2]. It is important to evert the eyelid(s) when irrigating, to ensure that no sub-tarsal particulates remain. As long as the corneal limbal stem cells remain functional, and the ocular surface environment is optimised by copious lubrication, topical anti-inflammatory agents and antibiotic cover, defect re-epithelialisation should occur rapidly in majority of cases, with subjective and objective improvement in a matter of days. Finally, infective causes, including acanthamoeba keratitis and pseudomonas keratitis, must always be considered as a differential diagnosis for painful red eyes in contact lens wearers, as it can rapidly lead to permanent vision loss if not treated promptly.

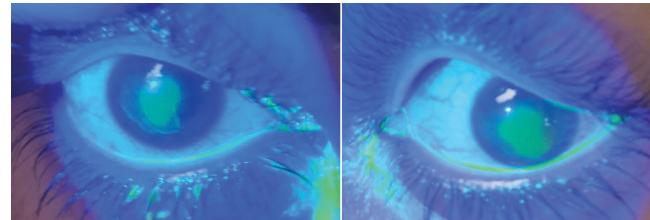


Figure 1: Bilateral central corneal epithelial defects, measuring 4.0mm x 3.5mm and 5.0mm x 4.5mm in the right and left eyes, are highlighted by the fluorescein eyedrops.

As this case demonstrates, patient education in contact lens care is of paramount importance to minimise the risk of infectious keratitis or other complications. This is no simple task, however, as a 2007 study by Donshik et al. found that while 99.1% of their participants reported that they received contact lens care instruction, a range of non-compliant behaviours were reported, including using saliva to wet contact lenses in 27.1% of them [3]. More recently in 2021, a Spanish survey of 266 university students who wore contact lenses showed that 64.9% of respondents were not informed about the potential risks of contact lens wear, 39.1% replaced their contact lenses within the recommended schedule and, alarmingly, 42.1% frequently exposed their contact lenses to water [4].

Potential causes of complications include improper cleaning, disinfection, reuse of solutions, inadequate or absent handwashing, lack of contact lens case replacement, and contact lens overwear past its stated duration [5]. Eyecare professionals such as optometrists and ophthalmologists should therefore check patient understanding in these areas, whenever opportunities arise.

## References

1. Kerr C, Chauhan K. The ACLM contact lens year book 2020: Association of Contact Lens Manufacturers. 2020 <https://bcla.org.uk/Public/Public/Member-Resources/ACLM-Online.aspx>
2. Corbett M, Bizrah M. Chemical Injuries of the Ocular Surface. *Focus - The Royal College of Ophthalmologists Quarterly Magazine*. 2018 [www.rcophth.ac.uk/wp-content/uploads/2021/01/College-News-FOCUS\\_April2018.pdf](http://www.rcophth.ac.uk/wp-content/uploads/2021/01/College-News-FOCUS_April2018.pdf)
3. Donshik PC, Ehlers WH, Anderson LD, Sacheck JK. Strategies to better engage, educate, and empower patient compliance and safe lens wear: compliance: what we know, what we do not know, and what we need to know. *Eye Contact Lens* 2007;33(6 Pt 2):430-3.
4. García-Ayuso D, Moya-Rodríguez E, Valiente-Soriano FJ, et al. University students fail to comply with contact lens care. *Contact Lens Anterior Eye* 2022;45(2):101411.
5. Lievens CW, Cilimberg KC, Moore A. Contact lens care tips for patients: an optometrist's perspective. *Clin Optom* 2017;9:113-21.

[All links last accessed March 2022].

## AUTHORS

### Derek K-H Ho,

ST7 Registrar, University Hospital of Wales, Cardiff and Vale University Health Board, Wales, UK.

### Vinod Kumar,

Consultant Ophthalmologist, Hospital of Wales, Cardiff and Vale University Health Board, Wales, UK.

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