chapter 6
Eye conditions

Conditions of the cornea

Causes

There are some minor conditions of the cornea for which pharmacists can offer advice and treatment. These are:

- allergic conjunctivitis (see Chapter 23)
- infective conjunctivitis, caused by:
  - viruses (mainly adenovirus or picornavirus)
  - bacteria (usually *Streptococcus* or *Haemophilus*).
- subconjunctival haemorrhage, caused by rupture of a conjunctival capillary causing spread of blood over the cornea. It looks alarming but it is painless, vision is not affected and it is usually of no significance. There is no treatment and the blood cannot be washed out of the eye
- dacrocystitis: the lacrimal sac, which drains tears into the nasolacrimal duct in the corner of the eye, becomes blocked or in young children may not open, and tears overflow. It may be cleared by gentle massage in the inner corner of eye, but if it does not clear, the patient should be referred.

Signs and symptoms

The features of minor corneal conditions are set out in Table 6.1.

Table 6.1 Signs and symptoms of minor eye conditions

Feature	Significance	Possible indication
Eyes affected	Both	Viral or allergic conjunctivitis
	Both, but one before the other	Bacterial conjunctivitis
Discharge	Watery	Viral or allergic conjunctivitis
	Purulent	Bacterial conjunctivitis
Pain/discomfort	No pain	All conjunctivitis Subconjunctival haemorrhage
	Itching/gritty	Bacterial or viral conjunctivitis
	Itching only Pain	Allergic conjunctivitis More serious conditions
Redness	Generalised, diffuse	All conjunctivitis
	Around centre of eye	More serious conditions

(continued)

Table 6.1 (cont.)

	Localised areas of sclera	More serious conditions
Duration	2–3 days	Infective conjunctivitis
	Variable, depending on exposure to allergen	Allergic conjunctivitis
	Up to 10 days	Subconjunctival haemorrhage
	> 1 week	More serious conditions
Associated factors	None	Bacterial
	Cough and cold symptoms	Viral
	Allergic rhinitis symptoms	Allergic conjunctivitis

Differential diagnosis

Glaucoma

- Open-angle (chronic) glaucoma results from an increase in ocular pressure due to an imbalance between production and drainage of aqueous humour. It develops slowly and initially is symptomless, but eventually it produces headache and loss of visual field. It affects both eyes and can cause blindness if not treated.
- Closed-angle (acute) glaucoma is due to obstruction to drainage of aqueous humour. It presents as severe pain in one eye, accompanied by headache, nausea and vomiting. Visual field is reduced and haloes may be seen around lights.

Episcleritis

In episcleritis there is inflammation of the sclera, the tissue immediately beneath the conjunctiva, producing a localised patch of redness. It is usually painless or there may be a dull ache. It is most common in young women. It is self-limiting, but could take several weeks to resolve.

Scleritis

Scleritis is of similar appearance to episcleritis but much more painful. It is often associated with autoimmune conditions such as rheumatoid arthritis.

Uveitis (iritis)

Uveitis is inflammation of the uveal tract (the structures around the iris). There is localised central redness, with pain and photophobia, and vision may be impaired. It may be associated with rheumatoid arthritis or ulcerative colitis.

Keratitis (corneal ulcer)

Inflammation of the cornea is keratitis. There is severe pain with a watery discharge and photophobia. Redness is concentrated in the centre of the eye. It may result from trauma, long-term use of steroid eye drops or use of soft contact lenses.

Dry eye

Dry eye is a chronic condition, often associated with a systemic disorder such as rheumatoid arthritis. It may cause irritation and photophobia.

Symptoms and circumstances for referral

- pain in the eye, as distinct from superficial soreness, grittiness or itchiness
- redness localised to one area of the eye surface
- disturbance of vision
- pupils of abnormal shape or uneven pupils
- pupils reacting unevenly to light
- eye symptoms with headache and/or nausea/vomiting
- recurrent subconjunctival haemorrhage
- dry eyes.

Essential criteria for distinguishing between minor and potentially more serious eye conditions are set out in Table 6.2.

Table 6.2 Distinguishing criteria between minor and potentially more serious eye conditions

Minor eye conditions	Potentially more serious eye conditions
Irritation and discomfort, but no pain	Pain
Redness over entire eye surface	Localised redness
Vision unaffected (although there may be slight blurring)	Vision affected

Treatment

Allergic conjunctivitis

See Chapter 23.

Infective conjunctivitis

- Bacteria and viruses are both causes of infective conjunctivitis and it may be clinically difficult to distinguish between them. Over-the-counter treatment of any superficial infective conjunctivitis with an antibacterial agent is considered appropriate, as it may help prevent secondary bacterial infection.
- Non-prescription antimicrobial compounds available for the treatment of these infections are:

– chloramphenicol
– propamidine and dibromopropamidine isetionates.

Chloramphenicol

- Chloramphenicol is active against a wide range of ocular pathogens. It has been the first-choice prescription antibiotic for minor eye infections for many years, and chloramphenicol eye drops were reclassified for pharmacy sale in 2005 for use for adults and children aged 2 years and over.

- Dosage is one drop into the infected eye every 2 hours for the first 48 hours and then every 4 hours, during waking hours only. Treatment should be continued for 5 days, if symptoms improve.
- Chloramphenicol eye drops should not be used in patients hypersensitive to chloramphenicol, who have experienced myelosuppression during previous exposure to chloramphenicol or with a family history of blood dyscrasias, and it is not recommended for pregnant or breastfeeding women.
- Prolonged or frequent intermittent use should be avoided, as it may increase the likelihood of sensitisation and emergence of resistant organisms.
- The drops should not be used for more than 5 days, and patients should be referred if symptoms do not improve within 48 hours of starting treatment.
- As with all ocular antibiotic and most other eye preparations, contact lenses should not be worn during treatment and soft contact lenses should not be replaced for 24 hours after completing treatment.
- In the pharmacy, chloramphenicol eye drops should be stored in a refrigerator at 2–8°C. Once opened, the drops should be discarded after 5 days.
- In June 2007, chloramphenicol eye ointment was reclassified from prescription only (POM) to pharmacy sale (P) for the treatment of acute bacterial conjunctivitis.

Propamidine and dibromopropamidine isetionates

- Propamidine and dibromopropamidine isetionates are aromatic diamidine antiseptics. They have been used for the treatment of bacterial conjunctivitis for more than 60 years and have always been available without prescription, but chloramphenicol is considered the drug of choice and the *British National Formulary* regards propamidine and dibromopropamidine as of little value.
- Eye drops are formulated with propamidine isetionate 0.1% and eye ointment with dibromopropamidine isetionate 0.15%. Both can be used for adults and children.
- The ointment persists longer on the corneal surface and needs to be applied only twice daily, but can cause stickiness and blurring of vision. Drops are used four times daily. Treatment should be continued for 24 hours after symptoms have cleared. If symptoms do not significantly improve within 48 hours, treatment should be discontinued and the patient referred for medical advice.
- Both products should be stored at room temperature and discarded not more than 1 month after opening.

Conditions of the eyelid

- There is one minor condition – stye (hordeolum) – for which pharmacists can offer advice and treatment. It is caused by staphylococcal infection of a hair follicle at the base of an eyelash.
- Principal symptoms are pain, redness, swelling and irritation. Initially, the whole of the lid may be affected, then swelling becomes localised, and a yellow pustule may develop near the lid margin.
- Treatment is with dibromopropanidine isetionate ointment.

Differential diagnosis and factors for referral

Referral should be made if any of the conditions described below are suspected.

Blepharitis

Blepharitis is chronic inflammation of the lid margins, affecting both eyes. There are three main types: staphylococcal, seborrhoeic (frequently associated with seborrhoea of the scalp, eyebrows and ears) and contact dermatitis (due to cosmetics). The lid margins appear raw and red, with irritation, burning and itching. If contact dermatitis is the cause then there is generally a history of atopy, and other areas of skin may be affected. Scales are frequently seen on the lashes of both upper and lower lids, which tend to be dry in staphylococcal infections and greasy in seborrhoeic blepharitis. The lids become deformed in staphylococcal blepharitis due to ulceration. Lashes are frequently lost or may be distorted, turn inwards and rub on the cornea; this in turn can cause conjunctivitis. Mild seborrhoeic blepharitis can often be managed with eyelid hygiene without prescribed medication. However, medical diagnosis is always necessary first and the condition may not respond to over-the-counter treatment.

Chalazion (meibomian cyst)

A chalazion is a cyst of a meibomian gland: the meibomian gland secretes fluid to stop the eyelashes sticking together. It may become infected or develop into a sterile chronic granuloma, a firm, painless lump in the lid which gradually enlarges. Initially, the chalazion may resemble a stye but is not inflamed. Chalazia usually grow inwards towards the conjunctival surface, which may be slightly reddened or elevated. Infected cysts are treated as styes. A third of cases will resolve spontaneously and virtually all will resorb within 2 years, but they are often surgically removed before then.

Ectropion

This is mainly a condition of old age, as is entropion (see below). Sagging and turning outward of the lower eyelid occur from a natural loss of muscle tone and orbital fat. Tears overflow and there is insufficient lubrication and protection for the eye. The lower lid may become chronically infected and scarred. This then requires surgical correction.

Entropion

The lower lids turn inwards and lid margins and eyelashes abrade the surface of the eye. Lashes may fall out and susceptibility to infection is increased. Entropion requires surgical correction.

Basal cell carcinoma

Basal cell carcinoma presents as a reddish nodule on the eyelid. There is no pain or discomfort. There may be a history of prolonged exposure to sun or ultraviolet light.

Other eye problems

Sore and 'tired' eyes

- Redness and mild irritation in the eyes can be caused by activities such as driving and close work, and environmental pollutants, including tobacco smoke.
- Several eye drop preparations, based mainly on astringents and vasoconstrictors, are available without prescription:
  - Several products contain distilled witch hazel (hamamelis water), obtained from the bark of a shrub, with astringent and anti-inflammatory properties.
  - Naphazoline, a sympathomimetic vasoconstrictor, is included in some ophthalmic preparations to shrink the dilated blood vessels that cause redness.

Dry eyes

- Dry eye (keratoconjunctivitis sicca) is a chronic condition characterised by dryness of the surface of the eye. It is caused by either a deficiency of conjunctival mucus, due to the absence or significant impairment of the mucin-producing goblet cells of the conjunctiva, or tear deficiency, the latter often associated with rheumatoid arthritis.
- The cause of dry eye requires medical diagnosis.
- Treatment is usually with tear substitutes ('artificial tears'), containing compounds that enhance wetting, viscosity and stability of tears. These are: hypromellose, polyvinyl alcohol (PVA), carbomer 940, and hydrophobic ocular lubricants containing liquid and soft paraffins, such as Simple Eye Ointment. All preparations are available as P medicines.

Self-assessment

Case study

A man asks for your advice about his eye. He tells you that he had a stye a couple of months ago, but it had cleared up after a few days following treatment with an over-the-counter eye ointment he had bought in another pharmacy. However, a little lump has now formed on his eyelid where the stye was. It doesn't hurt at all, but it is a bit of a nuisance and he wonders if you can suggest anything to get rid of it. Can you?

Multiple choice questions

1. (Closed-book, multiple completion)
Which of the following signs and symptoms, in an adult patient asking for advice about her eyes, would lead you to make immediate referral to a doctor?

a. pain and redness around the centre of one eye; can't see properly out of it

b. one eye completely covered in a red film of blood; no pain or discomfort; no impairment of vision

c. both eyes slightly red across the entire surface; feeling of soreness and itchiness; slight discharge leaving a yellowish crust around the eyelids when it dries; no pain; no impairment of vision.

2–4.(Open-book, classification)

Questions 2–4 concern the ophthalmic preparations listed below:

a. Acular 0.5% eye drops
b. Artelac SDU
c. Isopto Plain eye drops
d. Voltarol Ophtha eye drops
e. Zinc sulphate 0.25% eye drops

Which, from (a) to (e) above:

2. is indicated for the treatment of hayfever?
3. is now little used?
4. is a POM?

5. (Closed-book, simple completion)

Which one of the following is not indicated for dry eye conditions?

a. Carmellose 1% eye drops
b. Chloramphenicol 0.5% eye drops
c. Hydroxyethylcellulose 0.44% eye drops
d. Polyvinyl alcohol 1.4% eye drops
e. Povidone 5% eye drops

Tips

If you suffer from a chronic condition, e.g. migraine, and have an attack that you think has seriously adversely affected your performance during the registration exam, you can ask for your entry to be considered null and void. If granted, your mark in the exam will not be considered by the examiners (even if you have passed) and you will be treated as if you had not sat it. You will, of course, have to sit it again. In order to get consideration for your request, you will need to report your indisposition to an invigilator on the day and provide confirmation from a medical practitioner that you suffer chronically from the condition and had a severe attack during the exam.