

The Itchy Eye: Diagnosis and Management of Ocular Pruritus

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Ocular pruritus is a common symptom that brings patients to the ophthalmologist's office. It may be tempting to overlook this seemingly minor problem while assessing patients for potentially vision-threatening diseases. However, itchy eyes can be a major problem and source of anxiety for patients, often affecting their day-to-day quality of life.

Although a physician's inclination may be simply to treat the symptom with topical mast-cell stabilizers or antihistamines, it is important to identify the underlying cause. By carefully and methodically determining the etiology of ocular pruritus, the clinician can select an appropriate treatment regimen and provide patients with the relief they seek.

What Causes Itchy Eyes?

Pruritus can be the chief complaint for a number of ocular surface diseases. Atopic keratoconjunctivitis, vernal keratoconjunctivitis, allergic conjunctivitis and atopic dermatitis are part of the spectrum of ocular allergies. Other causes of pruritus include dry eye syndrome, meibomian gland dysfunction, blepharitis, contact lens-induced

conjunctivitis, giant papillary conjunctivitis and contact dermatoblepharitis. A complete history, review of systems and examination can help differentiate among these etiologies.

Pathophysiology

Many of the causes of ocular pruritus are immunologically mediated.

- Allergic conjunctivitis and AKC are a result of IgE-mediated reactions that cause mast-cell degranulation and histamine release. IgE-mediated processes as well as impaired cellular immunity and genetic factors also contribute to atopic dermatitis. Both type I (immediate) and type IV (delayed) hypersensitivity reactions are involved in vernal keratoconjunctivitis. Conjunctival scrapings from patients with allergic conjunctivitis, AKC and vernal keratoconjunctivitis will reveal eosinophils that are not part of the normal conjunctival histology.

- Contact dermatoblepharitis is the result of a type IV T cell-mediated hypersensitivity reaction, which is why symptoms can take one to three days to manifest.
- Blepharitis is also believed to have an immunologic basis, as symptoms may result from a reaction to staphylococcal antigens.
- The etiology of conjunctivitis induced by contact lenses is multifactorial, including mechanical trauma, dry eye syndrome and hypersensitivity to contact lenses and/or solution as well as to protein deposits on the lenses.
- The pathogenesis of MGD involves



CONTACT LENS COMPLICATION. Giant papillary conjunctivitis.

the action of local inflammatory mediators in the setting of hyposecretion and obstruction of the meibomian gland orifices.

- DES can be caused by either aqueous tear deficiency (either Sjögren or non-Sjögren type) or evaporative tear dysfunction (which includes MGD). Patients suffering from Sjögren syndrome also have autoimmune dysregulation.

History

A thorough history and review of systems should include special attention to onset, duration and frequency of symptoms, as well as exacerbating factors and associated systemic complaints. The following questions may help narrow the differential:

- Do your eyes itch throughout the year?** Perennial complaints are often associated with allergic conjunctivitis and AKC.
- Do your eyes burn and/or tear? Do you have foreign body sensation?** All

Acronyms

AKC	Atopic keratoconjunctivitis
DES	Dry eye syndrome
GPC	Giant papillary conjunctivitis
MGD	Meibomian gland dysfunction

may be symptoms of dry eyes and/or MGD.

- **Do you have asthma, allergic rhinitis and/or eczema/skin rashes?** A positive response may suggest allergic conjunctivitis, AKC and atopic dermatitis more strongly; these conditions are frequently linked.
- **Do you wear contact lenses?** Contact lens overwear, poorly fitting lenses and/or improper hygiene can lead to contact lens-induced conjunctivitis or GPC. Soft contact lenses tend to induce more pruritus than rigid gas permeable lenses.
- **Can you identify any triggers?** Exposure to pet dander or environmental allergens can often trigger allergic conjunctivitis. Patients with vernal keratoconjunctivitis tend to be more symptomatic in warmer climates.
- **Have you used any new products, such as creams, makeup, soap or eye-drops?** Itchiness caused by exposure to a sensitizing agent is often seen with contact dermatoblepharitis or blepharoconjunctivitis. Symptoms tend to develop within one to three days of exposure.

Examination

A thorough examination will help reveal the underlying pathology.

Eyelids. Pay particular attention to the eyelids for:

- Eyelid margin erythema and edema, which can be seen with most of the conditions described.
- Scaling of the eyelids, ectropion and leathery thickness of the eyelid (lichenification) are associated with atopic dermatitis and chronic contact dermatoblepharitis.
- Periorbital hyperpigmentation ("allergic shiners") may point to an allergic cause.
- Blepharitis can result in crusting of the eyelid margin and collarettes at the base of the eyelashes.
- MGD can cause inspissation of the meibomian gland orifices, foamy tears, eyelid margin telangiectasias, puckering and recurrent chalazia.
- Papillary reactions of the palpebral conjunctiva are seen with many of the aforementioned conditions, but the

severity and location tend to vary.

- Patients with vernal keratoconjunctivitis may have giant papillae or diffuse papillary hypertrophy of the upper palpebral conjunctiva. Small papillae tend to be located on both the upper and lower palpebral conjunctiva in AKC, while papillae are more prominent on the upper palpebral conjunctiva in contact lens-induced conjunctivitis.

Conjunctiva. Conjunctival signs include:

- Mild to moderate bulbar conjunctival hyperemia and/or chemosis, which is seen in most cases of ocular pruritis.
- Varying degrees of mucoid discharge may also be seen.

Cornea. Check the cornea for:

- Punctate epithelial erosions, which are a common finding in the patient with itchy eyes. Pannus and corneal vascularization may be present and vary according to disease severity.
- Marginal epithelial infiltrates can be present in MGD and contact lens-induced conjunctivitis.
- Horner-Trantas dots (raised, gelatinous collections at the limbus) and shield ulcers are classically associated with vernal keratoconjunctivitis.

Management and Treatment

Once the diagnosis has been made, an appropriate treatment course can be selected ("Common Causes and Treatments for Ocular Pruritis," next page).

Contact dermatoblepharitis/blepharoconjunctivitis.

First, it is imperative to identify and discontinue use of the offending agent. Contact reactions to topical carbonic anhydrase inhibitors and brimonidine are commonly delayed several weeks or months. Once the irritant is eliminated, supportive treatment, including the use of cool compresses, is usually sufficient. Ocular lubrication with artificial tears or ointment is also helpful. Additional therapies include the use of mast-cell stabilizers, topical antihistamines and topical nonsteroidal anti-inflammatory drugs (e.g., ketorolac). Topical corticosteroids applied to the eyelid can hasten recovery in more severe cases.

Atopic dermatitis. Eliminate environmental and food allergens. Exacerbations on the skin can be treated with corticosteroid cream or immunomodulators (e.g., tacrolimus) in severe cases. Moisturizing the facial skin (specifically the eyelid) is important for long-term treatment. Systemic antihistamines and mast-cell stabilizers may also provide relief.

Dry eye syndrome. Lubrication of the ocular surface is the ultimate goal. Initial treatment with artificial tears (if the tears are used more often than four times daily, then a preservative-free formulation is necessary) and with lubricant at bedtime, is acceptable. Some patients may also require punctal plugs. Those who remain symptomatic may need topical cyclosporine A to increase tear production.

Allergic conjunctivitis. Once again, it is important to avoid or eliminate allergic triggers whenever possible. Supportive care with cool compresses can be helpful for some patients. The use of physical barriers (such as glasses) is also useful in limiting allergen contact. Artificial tears will help dilute any allergen remaining on the ocular surface. Topical vasoconstrictors (e.g., pheniramine, naphazoline, oxymetazoline) can be used on a short-term basis for symptomatic relief. For patients with more severe symptoms, topical (e.g., olopatadine, ketotifen), oral and intranasal antihistamines and mast-cell stabilizers (e.g., cromolyn sodium, lodoxamide) are often beneficial. Topical NSAIDs and corticosteroids should be used with caution and require frequent follow-up. Consultation with an allergist for desensitization therapy may be necessary for those patients who remain symptomatic despite these measures.

Vernal keratoconjunctivitis/atopic keratoconjunctivitis. Symptoms may be alleviated with topical antihistamines and mast-cell stabilizers. However, these patients tend to require more aggressive measures compared with those suffering from allergic conjunctivitis. Topical corticosteroids and even immunomodulators (such as cyclosporine A) may be necessary.

Supratarsal corticosteroid injections have also been used to control symptoms. Patients with AKC are more prone to infectious complications (especially herpes simplex keratitis) and should, therefore, be monitored closely. Vernal keratoconjunctivitis classically affects young men in warm climates; these patients may find relief in cooler climates or air-conditioned environments. Shield ulcers may require plaque debridement and scraping at the ulcer base followed by aggressive treatment with topical corticosteroids and antibiotics.

Contact lens–induced conjunctivitis/giant papillary conjunctivitis.

Patients should first be advised to discontinue contact lens wear until the exacerbation has resolved. It is also appropriate to refit the lenses or to try different lenses and to advise patients about proper hygiene. It may be helpful to change to daily-wear contact lenses. Once the exacerbation has resolved, mast-cell stabilizers are sometimes used as maintenance therapy. For those who remain intolerant, refractive surgery is an alternative.

Meibomian gland dysfunction/blepharitis. Education regarding proper eyelid hygiene is imperative. Warm compresses and twice-daily eyelid scrubs can help open inspissated meibomian glands. A clean washcloth dipped into baby shampoo diluted with water is commonly used for eyelid massage and scrubbing. Ocular surface lubrication with artificial tears can provide additional relief. Short-term use of a topical antibiotic (macrolides are often used) may be beneficial, while some patients will require a course of oral tetracyclines that are then tapered off. Staphylococcal marginal keratitis will often require the use of topical corticosteroids to quell the inflammatory response.

Follow-Up

Frequent follow-up is often necessary for patients with ocular pruritus. Patients on topical NSAIDs need close monitoring (to date, only ketorolac is FDA-approved for this condition), and NSAIDs should only be prescribed on

Common Causes and Treatments of Ocular Pruritus

Contact dermatoblepharitis/blepharoconjunctivitis	Remove offending agent Cool compresses, artificial tears Mast-cell stabilizers and topical antihistamines Topical NSAIDs (e.g., ketorolac) and corticosteroids as needed
Atopic dermatitis	Remove offending agent Topical corticosteroid cream or immunomodulators for skin symptoms (e.g., tacrolimus) Lubrication of eyelids Systemic antihistamines and mast-cell stabilizers
Dry eye syndrome	Artificial tears and lubricating ointments Punctal plugs Topical immunomodulators (e.g., cyclosporine A)
Allergic conjunctivitis (seasonal and perennial)	Remove offending agent Cool compresses Eyeglasses to shield from allergens Artificial tears Topical vasoconstrictors (e.g., pheniramine, naphazoline, oxymetazoline) for short-term symptomatic relief Topical (e.g., olopatadine, ketotifen) as well as oral or intranasal antihistamines, and mast-cell stabilizers (e.g., cromolyn sodium, Iodoxamide) Topical NSAIDs and corticosteroids Consultation with an allergist for desensitization therapy
Vernal keratoconjunctivitis	Topical antihistamines and mast-cell stabilizers Topical corticosteroids and immunomodulators (e.g., cyclosporine A) Supratarsal corticosteroid injection
Atopic keratoconjunctivitis	Similar treatment as for vernal keratoconjunctivitis
Contact lens–induced conjunctivitis/giant papillary conjunctivitis	Discontinue contact lens use Refit contact lenses Proper contact lens hygiene Mast-cell stabilizers for maintenance May consider refractive surgery in refractory cases
Meibomian gland dysfunction/blepharitis	Eyelid hygiene Artificial tears Topical antibiotics (e.g., macrolides) Course of oral tetracyclines followed by taper Short course of topical corticosteroids

a short-term basis due to the risk of corneal melts and perforation. Patients taking topical corticosteroids also require close monitoring for super-infection and for the development of corticosteroid-induced ocular hypertension. For those patients who require an extended course of topical corticosteroids, combination therapy with a topical antibiotic may be indicated.

Management of patients with systemic complaints is often facilitated by consultation with an allergist.

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