

Understanding and managing allergic conjunctivitis

Mile Brujic, OD



Ocular allergies are one of the most common conditions that doctors of optometry will treat in our practices. Although the prevalence of allergic conjunctivitis can vary significantly based on the time of year and the region of the country you live in, it is typically seen in 20 to 40 percent of the population.¹ This condition is highly symptomatic and if not identified and treated appropriately, it can cause significant inflammation and patient symptoms. We will look at the various types of allergic eye disease along with strategies to successfully treat them.

Importance of Identifying Ocular Allergies

When patients come into our offices with active symptoms of allergic conjunctivitis, many eye care practitioners don't hesitate to treat these patients with highly effective therapeutic agents. What I have found is that doctors of optometry need to make sure we are checking at every visit whether patients have allergies that may manifest themselves throughout the year. Often times, patients who fill out history forms will not include allergy symptoms that they may experience if their symptoms are not currently active. It is incumbent upon us to identify these patients so that we can provide the proper guidance for when their symptoms are active.

This is especially important for our contact lens wearing patients. These patients will often take treatment into their own hands by either decreasing lens wearing time, utilizing over-the-counter agents that may not be ideal for their condition or a combination of the two. Identifying these people gives us the opportunity to discuss and provide proper treatment direction when they do experience their symptoms.

Seasonal Allergic Conjunctivitis

Of the various forms of allergic conjunctivitis that patients will present to our office, seasonal allergic conjunctivitis will be the most common form. It is referred to as an immediate or Type I hypersensitivity response because of the rapid onset of signs and symptoms that occur when a patient comes in contact with the offending allergen.

The allergen will bind directly to immunoglobulin E (IgE) molecules that are located on the surface of mast cells. When allergen binds to IgE, it causes a cross linking to occur between these molecules.² This will then activate a cascade of intracellular events that will ultimately lead to intracellular granules filled with histamine to fuse their membrane with that of the cell. This will then cause the histamine to be released outside of the mast cells in massive amounts and very quickly after the patient is exposed to allergen.³

Histamine that is released in the tear film and the ocular tissues will trigger most of the classic signs and symptoms that we see in seasonal allergic conjunctivitis. Most notable to patients is a strong urge to itch the eyes because of histamine binding to nerve endings causing this response to occur.⁴ Patients with seasonal allergic conjunctivitis (SAC) will experience the greatest itching in the inner canthal region of the eyes. This occurs because of the natural blink mechanism which will move tears towards the nasal region.

Additionally, histamine will bind to blood vessels causing vasodilation and creating a classic allergic appearance of "red eye." As the vasodilation occurs, the vessels will become more permeable and allow additional fluid to enter into the surrounding tissues causing both chemosis and eyelid edema. All the while, the eye attempts to remove the allergens from the surface and a tearing response ensues.⁴

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Dr. Mile Brujic is a partner of Premier Vision Group, a successful four location optometric practice in Northwest Ohio. He practices full scope optometry with an emphasis on ocular disease management of the anterior segment and contact lenses. He is active at all levels of organized optometry. Dr. Brujic has published over 100 articles and has given over 500 lectures, both nationally and internationally on contemporary topics in eye care.

Diagnosing this condition is usually straightforward as these patients will often be in their allergy season or will remember having a similar event in the past and having a similar response which required treatment. Additionally, this is usually a bilateral condition, although it can be asymmetric in its appearance. If the presenting signs and symptoms do not clearly indicate that it is allergic conjunctivitis and you are suspecting viral conjunctivitis, it may be wise to utilize the adenoplus to rule out a viral conjunctivitis. The adenoplus measures for the presence of adenoviral antigens and gives the clinician either a positive or negative result, with a positive result indicating the presence of adenovirus.⁵ Utilizing this test allows rapidly being able to rule out an adenoviral conjunctivitis.

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Treatment for seasonal allergic conjunctivitis involves initially removing the offending agent. For most, this is difficult as they are frequently surrounded by the allergen that caused the response throughout their environment. What also helps significantly with symptoms is instructing patients to wash their hair in the evening and regularly replace any bedding, specifically pillow cases. The hair can entrap allergens throughout the day and can manifest significant signs and symptoms in the morning after being surrounded by them while sleeping. One study showed that when dogs are washed two times a week it significantly reduces the amount of recoverable antigen from the animal which would likely help those who may be suffering from allergic eye disease.⁶

Additionally, applying cold compresses to the eyelids can help tremendously with eyelid edema and inflammation. Artificial tears can help remove allergens from the ocular surface.⁷ The typical recommendation for those with allergies is non-preserved artificial tears. Keeping these drops chilled in a refrigerator will also help alleviate patient symptoms to a certain extent. The challenge with both cold compresses and artificial tears is that although help in temporarily alleviating some of the signs and symptoms of SAC, they will not get to the root of the problem which is the release of histamine from sensitized mast cells.

Fortunately, there are a number of topical therapeutics that address both the instability and propensity for mast cell degranulation when in the presence of allergen. Additionally

they also act as an antihistamine to help alleviate much of the symptoms and clinical sequelae that is the result of histamine released from the mast cells. As a category, these medications are frequently referred to as antihistamine/mast cell stabilizing products and work remarkably well to help alleviate the signs and symptoms of SAC.

One of the medications is alcaftadine. It is commercially available as Lastacaft (0.25%). It is available by prescription and is approved as a qd dosing schedule which makes it convenient regimen.⁸ Bepotastine is commercially available as Bepreve (1.5%) and is also available by prescription and is approved as a bid dosing schedule.⁹ Azelastine and epinastine are both available in generic formulations. They are commercially available as Optivar (0.05%) and Elestat (0.05%) respectively. They are both available by prescription and approved as a bid dosing schedule.^{10,11}

Ketotifen used to be available only by prescription but in recent years has become available as an over-the-counter product. It is commercially available under several names such as Zadator (0.25%) and Alaway. They are over-the-counter agents and are a bid dosing schedule.^{12,13}

Olopatadine is unique in that it is available at two different concentrations: 0.1% and 0.2%. It is commercially available as Patanol (0.1%) and Pataday (0.2%). Patanol is 0.1% olopatadine and is a prescription product approved for a bid dosing regimen.¹⁴ Pataday is 0.2% olopatadine and is a prescription product that has the convenience of being approved as a qd dosing regimen.¹⁵

At times, corticosteroids may be warranted to help those with seasonal allergic conjunctivitis. Steroids work through inhibiting transcription in the cell nucleus which inhibits the production of pro-inflammatory molecules produced by immune cells. As such, corticosteroids create a diffuse dampening of the inflammatory process.¹⁶

Although allergic eye disease can result in significant inflammation causing much of the signs and symptoms that are associated with the disease, the safety profile of topical steroids should be balanced by the benefits to using such a medication. The two main side effects of steroids are certainly the concern of the development of cataracts and an increase in intraocular pressure. Ester-based steroids seem to provide much of the benefits of this category of medication with minimal side effects.⁷

Topical loteprednol is one such option that has been utilized for this purpose. Alrex is 0.2 percent loteprednol offers patients the anti-inflammatory benefits of a topical steroid with a low propensity for side effects. In a recent study, 300 patients with seasonal allergic conjunctivitis were randomized

to either topical loteprednol 0.2 percent qid or an anti-histamine/mast cell stabilizer bid. Fifteen days after beginning treatment, patients experienced a greater reduction in ocular itching scores with steroid treatment. There was no difference in conjunctival bulbar redness between the two groups.¹⁷

For those that may require a stronger steroid based on the level of inflammation, consider loteprednol etabonate 0.5 percent (Lotemax) on a qid dosing regimen until symptoms improve. If you feel that your patients would benefit from a steroid throughout the evening, consider utilizing a steroid ointment to provide continued anti-inflammatory activity throughout the evening. Two options that are available include flourometholone 0.1 percent (FML) and loteprednol 0.5 percent (Lotemax).^{18,19} Patients are typically instructed to place the ointment in the lower fornix right before bed because of the blurring that ointment will cause.

Giant Papillary Conjunctivitis

Giant papillary conjunctivitis (GPC) is the second most commonly encountered allergic eye disease in clinical practice. It is named because of very obvious and impressive clinical appearance. Essentially, large papillae form on the superior tarsal plate. It is accompanied with itching and redness along with an increased level of mucous production.²⁰ This increased mucous production can sometimes form a mucous shield over the surface of the tarsal plate which will at times make it difficult to view the papillae present. The increased mucous production can cause blurring of the vision as it is blinked across the cornea over the visual axis.



Figure A: View of upper tarsal plate of a patient with GPC that is coated in mucous

GPC will be the result of chronic irritation to the tarsal plate. Frequently this is secondary to a patient wearing contact lenses who is abusing them, causing significant deposition on the surface resulting in the papillary response seen clinically. This causes the increased amounts of mast cells, eosinophils and basophils present in the surface of the conjunctiva.²¹ This can be seen bilaterally with either a symmetrical or assymetrical appearance. It can also be seen unilaterally. Other things that could trigger GPC are a foreign body, exposed sutures and extruded scleral buckles.

Strategies for the treatment of GPC are very similar to that of SAC and require a multifaceted approach. Initial strategies include removing the stimulus causing the immunological

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response. I will usually swab the tarsal plate initially to remove any of the mucous that may be present.



Figure B: Swabbing the tarsal plate with a cotton tip applicator



Figure C: Prominently visible GPC after upper tarsal plate has been swabbed

I will typically have the patient discontinue contact lens wear and begin a topical corticosteroid on a qid dosing schedule along with beginning an antihistamine/mast cell stabilizer combination concomitantly.^{22,23,24} Usual follow-up would be about one week after beginning treatment. If signs and symptoms are significantly resolved, consider discontinuing topical corticosteroids and continuing with the antihistamine/mast cell stabilizer combination. If signs and symptoms are still present, consider continuing topical corticosteroid therapy until they are sufficiently controlled. Remember to always measure intraocular pressures at follow-up visits. Also remember that in general, the longer a patient is on steroids, the more likely they will be required to taper off of the drop to avoid a rebound inflammation.

If GPC was secondary to contact lens wear, most patients will usually be able to begin wearing contact lenses between two to four weeks after treatment has begun. This will vary depending on the severity of the condition before treatment was initiated. If a patient's contact lens prescription is available in a daily disposable modality, it would be wise to consider this option for these patients.²⁵ If their prescription is unavailable in a daily disposable option, consider a hydrogen peroxide based system for cleaning and care for the lenses because of its strong cleaning and disinfection efficacy.^{26,27} Although GPC is less likely to occur in patients who wear rigid gas permeable (RGP) contact lenses, it can still occur in these patients. For these patients, consider utilizing Clear Care. In addition to being approved for soft lenses, it is also approved for RGPs.²⁸

Vernal Keratoconjunctivitis

Vernal keratoconjunctivitis (VKC) is a chronic form of allergic conjunctivitis. It is typically seen in patients who are under 25 years of age and has a predisposition for males.²⁹ It typically

tends to have a seasonal predilection, but is often described as a non-specific sensitivity.

VKC is believed to be an inflammatory response that is driven by an IgE dependent mechanism and an IgE independent mechanism. It is the IgE independent mechanism that causes the recruitment of more inflammatory cells which causes many of the signs that are typically seen with this condition. Specifically, there is a significant increase in eosinophils and lymphocytes cells. Similar to seasonal allergic conjunctivitis, there is an increase in mast cells as well.³⁰

VKC is characteristically identified by large cobblestone papillae that are located on the superior tarsal plate. In severe situations, it can actually cause the upper eyelid to appear as though there is a ptosis. This condition is often accompanied by severe itching and ocular redness. Often times these patients will also experience significant mucous discharge.²⁹

The concern with vernal conjunctivitis is the involvement of the cornea which can result in a keratoconjunctivitis. Frequently this initially begins with small white glistening appearing elevations in the limbal area called Tranta's dots. This is thought to be the infiltration of chronic inflammatory cells into the region. Punctate epitheliopathy, which can progress to shield ulcers, can also be seen in more severe cases.

Treatment protocols for patients with vernal disease will usually require the utilization of a steroid. Those mentioned previously in the article work well and are utilized on a qid dosing regimen. Just as previously noted, make sure you are following up with patients utilizing steroids regularly to make sure that you are following their IOPs. This is accompanied by cold compresses performed several times. Artificial tears between dosings also work remarkably well as needed for patients requiring them.

The combination mast cell stabilizing/antihistamine agents work very well when combined with steroids. It helps with much of the itching that patients will complain about in addition to stabilizing mast cells.

For patients that may need some type of long-term steroid treatment, consider cyclosporine 0.05percent bid OU.³⁰ Cyclosporine does not have the broad spectrum of anti-inflammatory activity that a corticosteroid does, but it has a remarkably safe side effect profile. For this reason, it has advantages for a patient requiring long-term anti-inflammatory activity.

Atopic Keratoconjunctivitis

Atopic keratoconjunctivitis (AKC) is another type of chronic allergic eye disease. It is associated with atopic dermatitis and has a perennial predisposition. Although the condition is perennial, it will manifest significantly greater signs and symptoms during times of increased environmental antigens.

Just as the other forms of allergic eye disease, atopic keratoconjunctivitis will cause significant itching. Ocular redness and mucous discharge is also commonly seen with AKC. Because of the chronic nature of this condition, along with the recruitment of significant immunologic cells, you will at times see corneal involvement leading to ulcers, neovascularization and photophobia.³¹ Chronic eyelid rubbing is thought to lead to the greater prevalence of keratoconus in this patient population.³²

Treatment follows a similar logic as with the other chronic allergic conditions. Steroids are usually a first line choice for

severe exacerbations but should be used with caution balancing the benefits versus the risks. Usually these patients are on a maintenance dose of topical antihistamine/mast cell stabilizers. If this class of medication does not adequately control the signs and symptoms of the disease, consider topical cyclosporine in addition to the antihistamine/mast cell stabilizer.

Conclusion

As with any disease entity, proper diagnosis and treatment is imperative to successfully managing these patients. Understanding ocular allergies and the current treatment protocols will help to control this disease as well as patient symptoms.

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