



Unilateral red eye

Eye series - 16



Chris Hodge, BAppSc, DOBA, is Research Director, The Eye Institute, Chatswood, New South Wales.

Anthony Dunlop, MBBS, FRANZCO, FRACS, DA (UK), is an ophthalmic surgeon, Newcastle, and The Eye Institute Chatswood, New South Wales.

Case history

Jason, 25 years of age, presents with a 3 day history of pain 'like bruising' and redness in his right eye. Initially mild, the symptoms have steadily worsened and Jason feels his vision has now become affected. Reading is particularly uncomfortable and he notes that bright lights immediately intensify the pain. There has been no obvious discharge from the eye apart from occasional tearing due to the light sensitivity. Jason's medical history is unremarkable apart from a chronic sore lower back. On observation, the eye is severely injected around the limbal area. There is also numerous small to medium sized deposits in the lower area of the anterior chamber. The pupil is smaller than in his left eye.

FEEDBACK

Answer 1

The presentation of a unilateral, painful red eye can indicate the presence of several conditions. These may include bacterial conjunctivitis, corneal or intraocular inflammation, ocular foreign body and acute angle closure glaucoma. Although commonly bilateral in presentation, bacterial conjunctivitis may present in one eye. The patient will generally complain of a red, irritable eye. Purulent discharge is the hallmark of a bacterial infection. The patient may complain of photophobia if there is associated punctate epitheliopathy or peripheral corneal infiltrates.

Question 1

Describe the differential diagnoses.

Question 2

What examination findings and tests will help to differentiate these conditions?

Question 3

Is Jason's history of back pain important to your diagnosis?

Question 4

Investigational X-ray results describe inflammation of the sacroiliac joints. What is your diagnosis?

Question 5

Are any further tests required?

Question 6

What is the treatment for Jason's ocular condition and general condition?



Figure 1. Severe limbal injection

Vision can also be affected in severe cases. Keratoconjunctivitis sicca (dry eyes) is a relatively common condition. On presentation the patient will complain of grittiness, excess tearing, photophobia and red eyes, with symptoms worse later in the day, or in hot or dry conditions. This condition rarely significantly threatens sight.

An ocular foreign body will cause localised irritation and inflammation. Patients will commonly produce excessive tearing as a result of the irritation. Similarly, the patient generally complains of light sensitivity. The vision may or may not be affected.

Acute angle closure glaucoma is characterised by a sudden and severe increase in intraocular pressure. On presentation the

patient will complain of pain, extreme photophobia and sudden deterioration of vision. The eye will be injected around the limbus. The pupil will be semi dilated and often unreactive to light. Vision is affected by the presence of severe corneal oedema.

Uveitis is an intraocular inflammation that involves the uveal tract (iris, ciliary body and choroid). Uveitis can be further classified depending on which structures are affected. Anterior uveitis, involving the iris and occasionally also the anterior part of the ciliary body, will develop over several days beginning with general sensitivity and progressing to photophobia, pain, redness over the ciliary body (*Figure 1*) and visual loss. Keratic precipitates (KP), small cellular deposits from the



Figure 2. Keratic precipitates

anterior chamber on the posterior surface of the cornea, can be seen on close examination (Figure 2).

Answer 2

A thorough patient history should provide an excellent platform for diagnosis. Visual acuity assessment will help differentiate between conditions. Dry eye and conjunctivitis will not affect visual acuity, unless extreme. An acute glaucoma attack will lead to corneal oedema that will cause an abrupt decrease in vision and a fixed, semi dilated pupil. Inflammation from uveitis may lead to a constriction of the pupils that could lead to posterior synechiae, an adhesion between the anterior lens surface and iris. This will lead to an irregular and poorly reactive pupil.

On slit lamp (and ophthalmoscopic) examination, patients with conjunctivitis are injected peripherally over the globe and the posterior surface of the lids, whereas those with uveitis, will typically show an increase in redness toward the limbus (ciliary flush). In uveitis, KP are seen commonly in the mid or inferior zone of the cornea. Small nodules (Koepe nodules) may also appear at the border of the pupil as a result of granulomatous uveitis. Dry eye changes will typically be superficial. The examiner may notice disrupted or inadequate tear film and small erosions on the epithelial surface. In severe cases scarring may occur. In an acute glaucoma attack, the cornea will be hazy due to oedema, and visualisation of the anterior chamber will be difficult.

Jason has no history of injury to suggest a foreign body, no purulent discharge and no

corneal haze. Ciliary injection, the presence of KP, combined with the progression of symptoms such as globe tenderness, photophobia and blurred vision suggests he is suffering an acute attack of uveitis.

Answer 3

In an active, young adult, back pain may be attributed to vigorous or excessive exercise or labour. The differential diagnosis may not be considered for many months or years in more subtle cases. Although almost 50% of uveitis cases are idiopathic in origin, a large percentage are associated with an underlying systemic condition. Although the precise link is uncertain, uveitis has been directly related to a group of autoimmune disorders called spondyloarthropathies. Confirmation of the ocular diagnosis of uveitis therefore demands further investigation of the patient's general health especially given the previous history of back pain.

Answer 4

Inflammation of the spine and sacroiliac joints are typical symptoms of ankylosing spondylitis, a systemic rheumatic disorder. Inflammation will cause stiffness and pain in the lower spine; worse on waking and relieved with activity. Other joints may be affected by inflammation, as can other organs such as the eyes, heart and lungs. Between 25–35% of patients with ankylosing spondylitis will also experience an attack of acute anterior uveitis.

Coexisting signs and symptoms can differentiate other systemic conditions that lead to inflammation of the spine. Reactive arthritis, which may follow an infection such as chlamydia or Gram negative dysentery, commonly displays a triad of symptoms of arthritis, conjunctivitis and urethritis. Skin lesions and nail changes are associated with psoriatic arthritis.

Answer 5

Most spondyloarthropathies are associated with the presence of HLA-B27 antigen. Blood tests to confirm the presence of this gene are not necessary to confirm diagnosis, however, it may provide information to the probability of future uveitis attacks.

Approximately 30% of patients with ankylosing spondylitis will experience an acute attack of uveitis (over 90% of these patients will be HLA-B27 positive). The association is weaker in conditions such as Crohn disease or psoriatic arthritis with 5% or less of patients suffering an attack of anterior uveitis at some stage (only 50% of patients with these conditions will be HLA-B27 positive).

Answer 6

The aims of ocular therapy are to resolve the inflammation, relieve symptoms, return normal vision and prevent ocular scarring. Although the course of an acute uveitis attack is generally 2–6 weeks, referral to an ophthalmologist within 24 hours is essential to an optimum outcome. Corticosteroid drops such as prednisolone are the preferred initial therapy. Due to the possible side effects of steroid drops it is important the patient is carefully screened before and during treatment. Possible short term complications include acute intraocular pressure rise which can quickly lead to severe visual loss. Uveal inflammation may lead to ciliary spasm and cause periocular pain. Furthermore, the uveitis patient is at increased risk of posterior synechiae. Long acting cycloplegics such as homatropine and atropine, work to relieve the pain and reduce the possibility of adhesions. If inflammation persists, periocular or oral steroids may be required. Treatment is tapered over 6 weeks despite symptomatic and clinical quiescence to avoid bounce back inflammation.

Treatment of the systemic findings is dependent on symptoms. NSAIDs may be used to treat sore or painful joints. If inflammation persists, oral or injectable corticosteroids or immunosuppressants may be necessary. Care should be taken due to the possible side effects of these medications. Consultation with a rheumatologist is required. Physical therapy to improve flexibility and maintain correct posture is considered a useful adjunct to medical treatment in cases of ankylosing spondylitis.

AFP

Correspondence

Email: chodge@theeyeinstitute.com.au