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Corneal perforation requiring corneal grafting - A rare complication of  
Gonococcal Eye Infection

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Key Messages:

1. Early recognition and treatment of *Neisseria gonorrhoea* eye infection, wherever it may present, is paramount to prevent sight-threatening complications.
2. A sexual history is important in the management of patients with purulent eye discharge as patients do not readily associate genital and eye symptoms.
3. The optimal antimicrobial management of this condition is unknown and there is presently no UK guideline for its management.

### Summary (abstract)

We present a case of severe gonococcal conjunctivitis associated with corneal perforation of the right eye in a 25 year-old homosexual man. Inpatient management and corneal grafting were required. We demonstrate that GC should be considered in the presence of purulent conjunctival discharge with a white patch on the cornea or reduced vision. Regardless of whether a patient has genital symptoms, they should be referred urgently to an ophthalmologist to ensure adequate treatment of this rare but sight threatening complication.

### Introduction

The adult conjunctiva is susceptible to infection by *Neisseria gonorrhoea* (GC) by both direct and indirect contact. Once infection is established the bacteria can quickly spread to the cornea leading to keratitis, ulceration, descemetocoele formation and ultimately perforation. The rapid identification and treatment of the infection is paramount as these complications can occur within 24 hours of infection(1).

### Case Report

A 25 year old man initially presented to the ophthalmologists via the emergency department. He reported three days of irritation and discharge from the right eye attributed to a chemical injury. Swabs were taken and he was treated with dexamethasone, chloramphenicol, ascorbic acid and cyclopentolate eye drops.

7 days later the eye had become increasingly painful with intense conjunctival injection and copious purulent discharge (Image 1A). A corneal abscess had developed under the upper lid together with corneal melt and associated perforation (Image 1B). Unaided visual acuity was right eye 6/36 and left 6/4. Culture results from the initial visit were found to be positive for GC, which was resistant to ciprofloxacin and nalidixic acid. He was admitted by the ophthalmologists for intensive topical antibiotics.

The patient was referred to the genito-urinary (GU) service a full GU sexual history and screening. The male was a sexually active homosexual. He reported a urethral discharge 4 weeks prior to his eye symptoms, which had resolved spontaneously. He was offered and accepted a full GU screen. This initially revealed urethral GC and a positive HIV point-of-care test.

Subsequent results confirmed HIV-1 infection, urethral GC and Chlamydia.

The patient received initial treatment with ceftriaxone 250mg IM and azithromycin 1g PO. IV ceftriaxone was continued for 7 days together with topical chloramphenicol and gentamicin hourly day and night; dexamethasone and cyclopentolate eye drops. On day 7 of admission, once the eye was quieter, he underwent tectonic corneal grafting of the perforated area of cornea (Image 1C). A kidney-shaped lamellar graft was overlaid on the perforation and area of melt just inside the superior limbus.

During close outpatient follow-up his vision in the affected eye improved to 6/18 unaided (6/5 pinhole) (Image 1D). He was found to have a CD4 count of 180 (22%).

## Discussion

The presentation of gonococcal eye infection can have a similar initial presentation to the common infective forms of conjunctivitis. However conjunctival swabs are not routinely taken, so the diagnosis of GC can initially be missed. In this patient a swab was taken because the purulent discharge was inconsistent with the history of chemical injury. Sexual history taking is particularly important to identify patients most at risk of gonococcal eye infection.

GC infection of the eye has been reported both with and without concomitant anogenital infection(2, 3). Patients may not readily associate their eye and genital symptoms. In this case in particular there was a 4-week delay between the onset of genital and eye symptoms. The importance of considering the diagnosis is therefore paramount.

The British Association of Sexual Health and HIV (BASHH) do not have a recommendation for the treatment of GC eye in their current guidelines(4). For genital infection, World Health Organisation (WHO) 2003 guidelines recommend ceftriaxone 125mg IM stat(5) whilst the American Centers for Disease Control (CDC) advise a 1g dosage(6). The GC isolated in this case had confirmed sensitivity to third generation cephalosporins, namely cefixime and ceftriaxone. For eye infections, topical antibiotics achieve much higher concentrations in the infected tissues than systemic treatments. Four times a day treatments are usually sufficient for conjunctivitis, but for corneal involvement, dual topical therapy hourly throughout the day and night is required(1). In this case, in view of the breach of the cornea, systemic treatment more akin to that for disseminated GC was employed.

Case reports of GC eye infection with associated corneal perforation have been previously described in the ophthalmology literature but not that of GU medicine. This case highlights both the potential severe complications of this infection, which should be treated immediately and followed up closely by ophthalmologists, and the shortcomings of current guidelines for its management.

#### Legend for Figure

Anterior segment photographs of a patient with gonococcal keratitis: (A) on admission, 10 days after the onset of symptoms, there was copious pus and a superior corneal perforation; (B) after 2 days of systemic and intensive topical antibiotics, the infection began to settle, but necrotic stroma remained around the perforation. Tectonic corneal grafting was performed at 1 week. (C) One week postoperatively the perforation was sealed. (D) Ten months later the eye was white and quiet, sutures were removed and he achieved an unaided visual acuity of 6/18.

#### Authors Roles

All authors contributed to the preparation of the manuscript with CT as the main contributor and corresponding author. MC drafted the detailed ophthalmic management and figure legend.

CT = Craig Tipple

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