

## Corneal ulcers in general practice

### CASE

A 31-year-old presents to their GP complaining of an uncomfortable, red left eye with mild blurring of vision and significant lacrimation. Examination after instillation of a drop of local anaesthetic and fluorescein reveals a large area of uptake.

### HISTORY

A primary care physician should enquire about onset, pain, progression, and risk factors, as follows.

### Onset

Acute onset often follows ocular surface trauma. Repeated episodes of ocular discomfort and lacrimation on waking in the morning are pathognomonic of recurrent corneal erosion syndrome. Chronic mild or moderate ocular discomfort that worsens as the day progresses or during certain tasks, for example, reading or computer work, is typical of dry eyes or blepharitis.

### Pain

It may be useful to ask the patient to score any pain on a scale of 0–10. A high score is more likely to be associated with microbial keratitis or a mechanical abrasion.

### Progression

Spontaneous and rapid resolution of pain, typically within 24 hours, is common in

mechanical abrasion, whereas untreated microbial keratitis becomes worse with the passage of time.

### Risk factors

The physician should always ask if the patient wears contact lenses as this is a major risk factor for microbial keratitis. They should have a very low suspicion of microbial keratitis in any contact lens wearer presenting with a red eye. Patients with known atopy and 'cold sores' are at higher risk of developing herpes simplex keratitis. Grinding, hammering, and chiselling are associated with corneal foreign bodies. A previous corneal abrasion or known corneal dystrophy predisposes to recurrent corneal erosion syndrome. Systemic collagen vascular diseases such as rheumatoid arthritis can be associated with non-infective corneal ulcers and dry eyes. Patients with a corneal graft have a lifelong risk of graft-related complications.

### EXAMINATION

The physician should begin by instilling a drop of local anaesthetic, if available, in patients reporting a high pain score. This will relieve their blepharospasm and make the examination much easier.

A Snellen chart should be used to assess the visual acuity. A significant, new reduction in vision, especially when compared with the fellow eye, is a red-flag sign.

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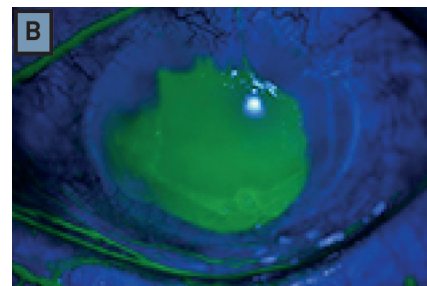
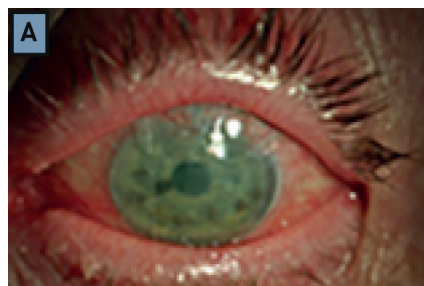
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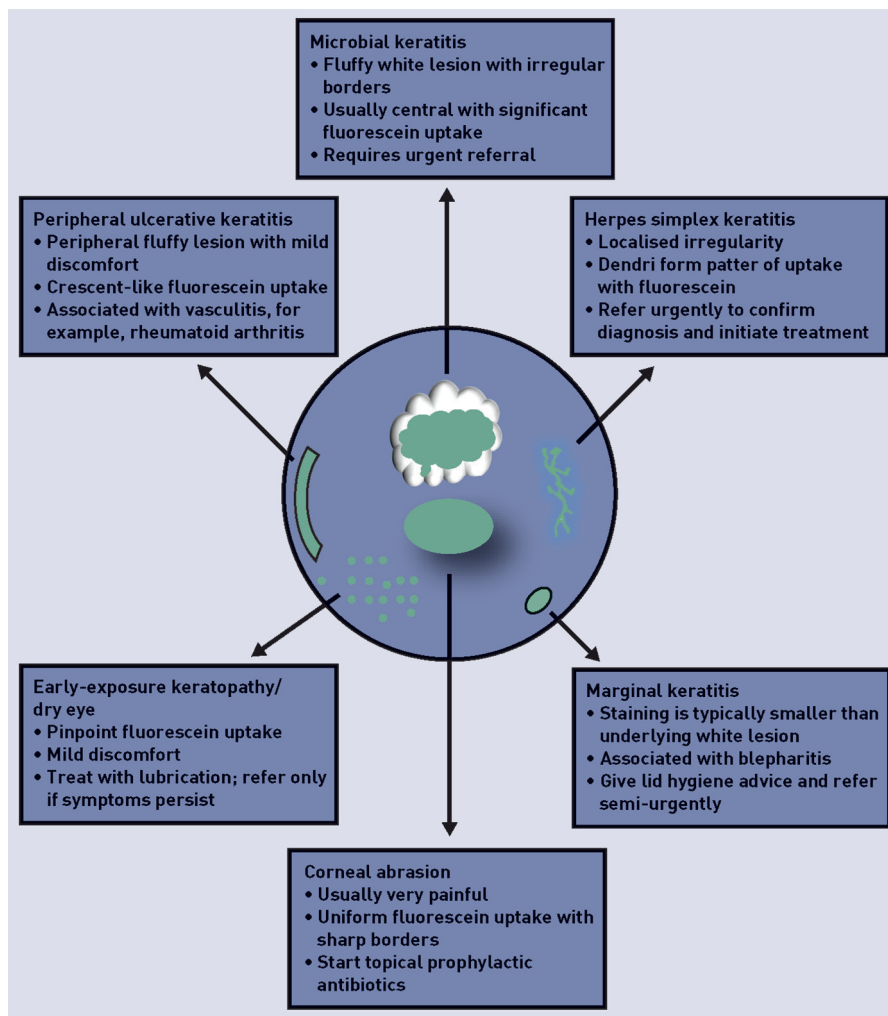
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**Figure 1. Large corneal abrasion without (A) and with (B) fluorescein dye. Note how the large abrasion is almost invisible without fluorescein.**



**Figure 2. Characteristic features and management of corneal ulcers according to morphology and location.**

The eyelids should be examined for any obvious inversion (entropion) or eversion (ectropion). Also, any obvious facial droop (seventh nerve palsy), and associated failure to fully close eyelids (lagophthalmos), should be noted. Entropion causes abrasion of the cornea whereas ectropion and lagophthalmos lead to dry eyes and exposure keratopathy.

The surface of the eye should be examined using the direct ophthalmoscope as an illuminating magnifier. The physician should look for any obvious corneal haze, foreign body, or irregular fluffy white lesion. The latter represents infiltration, which can be infective or inflammatory.

The physician should stain the cornea with fluorescein dye and look for a yellow-green area of uptake using the blue light on the ophthalmoscope (Figure 1). Use the smallest amount of fluorescein possible. A full drop of fluorescein 1% is too much and will flood the eye. This will not fluoresce until the tears dilute it, therefore, an area of epithelial injury may be missed. Multiple

pinpoint uptakes, called punctate epithelial erosions, suggest dry eye or exposure. A single larger area of staining can either be a corneal abrasion or an ulcer. Corneal abrasions have sharp, well-defined borders (Figure 2). Dendriform staining indicates herpetic disease.

Other features, such as obvious eczema, rosacea, cold sores, and joint deformities, should be noted.

## MANAGEMENT

Suspected microbial keratitis warrants urgent referral by phone. This is particularly likely to be the case in a patient with contact lens wear. Microbial keratitis progresses rapidly and requires urgent initiation of appropriate antimicrobial treatment to limit severe visual disabilities. It should be remembered that most of these cases require a corneal scrape, so starting antibiotics should be avoided unless the patient cannot be seen urgently by an ophthalmologist. Dendriform lesions also need urgent referral to confirm the diagnosis and start treatment. However, if urgent review is not possible, topical antiviral ointments such as aciclovir 3% five times a day for 10 days can be initiated.

Smaller peripheral corneal ulcers in a non-contact-lens wearer can be referred semi-urgently. Corneal abrasions can be managed with topical prophylactic antibiotics (chloramphenicol 1%). Superficial corneal foreign bodies can be swept away easily with a cotton bud applicator after instillation of topical anaesthetic. Dry eye and exposure keratopathy may benefit from a trial of lubrication and hot bathing advice, followed by referral if required. Chemical injury to the eye is an emergency and warrants immediate irrigation by the primary care physician followed by same-day referral.

## Consent

The patient provided consent for the publication of this article and its images.

## Provenance

Freely submitted; externally peer reviewed.

## Competing interests

The authors have declared no competing interests.

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## FURTHER READING

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