

Acute red eyes with watery discharge

NATHAN WALKER BAppScOptom(Hons), MB BS(Hons)

STEPHEN O'HAGAN MB BS, FRANZCO

There are many causes of acute red eye. Clinical features may be suggestive of a particular aetiology and enable treatment to be directed accordingly.

Case presentation

A 23-year-old Swedish nurse on a working holiday in Australia presented to her GP with a two-day history of acute red eyes with a gritty ocular irritation, mild photophobia and a watery discharge. She was not systemically unwell.

When asked about potential ocular exposures, she reported having attended a nightclub seven days previously at which the dance floor had been flooded with foam. She had also recently been on a trip to the Great Barrier Reef, where she had used snorkelling equipment loaned by the tour operator.

Apart from a contraceptive implant, the patient had no general or ocular history of note. She used no other medications and had no known allergies to medications or environmental agents. She did not wear contact lenses or spectacles.

Examination

The patient's unaided vision was 6/6 in the right and left eyes. On gross inspection, both eyelids were mildly oedematous and her conjunctivae were diffusely injected. Closer examination with a slit lamp revealed clear corneas and quiet anterior chambers, but follicles (foci of hyperplastic lymphoid tissue likened to transparent grains of rice, each surrounded by a small vascular cuff) were noted on the palpebral conjunctivae. The conjunctival hyperaemia was noticeably more pronounced in the fornices and relatively spared in the perilimbal region, and the watery discharge contained fine particles of mucoid debris (Figure 1). Preauricular lymph nodes were noted to be enlarged and tender.

Examination with a cobalt blue light after instillation of fluorescein eyedrops showed no epithelial defects and excluded the possibility of a foreign body. Intraocular pressures and pupillary light reactions were normal. No eyelash crusting was present.

Diagnosis

A provisional diagnosis of adenoviral conjunctivitis was made, based on the conjunctival follicular reaction, watery discharge and tender preauricular lymphadenopathy.

Treatment

The GP explained to the patient that there was no treatment available that would shorten the duration of her con-

junctivitis, but offered cold compresses and nonpreserved lubricating eyedrops hourly for symptomatic relief. The highly contagious nature of the condition was explained, and in order to limit further spread she was advised to adhere to strict hygiene measures and to avoid contact with other people. She was further advised to return if the condition failed to resolve after two to three weeks or if she noticed a reduction in her vision.

When the patient had left, the GP washed his hands thoroughly with soap and water and then cleaned the instrumentation and relevant consulting room surfaces.

Follow up

One week later, the patient returned to her GP, complaining of reduced vision and sensitivity to glare. Her unaided vision was 6/15 in the right and left eyes. Slit lamp examination revealed the appearance of subepithelial infiltrates.

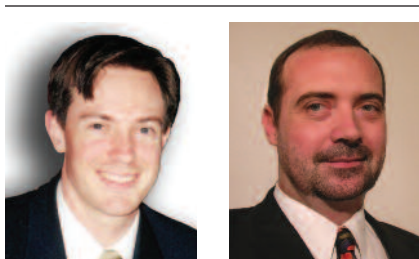
She was referred to an ophthalmologist within the next few days. After two weeks of treatment with corticosteroid eyedrops, her vision improved to normal and the corticosteroid was then slowly tapered and ceased.

Discussion

The differential diagnoses of acute red eye include:

- minor irritations, such as dry eye and injected pterygia or pingueculae
- inflammations, such as conjunctivitis, marginal keratitis, uveitis, episcleritis and scleritis
- traumatic or vascular events, such as subconjunctival haemorrhage
- infections, such as corneal ulceration and endophthalmitis
- emergency situations, such as acute angle closure glaucoma.

In cases of conjunctivitis, vision is usually normal, hyperaemia is characteristically maximal in the fornices and least at the limbus, and a history of contact with other affected persons may be pre-



Dr Walker is Ophthalmology Registrar, Princess Alexandra Hospital, Brisbane. Dr O'Hagan is Visiting Medical Officer, Cairns Base Hospital, and an Ophthalmologist in private practice in Cairns, Qld.

Features of adenoviral conjunctivitis

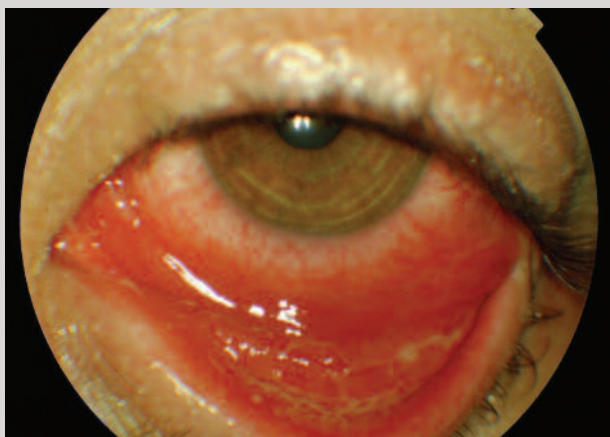


Figure 1 (above). Inferior palpebral conjunctival follicles and watery, mucoid discharge. Note the distribution of conjunctival injection which relatively spares the limbus.

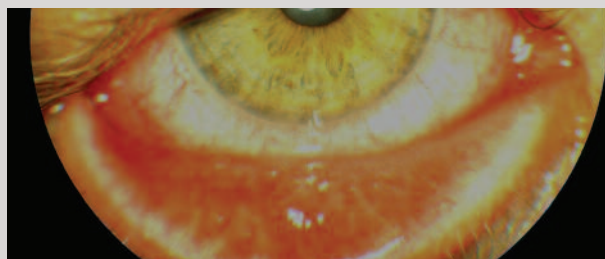


Figure 2 (top right). Inferior palpebral conjunctival follicles.

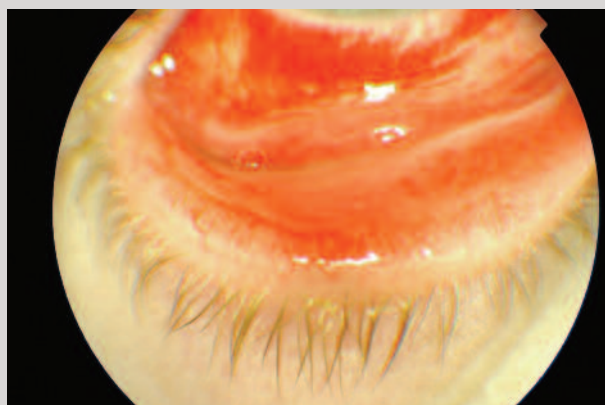


Figure 3 (right). Pseudomembrane and subconjunctival haemorrhage.

sent. Mild cases are often caused by allergens or irritation. Cases that are caused by infection can be difficult to distinguish, but elements of the clinical picture can be suggestive of a particular aetiology.

Viral conjunctivitis

Adenovirus

The most common pathogen causing viral conjunctivitis is adenovirus, which is transmitted by respiratory or ocular secretions on contaminated surfaces (including medical equipment). The incubation period is about one week, and the virus is shed for about 12 days after the onset of conjunctivitis. The disease can be mild or severe.

Adenoviral conjunctivitis is characterised by a gritty foreign body sensation with itching, burning, and a watery, mucoid discharge. It often starts in one eye and spreads to the other eye a few days later. A follicular conjunctival reaction is

seen under the lower lid (Figure 2), and often there is raised, tender preauricular lymphadenopathy. Small subconjunctival haemorrhages may be seen and a pseudomembrane or membrane of inflammatory material may form on the palpebral conjunctiva (Figure 3). There is sometimes a history of recent upper respiratory tract infection or contact with an affected person.

The subtypes of adenovirus may produce different clinical pictures. 'Pharyngoconjunctival fever' typically affects children and causes upper respiratory tract infection as well as conjunctivitis; mild to moderate keratitis develops in about 30% of cases and is identified by subepithelial infiltrates that appear as discrete white patches in the anterior cornea. 'Epidemic keratoconjunctivitis' is caused by the more contagious serotypes and does not cause systemic symptoms, but keratitis develops in the

majority of cases and may be severe.

Antiviral agents are ineffective in adenoviral conjunctivitis and most patients require only symptomatic treatment – cold compresses, lubricating eyedrops, topical vasoconstrictors, sunglasses and systemic analgesics can be offered. However, if vision is reduced from subepithelial corneal infiltrates or if pseudomembranes or membranes are present then the patient should be referred to an ophthalmologist for consideration of topical corticosteroid treatment. Subepithelial infiltrates can recur if the corticosteroid is withdrawn too quickly, so it often needs to be tapered off slowly.

Due to the highly contagious nature of adenovirus, strict hygiene measures must be instituted. These include washing hands thoroughly, disinfecting contaminated surfaces, not sharing towels and facewashers, and limiting contact with the general public.

Herpes simplex virus

Herpes simplex virus can also cause conjunctivitis with a follicular conjunctival reaction and preauricular lymphadenopathy. Clues to this aetiology include the characteristic herpetic vesicular rash near the eye, subsequent appearance of dendritic corneal ulcers, and recurrence. It is treated with topical aciclovir ointment (Zovirax Ophthalmic Ointment), five times a day for two weeks.

Enterovirus

Enterovirus produces a different clinical picture from adenovirus and herpes simplex virus. It is characterised by acute haemorrhagic conjunctivitis and usually presents with a large subconjunctival haemorrhage. It is more common in the tropics.

Allergic conjunctivitis

Allergic conjunctivitis often accompanies hayfever, and a history of sensitivity to environmental allergens is common. The key symptom is itch, and the clinical picture consists of chemosis, red swollen eyelids, and absence of preauricular lymphadenopathy. There is a papillary conjunctival reaction – that is, folds of hyperplastic conjunctival epithelium, each with a central blood vessel which differentiates them from follicles. (In reality, however, it is sometimes difficult to differentiate follicles and papillae, even with the aid of a slit lamp.)

If possible, the offending allergen should be avoided. Symptomatic relief may be achieved with cold compresses and lubricating eyedrops, as needed. Moderate to severe cases may benefit from topical antihistamines, such as levocabastine 0.05% (Livostin Eye Drops, four times daily), or a combination antihistamine and mast cell stabiliser such as olopatadine 0.1% (Patanol, twice daily) or ketotifen 0.025% (Zaditen, twice daily). Second line treatment options include topical NSAIDs, such as ketorolac (Acular Eye Drops) and oral antihistamines, such

as loratadine (Claratyne, Lorastyne). In severe cases, a mild topical corticosteroid such as fluorometholone (Flarex, Flucon, FML) may be needed.

Vernal conjunctivitis is an atopic condition that typically affects young boys. It consists of a thick, discharge of ropy mucus as well as itch and seasonal recurrences. The superior palpebral conjunctiva

displays large papillae ('cobblestones'), and raised white dots may appear at the superior limbus. This condition can be treated with eye drops of lodoxamide 0.1% (Lomide, four times daily), olopatadine 0.1% (twice daily) or ketotifen 0.025% (twice daily) for the duration of the season, in addition to the treatments described above for allergic conjunctivitis. Sodium cromoglycate is generally not very effective. If a superior corneal 'shield' ulcer is present (i.e. a discrete sterile corneal infiltrate), the patient should be referred to an ophthalmologist because the treatment is more complex.

Bacterial conjunctivitis

Bacterial conjunctivitis is characterised by redness, grittiness or burning discomfort. There is mild to moderate mucopurulent discharge that typically causes the eyelids to be stuck together on waking. Pathogens

include *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *Staphylococcus aureus* and *Neisseria* species. A swab should be sent for microscopy, culture and sensitivity testing. Most cases remit spontaneously within five days. For moderate to severe cases, recommended treatment is topical chloramphenicol (Chloromycetin, Chlorsig) or a combination antibacterial preparation (Neosporin Ophthalmic), one drop every one to six hours (depending on severity). The eyes should be cleaned to remove discharge before the eyedrops are instilled.

Gonococcal conjunctivitis requires urgent attention because it can lead to rapid invasion of the cornea with ulceration and perforation if not recognised and treated appropriately. It is seen sporadically, and as epidemics in central and northern Australia. It is characterised by hyperacute onset of a sore red eye with severe purulent discharge, chemosis, eyelid swelling, and preauricular lymphadenopathy.

If gonococcal conjunctivitis is suspected, a conjunctival swab and slide should be sent for urgent Gram staining (to look for Gram-positive cocci) and the usual culture and sensitivity testing before commencing treatment with procaine penicillin (Cilicaine Syringe; 50 mg/kg up to 1.5 g intramuscularly) or ceftriaxone (Rocephin; 50 mg/kg, up to 1 g intramuscularly in penicillin-sensitive patients). Epidemic cases can often be treated with a single dose; household and classroom contacts should be treated prophylactically. Sporadic cases and patients with an involved cornea should be hospitalised and continued on the aforementioned antibiotics daily for at least three days. Topical antibiotic therapy should be considered if the cornea is affected.

Chlamydia trachomatis generally infects young adults. Like viral conjunctivitis, it produces a follicular conjunctival reaction and preauricular lymphadenopathy, but it differs in that the disease becomes chronic (usually lasting longer than three

weeks), and may persist for many months if not recognised and treated. Chronic infection is known as trachoma and causes conjunctival and corneal scarring that leads to blindness. The suggested treatment is azithromycin (Zithromax; 20 mg/kg, up to 1 g orally as a single dose).

In addition, for both gonococcal and chlamydial infections, genital swabs should be taken from the patient (and, if the result is positive, from their partners) because the conditions are commonly spread by autoinoculation secondary to genital infection and other sexually transmitted illnesses often coexist. In cases of neonatal gonococcal conjunctivitis, genital swabs should be taken from both parents.

Final comment

On a related note, GPs should be aware that backpackers are particularly susceptible to contact lens-related ocular infections. This is due to the exposure to small foreign bodies that results from the itinerant lifestyle, as well as reduced access to hygiene facilities and increased time spent camping and on beaches. **MT**

Further reading

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DECLARATION OF INTEREST: None.