Blepharitis

Blepharitis refers to the group of conditions characterised by inflammation of the eyelid margin [1] . Blepharitis can be acute or chronic and can occur at all ages but the most commonly encountered variant is chronic adult disease [2] . This will be described here. Follow links provided throughout this article for information about more acute causes (eg, pre-septal cellulitis, herpes simplex virus (HSV) or herpes zoster virus (HZV) infections, etc) [3] .

It can be anatomically divided into anterior disease (anterior blepharitis) - which primarily affects the lashes, and posterior disease (posterior blepharitis) - which involves the meibomian glands (and so is sometimes referred to as meibomian gland disease or dysfunction). Anterior blepharitis is broadly divided into staphylococcal blepharitis and seborrhoeic blepharitis. This reflects the underlying pathophysiology to a certain degree, although there is often overlap in a given individual. It is not unusual for the different entities to be difficult to distinguish clinically in primary care [3] .

Pathogenesis

- In most cases the pathogenesis is unclear.
- Blepharitis is caused by staphylococcal infection, seborrhoeic dermatitis, meibomian gland dysfunction, or any combination of these factors .
- Staphylococcal blepharitis is a type of anterior blepharitis, and studies have shown there is not necessarily evidence of staphylococcal species, and where there is this isn't necessarily any higher than in control subjects. It is likely that other factors contribute [2] .
- Seborrhoeic blepharitis is also a type of anterior blepharitis and is closely associated with seborrhoeic dermatitis. It commonly co-exists with posterior blepharitis [3] .

- Meibomian gland dysfunction may contribute to posterior blepharitis. There may be blockage of the glands. Secretions may be deficient or of poor quality. This results in increased tear evaporation and dry eyes[2] . Seborrhoeic dermatitis and rosacea both affect meibomian gland function, and therefore there is often an association between these conditions and blepharitis.
- Demodex mites may also be a causative factor for both anterior and posterior blepharitis. The mites infest the eyelid margin around the lash follicles and sebaceous glands. It is thought that the mites or their waste or the body's inflammatory response may block follicles and glands[2] [4] .
- Anterior blepharitis can predispose an individual to posterior disease and vice versa[5] .
- Ultimately, most individuals presenting with blepharitis are thought to have a combination of causal factors. However, one factor may predominate to give a picture of a particular type of blepharitis[6] .

Epidemiology [3]

- Blepharitis accounts for at least 5% of ophthalmological presentations in primary care.
- The true prevalence is unknown and studies trying to estimate this have been unsatisfactory[2] .
- All forms are equally common in both sexes, other than staphylococcal blepharitis, which is more common in women.
- Blepharitis is a condition which most commonly starts in the fourth and fifth decades of life.

Presentation[3]

Symptoms

- Eyes are sore or gritty. There may be itching or burning.
- Eyelids may stick together on waking.
- Symptoms are worse in the morning.
- Symptoms are bilateral.

- There may be long periods of exacerbations and remissions.
- There may be symptoms of associated dry eye syndrome: watery eyes, blurred vision, dry eyes and intolerance of contact lenses.
- There may be symptoms of associated seborrhoeic dermatitis: dandruff, oily skin, facial rashes.
- There may be symptoms of associated rosacea: facial flushing, redness or telangiectasia.

Be suspicious of unilateral disease, as lid tumours may present this way[7] .

Signs

There may be little to find on examination, in particular when compared to the severity of symptoms reported[7] . The margins of the eyelids may be reddened, and there may be visible crusting or scaling. There are a number of possible signs, some characteristic to each type of blepharitis and many overlapping where there is mixed pathology.

Anterior blepharitis	Staphylococcal	Hyperaemia and telangiectasia around lid margin, crusting around base of lashes (= collarettes). There may be eyelash deformity, depigmentation or loss.
	Seborrhoeic	Erythema, hyperaemia and greasy appearance of anterior lid margin with lashes stuck together. Soft scaling occurs along length of lash. Less inflammation. May be signs of seborrhoeic dermatitis elsewhere - for example, the scalp, ear or skin folds.
Posterior blepharitis	Meibomian gland dysfunction	Meibomian gland orifices (lining the lid margin) are covered with small oil globules or foam. Glands may be dilated or visibly obstructed. May be telangiectasia and scarring. May be chalazia.

Differential diagnosis

- Tumours of the eyelid margin: basal cell carcinoma (BCC), squamous cell carcinoma (SCC) or sebaceous gland carcinoma.
- Contact dermatitis or atopic dermatitis.
- Infection: impetigo or cellulitis.
- Conjunctivitis.
- Contact lens problems.
- Dry eye syndrome.

Diagnosis[8]

This is confirmed by clinical examination:

- **Lid skin** - this may be slightly inflamed. Look for concurrent dermatological conditions: scaly or flaking (especially in anterior disease), vesicles (associated with herpetic infection), telangiectasia or pustules (such as in patients with rosacea). It is particularly important to look for associated lesions that may raise suspicion of BCC or SCC.
- **Lashes** - loss (madarosis) frequently occurs in anterior disease and occasionally happens in long-standing posterior disease. **Be wary of localised lash loss**: sebaceous gland carcinoma may mimic chronic blepharitis with localised inflammation and lash loss - refer if unsure. Look for crusting (collarettes) or hard scales (staphylococcal disease) and for greasiness (seborrhoeic disease). Trichiasis (in-turning of lashes) and poliosis (whitening of lashes) may occur in long-standing disease.
- **Lid margin** - look for inflammation around the meibomian gland orifices or the capping of the meibomian gland orifices (looks like a row of yellow droplets along the lid margin) of meibomian seborrhoea.
- **Tear film** - this is frequently deficient in most forms of the disease and it may also be foamy in meibomian seborrhoea.
- **Conjunctiva** - may be injected. Associated conjunctivitis may be present. Evert the eyelid to view the tarsal conjunctiva. There may be early chalazion formation and scarring can occur in long-standing disease.
- **Cornea** - inferior punctate epithelial erosions, scarring and neovascularisation may all be found in more severe forms of the disease. Thinning and ulceration are rare but sight-threatening and warrant immediate referral.
- **Peripheral examination** for associated disease, such as dermatological problems, completes your assessment.

Investigations[3] [8]

There are no specific tests: diagnosis is made on examination. Referral for slit-lamp examination would be appropriate where there are severe or resistant symptoms, or where there are signs of other eye disease. Swabbing may be appropriate in severe or recurrent cases and biopsy is mandatory in cases where malignancy is suspected (such as associated suspicious lesions or eyelash loss, usually - but not exclusively - in the older patient).

Associated diseases[8]

Blepharitis may occur on its own or in association with any of the conditions outlined in 'Differential diagnosis' (above), particularly dry eyes (keratoconjunctivitis sicca). It may also be associated with:

- Bacterial infections - eg, impetigo, erysipelas.
- Viral infections - eg, molluscum contagiosum, varicella-zoster virus, HSV, papillomavirus.
- Parasitic infections - eg, the pubic louse, *Pthirus pubis*.
- Immune disease - eg, erythema multiforme, pemphigoid, connective tissue disorders, Crohn's disease.
- Dermatoses - eg, psoriasis, ichthyosis, erythroderma.
- Benign eyelid tumours - eg, actinic keratosis, haemangioma, pyogenic granuloma.
- Trauma - eg, chemical, thermal, surgical.

Meibomian gland disease is particularly associated with chalazia (obstruction + lipogranulomatous inflammation within the gland) and internal hordeolum (acute abscess formation within the gland) and pterygia. A recent study has shown blepharitis to be associated with less obvious systemic disease, including[9] :

- Irritable bowel syndrome.
- Anxiety and depression.

- Inflammatory diseases (eg, gastritis and peptic ulcer disease, asthma, ulcerative colitis and arthropathy).
- Cardiovascular disease (eg, carotid artery disease, hyperlipidaemia, hypertension and coronary heart disease),
- Hormonal-related problems (eg, hypothyroidism and prostatic hypertrophy).

Management[3] [7]

- **Patient information** - this condition often runs a protracted course and its containment will largely depend on the patient understanding the nature of the problem and what the management issues are. A dependence on a course of antibiotics with no patient input will result in limited - if any - positive results. Patients should be advised to avoid contact lens wear, particularly during acute inflammatory episodes. However, the patient should also be reassured that this condition is rarely sight-threatening and that it should not prevent them from doing all the usual activities of daily living (including swimming, unless there is an acute infection) other than restricting the use of make-up; eyeliner is a particular offender. Explain blepharitis is a chronic condition, which cannot be cured, but can be controlled, and that self-care measures are the core of this.
- **Lid hygiene** - this is the mainstay of treatment and may be sufficient to control simple low-grade blepharitis. It should also be used regardless of the need for additional treatment. Lid hygiene should be carried out twice a day in the acute phase and once daily at other times. There are three main aspects to this:

Action	Method	Rationale
Warm compresses	Soak a cloth or cotton wool pad with hot water - apply to closed eyes for five (ideally 10) minutes. Avoid excessive heat. Commercial products specifically prepared for this use are available, most commonly in the form of microwaveable eye bags.	Loosens collarettes and crusting which makes subsequent cleansing more comfortable. Also, warms the fatty content of the meibomian glands, so making this easier to express during lid massage.
Lid massage (more useful for posterior disease)	Massage the closed eyelids in a circular way. Move along the length of each lid.	Loosening meibomian gland content and expressing this through the orifices that line the lid margin.

Lid cleansing	Clean the lids with a cotton bud dipped in a cleansing solution. Options used include baby shampoo (diluted 1:10 in warm water), or commercial lid scrubs. Bicarbonate of soda or soaps are also sometimes used.	Aim is gentle mechanical washing, vigorous scrubbing is not necessary. This gets rid of collarettes and debris, so reducing margin inflammation. Evidence is limited as to the best solution to use. Baby shampoo is traditionally advised, and remains the advice given in National Institute for Health and Care Excellence Clinical Knowledge Summaries (NICE CKS) and the American Academy of Ophthalmology; Cochrane reviews have failed to find one form of management superior to another [2] [3] . Some feel that other solutions, such as phospholipid solutions are more beneficial [10] [11] . Soaps and bicarbonate of soda may be more irritant.

- **Managing infection** - if there is an infection despite adequate lid hygiene, you may consider antibiotics:
    - Topical antibiotics are advised first-line, particularly if signs suggest staphylococcal infection. Use for six weeks. Chloramphenicol ointment is first-line, with fusidic acid as an alternative.
    - Systemic antibiotics may be used if there is no response to topical treatment, or if there are signs of rosacea or meibomian gland dysfunction. Prescribe for 6-12 weeks. Options include doxycycline, lymecycline, tetracycline and oxytetracycline. Avoid if there is likely to be excessive exposure to the sun (risk of photosensitivity), in pregnant or breastfeeding women and in children under the age of 12 years. In individuals with chronic kidney disease, avoid if possible but, if they are essential, doxycycline is a safer option in this group (the others are excreted renally). Other risks associated with tetracycline use are benign intracranial hypertension, gastrointestinal disturbances and, in women, vulvovaginal candidiasis.
    - Repeated courses of antibiotics may be necessary.
    - Topical and oral azithromycin have been put forward as another potential treatment option but neither is currently routinely prescribed in the UK [12] [13] .
- **Managing dry eye** - this is a problem frequently encountered by patients suffering from blepharitis. The regular use of artificial tears (eg, qds, but adjust up or down after a trial period of a few days according to symptoms) and lubricants is appropriate. Generally, artificial tears are best used in the day and the thicker lubricants are best administered last thing at night. See the separate Dry Eyes article.
- **Managing inflammation** - corticosteroid drops are not recommended in primary care - due to the risks associated with them - but may be used occasionally by specialists in secondary care.

- **Managing underlying conditions** - these should be addressed as appropriate. This may not completely clear the blepharitis; however, this may go some way towards easing the symptoms and decreasing the intensity of the treatment.
- **Dietary supplementation** - there is some evidence to suggest omega-3 fatty acids found in fish oils may improve symptoms by improving tear quality and associated dry eye symptoms [8] [14] . Further studies are needed to confirm this, and ascertain quantities and doses to recommend.
- **Referral**:
    - Associated cellulitis, suspected malignancy and corneal involvement all warrant referral.
    - If there is a decrease in visual acuity or the patient complains of moderate/severe pain, there may be more than blepharitis going on and referral is then also necessary.
    - Uncertain diagnosis may also benefit from referral, as may the presence of concurrent disease, depending on its nature.

Complications [3]

Complications involving the lid

- Chalazion formation: this is a meibomian cyst which is chronic and sterile, filled with lipogranulomatous material. They may be multiple and recurrent but long-standing large ones can be removed in a simple minor operative procedure in an eye unit. They can occasionally get infected (infected chalazion or internal hordeolum). Occasionally, pressure of a chalazion can cause astigmatism.
- Stye (external hordeolum): this is a painful, purulent swelling, most prominent on the outside of the eyelid, which arises due to staphylococcal infection of the follicle of an eyelash.
- Trichiasis (inward-turning of eyelashes).
- Madarosis (loss of eyelashes).
- Poliosis (loss of pigment from eyelashes).

- Lid scarring and ulceration. This can in turn cause ectropion or entropion.

Complications involving the rest of the eye

- Contact lens intolerance is common.
- Dry eye syndrome is also common - particularly in posterior blepharitis.
- Conjunctivitis - results from infiltration of the conjunctiva with bacterial debris from the eyelid.
- Conjunctival cysts (clear fluid-filled blebs) and concretions (little yellow-white fat aggregates embedded in conjunctiva - most often seen on eversion of the inferior tarsus). These tend to be asymptomatic but very large concretions may give rise to a foreign body sensation and can be removed simply with a 25 G needle, under slit-lamp examination, with a drop of local anaesthetic in situ.
- Conjunctivitis.
- Keratitis (corneal inflammation) ± ulceration. Symptoms of a foreign body sensation, pain, a red eye and photophobia would lead you to suspect this and should prompt referral for further assessment.

Prognosis[3] [8]

This is a chronic condition which rarely fully resolves. Remissions, relapses and exacerbations are the norm. However, with patient education and continued adherence to lid hygiene measures (this needs to be reiterated on subsequent visits, even if the eyes are feeling comfortable), symptomatic control can be good. It will not permanently damage eyesight if the complications affecting the eyes are treated appropriately.

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