Allergic Conjunctivitis

The term conjunctivitis refers to inflammation of the conjunctiva. When this is caused by an allergic reaction it is called **allergic conjunctivitis**.

The most common form is a type 1 hypersensitivity reaction, which gives rise to **seasonal or perennial allergic conjunctivitis**.

Other types of allergic conjunctivitis are described here but their management is generally guided by an ophthalmology team. See also separate Eye Drugs - Prescribing and Administering (notes about eye drop allergies); Conjunctivitis (viral and less common types of conjunctivitis); Infective Conjunctivitis; Ophthalmia Neonatorum (conjunctivitis in the newborn); Diagnosing Conjunctival Problems (including trauma, lesions, degenerative conditions, etc) articles.

Although allergic conjunctivitis does not harm vision or cause lasting damage, it can have a significant impact on quality of life during the acute episode[1].

**Epidemiology**[2]

- In general practice, allergic conjunctivitis accounts for four to five consultations per 1,000 patients each year. About 15% of these are allergic, and about half of allergic cases are seasonal.
- Contact dermatoconjunctivitis is the most common form of allergic conjunctivitis seen by ophthalmologists.
- Giant papillary conjunctivitis occurs in 1-5% of people using soft lenses and 1% of people using hard lenses.
- Allergies affect about 20% of the population, of whom about 20% experience eye problems[3].
- Over 50% of patients who seek treatment for allergies present with ocular symptoms.
- Seasonal allergic conjunctivitis and perennial allergic conjunctivitis are often associated with a family history of atopy (asthma, eczema or rhinitis).
- Vernal keratoconjunctivitis occurs mainly in hot climates and presents more often in young males (see 'Vernal conjunctivitis', below).

**Presentation**[2]

Allergic conjunctivitis presents with an intense itch or a burning sensation, a feeling of grittiness in the eyes and mild photophobia.

**History**

Ask about factors in the history which suggest an allergic cause.

- These include likely exposure to allergens and irritants such as chemicals, eye drops, potential chemical irritants (including eye make-up).
- Environmental allergens are suggested by symptoms which vary with seasonality, time of day, geography and nature of landscape (eg, rural, urban, oceanic).
- Contact lens use is also relevant, especially if there is poor lens hygiene.

Associated conditions which support an allergic cause include atopy, idiopathic urticaria, non-hereditary angio-oedema, and food allergies.
Findings

- Red eyes, usually bilateral, and often with a clear watery discharge.
- Oedema may be visible in round swellings on the inside of the eyelid.
- Lid swelling and/or oedema.
- Conjunctival injection.
- Discharge, if present, is usually watery.
- Skin irritation may be visible on the lids in contact dermatoconjunctivitis.
- Conjunctival chemosis with giant papillae (>1 mm) may be seen in contact lens or prosthesis users. In these cases there may be decreased lens tolerance and a mucous discharge.

Differential diagnosis

The diagnosis is usually clear but other causes of uncomfortable, inflamed eyes must be considered:

- Infective conjunctivitis: viral or bacterial.
- Blepharitis.
- Uveitis.
- Acute glaucoma.
- Keratitis: presents with a unilateral, acutely painful, photophobic, injected eye.
- Scleritis: severe, boring ocular pain, which may radiate to the head and face.
- Episcleritis: mildly uncomfortable acute-onset red segment in one or both eyes.
- Orbital cellulitis.
- Foreign body.
- Ocular herpes simplex.
- Herpes zoster ophthalmicus.
- Dry eye syndrome.
- Inflamed pterygium/pinguecula (see separate Diagnosing Conjunctival Problems article).
- Arc eye/snow blindness/retinal burns (see separate Eye Injuries article).

Investigations

Diagnosis is usually made on history and eye examination. This should include fluorescein staining, testing visual acuity, checking the anterior chamber for clarity (with a handheld ophthalmoscope) and everting the lids to examine the undersides and check for foreign bodies.

Investigations and/or referral are only indicated if there is any doubt in the diagnosis. Investigations may include conjunctival swabs, skin prick testing, serum immunoglobulin E (IgE) and radioallergosorbent testing against specified allergens (RAST).

Types of allergic conjunctivitis

There are six recognised types of allergic conjunctivitis: seasonal, perennial, drug-induced, contact lens-induced, vernal and atopic[^4].

Seasonal, perennial, drug-induced and contact lens-induced conjunctivitis are caused by type 1 hypersensitivity reactions; vernal and atopic conjunctivitis are addressed separately below.

Conjunctivitis due to type 1 hypersensitivity reactions

- Seasonal conjunctivitis (conjunctivitis associated with hay fever). The most common allergen is pollen. Grass pollens peak from May to August, whereas tree pollens tend to peak on either side of this period, depending on the tree species involved. Individual patients may have multiple allergies; however, their symptoms tend to recur at the same time each year.
- Perennial conjunctivitis, where symptoms occur throughout the year in response to various allergens such as animal dander and house dust mites. Symptoms are typically worse in the mornings.
Giant papillary conjunctivitis - common causes include contact lenses and, following eye surgery, (broken) sutures and prostheses. Giant papillary conjunctivitis is the most severe form of contact lens-associated papillary conjunctivitis. It is seen in contact lens and prosthesis users. However, the widespread use of disposable contact lenses has reduced its incidence.

Contact dermatoconjunctivitis which tends to arise in response to eye drops or cosmetics. It does not respond to antihistamines and mast cell stabilisers.

Management

The management of allergic conjunctivitis is aimed at preventing the release of mediators of allergy, controlling the allergic inflammatory cascade and preventing ocular surface damage secondary to the allergic response[3, 5].

Many patients self-treat and go for help only when basic measures have failed[1].

In milder cases, it is worth trying the following before considering drug treatment:

Non-pharmaceutical management[5]

- Avoid rubbing the eyes.
- Cool compresses, eye baths and preservative-free lubricants may be soothing.
- Avoid wearing contact lenses/prostheses until symptoms and signs resolve.
- If lenses are essential, use daily disposable lenses.
- Allergen avoidance is often tricky but should be the primary aim. Consider introducing air conditioning and ventilation, reducing pet contact, reducing carpet thickness and quantity in favour of hard floors, and regular bedding change.
- Artificial tears can be helpful in mild cases (they dilute the allergen).
- Contact lenses should not be worn if conjunctivitis is present or during a course of topical therapy.

Pharmaceutical management[5]

- Topical mast cell stabilisers. These are recommended for use throughout a period of allergen exposure. Sodium cromoglycate is usually effective but newer agents, such as lodoxamide and nedocromil, may be effective in those with an inadequate response to sodium cromoglycate.
- Topical antihistamines (other than in contact dermatoconjunctivitis which is unresponsive to these). The topical ocular antihistamines, antazoline, azelastine, and emedastine, provide rapid relief of the symptoms of allergic conjunctivitis. Azelastine may have additional mast cell stabilising properties[6]. Topical antihistamines are not appropriate for prolonged use (no longer than six weeks).
- Combined antihistamine/vasoconstrictor drops - eg, antazoline with xylometazoline.
- Diclofenac eye drops are also licensed for seasonal allergic conjunctivitis.
- Oral antihistamines such as loratadine or chlorphenamine. Oral antihistamines provide relief of symptoms and are particularly useful when there is associated allergic rhinitis. They can cause drowsiness, particularly the older compounds such as chlorphenamine. Patients need to be cautioned regarding this.
- Topical corticosteroids. These can be used if symptoms are very severe; however, they are an unusual option in primary care and there must be absolutely no doubt about the diagnosis[7]. Steroid drops carry increased risks of infections (including the risk of worsening undiagnosed corneal herpes simplex or ocular herpes zoster), and of secondary glaucoma. Long-term use is avoided because this can result in cataract, glaucoma, and severe bacterial or fungal infections involving the eyelid, conjunctiva and cornea.
- Topical corticosteroids should never be given for undiagnosed red eye, when visual acuity is impaired, or if there is a previous history of ocular herpes simplex.
- Intranasal corticosteroids have been shown to reduce ocular symptoms[8].
- Oral steroids in a short (five-day) course may be used in severe cases where there is no doubt about the diagnosis[7].
- Patients experiencing giant papillary conjunctivitis following surgery should be referred to an ophthalmologist.
- Consider referral where contact dermatoconjunctivitis is severe or where an alternative eye drop also needs to be prescribed (eg, for glaucoma).
Complications

Serious complications are very rare in the majority of cases of allergic conjunctivitis; however, a severe allergic reaction can lead to corneal ulceration.

Prognosis

Prognosis is excellent with resolution over a variable time course.

Vernal conjunctivitis

This is an uncommon IgE- and cell-mediated allergic condition, mainly affecting boys (usually after the age of 5 years) and young individuals (there is no gender bias post-puberty), living in warm conditions. It rarely persists beyond the age of 25 years. Its incidence is decreasing among the white population but increasing among Asians. It is most common in Arabs and Afro-Caribbeans.

Vernal conjunctivitis may be seasonal or perennial and it is often more pronounced in the spring months.

Consider the diagnosis in patients not responding to conventional treatment. A new grading system has been developed to indicate the severity of this disease, ranging from 0 (absence of symptoms and no therapy) to 4 (severe disease involving the cornea and needing pulsed high-dose topical steroid).

Risk factors

- Atopy (patient or family history in over 80% of cases).
- Associated keratoconus (possible cause, possible effect) and other types of corneal malformations.

Suggestive symptoms

- Intense itching.
- Thick ropey mucous discharge.

Signs

- Large cobblestone upper lid papillae (if these are very large, they may cause a mechanical ptosis).
- Raised white mucoid nodules arranged around the limbus (margin) of the cornea.
- Associated keratitis (in the form of little epithelial erosions, seen as tiny dots on slit-lamp examination with a fluorescein stain or in the form of an ulcer).

Management

Refer suspected vernal conjunctivitis to ophthalmologists, as management is specialised and serious corneal complications can occasionally occur. Topical steroids may need to be added to conventional anti-inflammatory treatment. Systemic therapy with steroids ± cyclosporin may sometimes be needed. Aspirin may be of benefit in older children. Systemic antivirals may be added to the treatment regime if immunosuppressants are used, as these patients are vulnerable to herpes simplex keratitis. Permanent relocation to a cooler climate is a very effective therapy for vernal conjunctivitis although, clearly, this is not often practicable.

Atopic conjunctivitis

This is a relatively rare but potentially serious condition affecting mainly young individuals (onset: age 25-30 years) who have atopic dermatitis. Presentation can be similar to vernal conjunctivitis but the condition persists for years and is associated with significant visual morbidity secondary to keratoconus, presenile cataract and, occasionally, retinal detachment.

Suggestive symptoms

- Itching.
- Redness.
- Photophobia ± blurred vision.

Signs

- Red, thickened, scaly and occasionally fissured lids (lid eczema and blepharitis).
- Cicatrisation of the conjunctiva in advanced cases.
- Keratopathy (including keratoconus).
- Evidence of concurrent infections such as herpes simplex virus (HSV) and microbial keratitis.
- Unlike vernal conjunctivitis, the discharge tends to be watery.

Management
Referral to ophthalmology, where the approach is similar to that for vernal conjunctivitis. This condition is associated with a higher rate of corneal scarring than vernal conjunctivitis and needs specialised care\(^4\).

**Further reading & references**

- Pollen Count Forecast

2. Conjunctivitis - allergic; NICE CKS, August 2012 (UK access only)
4. What sets vernal keratoconjunctivitis apart from other allergic conditions, and how to create targeted treatments for it; Review of Ophthalmology, 2012
9. Conjunctivitis - infective; NICE CKS, August 2015 (UK access only)

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