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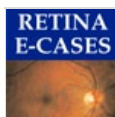


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How to Manage Ocular Allergy in Athletes

Athletes must perform at 100% to compete at the highest levels. Don't let the signs and symptoms of ocular allergy slow them down.

By Richard B. Mangan, O.D.

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A 40-year-old white male presented with a chief complaint of watery, itchy eyes O.U. He said that his eyes often bothered him year-round, but had been significantly worse over the past two weeks. He attributed his symptoms to seasonal allergies, although he had never been formally tested.

Normally, he wore biweekly replacement Acuvue Oasys (Vistakon) soft contact lenses, but indicated that his wearing time had decreased over the previous year because of irritation and dryness. He used Claritin (loratadine, Schering-Plough) on a regular basis, but took no other medications. He hoped we could offer a prescription to help him manage his allergic symptoms and wanted to know if he might be a candidate for laser vision correction (LVC).



I told him we would be happy to address his allergy symptoms. Additionally, I offered him a same-day LVC screening. If we found that he was a potential candidate for LVC, we would assist him in scheduling his refractive consultation.

His entering visual acuity measured 20/20 O.U. with a current spectacle correction of -1.50D +0.25D x 095 O.D. and -1.25D +0.25D x 090 O.S. The patient reported right-eye dominance. External examination showed no gross pathology. Slit lamp examination showed thickened lid margins O.U. Lid position and apposition were normal. There was a well-positioned, Freeman-style, silicone punctal plug at the lower punctum in the right eye. We noted epiphora (O.D. > O.S.) secondary to reflex tearing.

There was 1+ bulbar and palpebral conjunctival injection O.U. He had mild giant papillary conjunctivitis (GPC) on lid eversion O.U. Tear prism was reduced, but there was only minimal lissamine green staining and no sodium fluorescein staining O.U. Tear film break-up times were six seconds O.D. and seven seconds O.S. His physiological lenses were clear in both eyes. The remainder of his anterior segment examination was unremarkable.

When asked if he had any other allergic symptoms (e.g., runny nose, asthma, skin rash), the patient indicated that he experienced sneezing episodes with nasal drainage if he didn't take Claritin on a regular basis. Only on occasion did he notice a rash on his torso and neck after he exercised, but he never had any breathing or respiratory problems. He attributed the rash to the chlorine level in the pool he trained in. When I further inquired about his training, he indicated that he primarily does endurance exercises for multi-sport events, such as triathlons and duathlons. He said that one of the main reasons he was interested in LVC was because his eyes really bothered him during the swimming and cycling phases of these events. He reported that he used swimming goggles and wraparound glasses as well as a headband to help keep sweat out of his eyes.

If this were your patient, how would you proceed? Would you recommend further testing? What medication might you prescribe? Would you recommend LVC, or might you offer a different solution regarding his contact lens wear? Should our treatment plan for this patient be different than for a non-athlete?

This article addresses your role as an eye care provider in allergy management for multi-sport athletes.

Ocular and Nasal Allergy

According to the American Academy of Asthma, Allergy and Immunology (AAAAI), a nationwide survey determined that more than half (54.6%) of all Americans test positive for one or more allergens.¹ In 2006, there were more than 12 million physician office visits due to allergic rhinitis alone.² Allergic rhinitis is now estimated to affect approximately 60 million Americans, and roughly 90% of these individuals are likely to report ocular symptoms.^{3,4}

Unfortunately for the elite athlete, the peak incidence of seasonal allergic rhinoconjunctivitis (ARC) coincides with their peak years of training and competition (ages 10 to 25). That said, the average age of the multi-sport athlete is between 35 and 40 years old. This is an important consideration because both ARC and asthma have been on the rise across all age groups over the last three decades.⁵

Perhaps of greater concern is the impact that allergy can have on other aspects of an athlete's health and wellness. While symptoms related to allergic rhinitis may have performance-impairing effects on race day, persistent allergen exposure and mucosal inflammation can lead to chronic nasal obstruction—one of the more prominent complaints of endurance athletes. Chronic nasal obstruction often results in sleep disturbance (including snoring), headaches and fatigue. Other allergy related conditions that may affect athletic performance include hives, angioedema, contact dermatitis, and exercise-induced asthma and/or anaphylaxis.⁶

As a key member of a competitive athlete's health care team, you may be asked to provide guidance on how to minimize the impact of ocular allergy on sport performance. Let's look at our patient more closely and see if standard allergy management protocols apply equally to this competitive athlete.

Differential Diagnosis

Whether your patient presents in the spring, summer or fall, we often can predict that one or more environmental

antigens (i.e., tree, grass and mold pollens) are to blame. In this case, our patient clearly suffered from seasonal allergic conjunctivitis (SAC) with intermittent rhinitis. SAC is not a diagnostic conundrum. Hallmark ocular signs (redness, serous discharge and often chemosis) and symptoms (itching, itching and itching) are unmistakable.⁷

Our patient indicated that while his symptoms were worse during the spring and summer months, he still suffered all year long. This could indicate a perennial allergy component (e.g., dust mites or pet dander). Perennial allergens can be more difficult to recognize because chronic exposure over time can cause mild sensitization. Older houses or those with wall-to-wall carpeting can provide the perfect breeding ground for mold and dust mites. Add one or more pets to the mix, and your patient is ripe for chronic allergic symptoms.

Avoid the Avoidable

Here are several recommendations on how you can help reduce the impact of ocular allergy on your patients:

- **Track pollen counts.** Tracking pollen counts during workouts often can help athletes identify their tolerance threshold. In the future, this can give athletes greater perspective on whether they should modify their outdoor workout schedule or move indoors. There are several websites and phone apps available that offer up-to-date pollen counts (see "[Pollen Count Websites and Phone Apps](#)").
- **Get tested.** Some athletes don't have much choice when it comes to the timing of competitive events. In fact, many endurance events take place in the morning when pollen counts typically are at their highest. So, testing for outdoor seasonal allergies isn't always helpful from an avoidance perspective. But, if traditional avoidance techniques and conventional treatments fail to yield results, the next step should be allergy testing in an effort to rule out any and all causes for recalcitrant symptoms.
- **Give your home a makeover.** Consider removing pets from the house, or at least, from the bedroom. Replace down pillows with hypoallergenic pillows. Always take a shower after exercising and before going to bed, so you don't transfer accumulated outdoor pollens to cotton fabrics, sheets or pillowcases. Consider swapping out carpet for hardwood or tile flooring.
- **Avoid or reduce CL wear.** We know that contact lenses can have an adverse effect on tear film dynamics. We also know that contact lenses are prone to collecting surface antigens, especially in the presence of protein deposits. During a type 1 allergic response, mast cell degranulation on the conjunctival surface contributes to surface inflammation and a reduction in mucin production, which may induce or exacerbate a dry eye condition. As the tear volume decreases, the concentration of histamine and other inflammatory mediators increases. Eye rubbing often ensues, causing additional mast cell degranulation and a worsening of symptoms. For the competitive athlete, this allergic cycle not only can affect vision and concentration during competition, but the increased eye rubbing also increases the risk of the contact lens falling out.
- **Wear swimming goggles and wraparound glasses.** It has been estimated that 20% of contact lens wearers participate in some form of water activity or sport.⁸ If proper protective eyewear is not utilized, the risk for contact lens contamination is significantly greater.

Chemical dermatitis from chlorine is common. In excessive amounts, chlorine can cause ocular irritation.⁹ Additionally, waterborne microbes, such as *Pseudomonas aeruginosa*, or parasites can cause a significant skin rash.

One study examined microbial growth on hydrogel (n=15) and silicone hydrogel (n=15) contact lenses after athletes swam for 30 minutes in a chlorinated pool. No swimmers wore goggles, and two lenses were lost during the study. The researchers found that 27 of 28 lenses showed significant colonization of bacteria when compared to the control group, and the organisms most frequently identified (including *Staphylococcus epidermidis*, *Staphylococcus aureus* and *Streptococcus salivarius*) were present in the water sample taken from the pool. The researchers concluded that, regardless of the lens material, wearing contact lenses in chlorinated pools increased the risk of bacterial contamination and that the use of swimming goggles decreased the risk significantly.

Wraparound glasses are equally important in managing allergic conjunctivitis in endurance athletes. Not only do the glasses decrease the amount of airborne pollen that could come into contact with the 50 million or so mast cells that occupy the ocular surface, but also they greatly reduce the evaporative effects that wind can have on the pre-corneal tear film.

- **Avoid silicone punctal plugs.** Punctal occlusion with silicone plugs usually creates more problems than it solves when allergy and dry eye collide. As previously noted, the classic symptom of SAC is intense itching. With intense itching often comes vigorous eye rubbing and lacrimation. Therefore, patients with SAC who have punctal plugs are at risk for canalicular migration of the plug and are likely to have intermittent or chronic complaints of epiphora. If plugs are necessary, consider an extended-duration, dissolvable material. These work well for the allergy "offseason," and should dissolve at a time when flushing inflammatory mediators from the ocular surface is preferred.
- **Avoid oral antihistamine use in dry eye patients or dry environments.** Try to avoid the use of any allergy medication that may promote dehydration in patients who have both allergy and dry eye disease. In competitive athletes, it is also best to avoid any medication that acts as a sedative. Newer, second-generation OTC antihistamine/mast cell stabilizers, such as Claritin, are relatively non-sedating when compared to first-generation drugs, such as Benadryl (diphenhydramine, McNeil Consumer Healthcare).¹⁰

However, scholars from Ophthalmic Research Associates and the Schepens Eye Research Institute at Harvard found that the antimuscarinic activity of products like Claritin diminished the aqueous component of the tear film, thereby exacerbating dry eye signs and symptoms.¹¹ Athletes who wear contact lenses and/or compete in high-speed activities (e.g., bicycling) or at increased altitudes (e.g., skiing) are likely to have secondary dry eye symptoms already. Oral antihistamines could potentially worsen existing ocular symptoms.

Pollen Count Websites and Phone Apps

- Zyrtec's Allergy Forecast Tool and AllergyCast www.zyrtec.com/allergy-tools/allergy-forecast-tools-apps
- Pollen.com's MyPollen Allergy Tool www.pollen.com/allergy-weather-forecast.asp
- The National Allergy Bureau's Pollen Count Database www.aaaai.org/global/nab-pollen-counts.aspx

Topical Allergy Management

The nasal lacrimal duct system is the viaduct by which tears and all of its other components empty into the nasal cavity. Lacrimal flow, which is controlled by one-way valves, moves in a unidirectional manner away from the ocular surface. This is both good and bad. If a type 1 allergic reaction begins at the ocular surface, histamine and other inflammatory mediators may migrate into the nasal cavity, resulting in allergic rhinitis. Fortunately, several studies show that patients with allergic rhinitis often obtain relief with a fast-acting topical ocular antihistamine/mast cell stabilizing eye drop, such as Pataday (olopatadine hydrochloride 0.2%, Alcon) or Lastacaft (alcaftadine 0.25%, Allergan).^{12,13}

Treating Our Patient

We informed our patient that, based on his preliminary screening, he likely would be a candidate for LVC. If we were able to eliminate his need for contact lens wear, we would marginalize several of the concerns outlined above. Additionally, it would give us more flexibility in pulse dosing a topical steroid, such as Lotemax (loteprednol 0.5%, Bausch + Lomb) for delayed, cell-mediated reactions of the eye.

Based on his correction level, eye dominance and age, I asked him which arm he wears his sport watch on. He indicated his left wrist. We discussed the concept of monovision, because he is pre-presbyopic. I informed him that we could treat his right eye only for distance while leaving his left eye naturally focused for near viewing. This would save him some money up front, and he would have no problem viewing his watch with his left eye.

The patient indicated that he wanted to proceed with the consultation for LVC, but would like to defer treatment until his flex spending account had been fully funded.

Therefore, I recommended that he immediately switch to a daily replacement contact lens, such as Proclear (CooperVision). One study showed that daily replacement of contact lenses resulted in greater continued comfort compared to weekly or monthly replacement.¹⁴ Not only is there less cumulative protein build-up on the lenses, but it also eliminates the concern of allergy or sensitivity to disinfecting or multipurpose solutions.

Ultimately, I designed this step-by-step treatment plan for our patient:

1. Remove the remaining silicone plug O.D.
2. Begin a saturation dosing protocol (SDP) of TheraTears (Advanced Vision Research) upon waking, after training (especially swimming) and before bed.
3. Upon completion of his morning TheraTears dosing, I instructed him to wait five minutes and instill Lastacraft O.U. Then, I told him to wait 15 minutes before inserting his contact lenses.
4. I asked him to keep some of his TheraTears refrigerated because chilled artificial tears and refrigerated masks provide added relief during type 1 reactions and may aid in reducing conjunctival and lid edema when type 4 delayed reactions occur.
5. Finally, I instructed him to stop using Claritin temporarily.

I informed our patient that we should begin this regimen and then re-evaluate in two to four weeks. I explained the mast cell stabilizing properties of Lastacraft and the importance of q.d. dosing. I also explained that—in some cases—nasal relief is incomplete and that a number of studies have found that the use of a steroidal nasal spray as adjunctive therapy for allergic rhinitis compared favorably to the use of OTC oral antihistamine products.¹⁵ That said, I told him that the use of Claritin is likely not affecting his energy or awareness levels, but could negatively impact his contact lens comfort, hydration and quality of vision. We may reintroduce Claritin depending on his response to our topical treatment regimen.

Multi-sport athletes are committed to excellence when it comes to their training. They spend hours upon hours perfecting their art. While the average patient will likely endure mild to moderate allergy symptom flare-ups, the endurance athlete can ill afford to be less than 100% on race day. Preparation and planning are key for multi-sport athletes, and they will be looking to you to prepare the ideal allergy treatment plan for them. In recommending personalized avoidance techniques and imparting the advantages of treating topical symptoms, you will become a significant member of their health care and sport performance team.

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