

# PSS NEWS

A Distance Learning Format for COPE Continuing Education in Optometry

## A Guide to Ocular Allergies

Pinakin Davey, OD, FAAO

COPE pending

2.0 Hours

### Learning Objectives:

1. To review the basic pathophysiology of ocular allergies
2. To discuss diagnostic techniques to properly diagnose ocular allergies
3. To learn about management options for patients suffering from ocular allergies

Allergic conjunctivitis is one of the most frequently occurring ocular conditions that optometrists see. Although we do not see allergic conjunctivitis as a blinding disease such as glaucoma or a retinal disease, it is still a nice niche for us to fill so we can expand into our therapeutic privileges. This fact is highlighted by the fact that consumers purchase roughly 40 million bottles of over-the-counter (OTC) anti-allergic eye drops each year and another 4 million in prescription drops. This is unfortunate because we have vastly superior prescription medications to help these patients better manage their condition. When you consider that roughly 85% of patients with systemic allergies suffer from some stage of ocular manifestations, you will see how important it is for us to stay updated in this area.

When most people think of ocular allergies, they think of seasonal allergic conjunctivitis (SAC). Most patients suffering from SAC are usually bothered during the spring and early fall. These

patients are usually bothered by tree pollen in the spring, grass pollen in the summer, and ragweed in the fall. A variant of this condition, called perennial allergic conjunctivitis (PAC), affects patients indoors and all year long. These patients are usually sensitive to things such as dust mites and mold or pet dander.

Two rarer and more severe forms of allergic conjunctivitis (atopic keratoconjunctivitis [AKC] and vernal keratoconjunctivitis [VKC]) also exist. But because the vast majority of what we typically see are SAC and PAC, I'll limit my discussion to these two forms.

### Pathogenesis

The immunopathogenesis of SAC is a type-I hypersensitivity IgE-mediated reaction with the mast cell as the most important cellular player.

- The patient experiences sensitization to environmental allergens. This is the sub clinical

form in which the patient develops no symptoms, but the groundwork is laid for subsequent damage. In this stage, the IgE molecule binds to receptors on sensitized mast cells and basophils in a way that prepares them for future allergen exposure.

- When future allergen contact happens, within seconds, degranulation of the mast cells occurs, leading to the release of a wide assortment of inflammatory mediators. The most important of these is histamine, but so are prostaglandins, leukotrienes and cytokines. This is the early phase of ocular allergies.

- The late phase begins hours after the initial activation and involves additional inflammatory cells. Eosinophils, neutrophils, basophils and T lymphocytes infiltrate the conjunctival mucosa. Recurrence and prolongation of symptoms are a result of a variety of mediators released by these additional inflammatory cells.

## Differential Diagnosis

In most cases, a combination of a patient history and slit lamp examination will be enough to confirm a diagnosis. However, there are a few other common anterior segment disorders you should rule out:

- dry eyes
- blepharitis
- bacterial conjunctivitis
- hypersensitivity reactions to medications.

Because the signs of allergy that you observe at the slit lamp can be minimal, it's especially important to take a thorough history. One of the key complaints in allergic conjunctivitis is itching, which may be accompanied by redness, chemosis, tearing and lid swelling. One basic guideline often holds true: "If it itches it's allergy, if it burns it's dry eye and if it's sticky it's bacterial."

Patients who just have dry eye don't have itching. Patients who have seasonal allergies rarely demonstrate the discharge associated with bacterial conjunctivitis. Patients who just have blepharitis have some intermittent itching, but it isn't the predominant symptom.

When ruling out hypersensitivity reactions, remember that many eye drops, including some glaucoma medications, contain a benzalkonium chloride preservative that can cause toxicity reactions. In addition, contact lens wearers may have allergic reactions to the solutions or to the lenses themselves. Also, in most cases, the onset of symptoms will coincide with the use of a new brand of solution, etc. To eliminate these possible culprits, have the patient temporarily discontinue contact lens use and see if the symptoms resolve.

## Managing allergy

In the vast majority of cases, you are not going to be able to treat this condition. There will be no medication or remedy that you can offer which will cure the patient. Instead, what you are looking to do is to manage the symptoms so the patient is comfortable and no damage is done.

ocular tissue occurs. With the weapons you have in your arsenal, you should be able to treat individual patients according to their specific ailments and lifestyles.

## Over-the-counter drugs

OTC ocular allergy drugs such as Opcon-A, Visine-A and Naphcon-A contain an H1-receptor antihistamine (either antazoline or pheniramine) and a vasoconstrictor (either naphazoline or tetrahydrozoline). The antihistamine component competitively blocks the H1 receptors on the nociceptive type-C nerves of the mucosal membranes.

The result is a significant decrease in ocular itching but little effect on ocular redness or swelling. The vasoconstrictor component works on the conjunctival blood vessels to decrease redness. The problem with these OTC drops are manifold:

- Many patients complain that their eyes sting, burn and tear upon instillation.
- OTC drops have a duration of action of two hours, but are recommended for use q.i.d. That only covers eight hours of relief. Even q.i.d. dosing is often not enough for patients to obtain sufficient relief.
- Chronic use of these drops often leads to tachyphylaxis, rebound conjunctivitis and a permanent loss of ocular vessel tone.

These problems are a main reason why we should use the following prescription anti-allergy drugs for our patients. In our practice, we go out of our way to tell patients of the potential consequences of

these OTC medications and to write them a prescription instead.

The drugs listed in the following categories are more effective and carry less adverse effects.

### **1. Topical antihistamines.**

Antihistamines act against histamine, which has already been released. The vast majority of them work by competitive inhibition of histamine receptors. For symptomatic relief of acute, mild hay fever conjunctivitis, an antihistamine may prove effective. These agents combat redness and swelling as well as itch. They have little impact on other pro-inflammatory mediators, such as prostaglandins and leukotrienes but provide short-term, rapid symptomatic relief of itch. But patients who have chronic ocular surface allergy need to stabilize their mast cells long term. This is one of the chief reasons why these medications have been delegated to second line defense. Topical antihistamines include:

- emedastine difumarate(Emadine)
- levocabastine HCl (Livostin)

### **2 Topical mast cell stabilizers.**

Mast cell degranulation on the conjunctiva causes the clinical symptoms of allergy. A cascade of events results, leading to increased levels of histamine on the ocular surface. Drugs known as mast cell stabilizers reduce the amount of degranulation and histamine that the mast cells release.

Mast cell stabilizers don't relieve existing symptoms of allergy; they prevent them from occurring. This works

well in a patient who has a seasonal, predictable history of allergies where you see him several weeks before the anticipated onset of symptoms and start him on the drops prophylactically. They don't work well if a patient's allergy isn't limited to discrete, predictable attacks. Once again, these are now second line agents.

Topical mast cell stabilizers include:

- pemirolast potassium (Alamast)
- cromolyn sodium (Crolom)
- lodoxamide tromethamine (Alomide)
- nedocromil sodium (Alocril)

### ***3 Topical antihistamines/mast cell stabilizers.***

These dual-acting compounds are excellent for treating ocular allergy because they combine the fast response of antihistamines with the prolonged action of mast cell stabilizing activity. These are the 1<sup>st</sup> line of defense for most patients with allergies. Many of these are available by prescription; some are now over-the-counter. Topical antihistamines/mast cell stabilizers are:

- olopatadine HCl (Patanol/Pataday/Pazeo)
- azelastine HCl (Optivar)
- Epinastine (Elestat)
- Ketotifen (Zaditor)
- Alcaftadine (Lastacift)

### ***4. Topical corticosteroids.***

There once was time where these agents were only use when severe allergic conjunctivitis doesn't respond to other treatment modalities. However, with the emergence of milder steroids

with a much better safety profile, such as loteprednol, that situation has changed.

Steroids act by blocking a vital enzyme in the arachidonic acid pathway of prostaglandin and leukotriene synthesis. Thus they help with both the early and late phase reactions of an allergic response.

The most common topical corticosteroids used in managing patient with ocular allergies is loteprednol etabonate (Alrex). Loteprednol is derived from the prednisolone molecule, which explains its great efficacy.

The safety and efficacy profile of loteprednol usually makes it the steroid of choice. The reduced incidence of IOP spikes is a vast improvement from the harsh steroid such as dexamethasone, prednisolone. For those practitioners weary of prescribing topical steroids, this is the drug of choice. In addition, this is the drug of choice for any patient who may require repeated prescriptions or long-term care, such as a patient suffering from ocular allergies.

The modern day role of Alrex in ocular allergies has been compared to the role of inhalers in asthmatic patients. Patients will use a combination product such as Patanol or Elestat for baseline therapy and then use Alrex for time periods when the pollen count is high and additional relief is required.

Another use is for moderate and severe cases of allergies when both Alrex and the combination product are prescribed together. When doing this, the patient is seen for a follow-up in 7 to 10 days and the steroid is tapered.

For conservative clinicians, you may choose to start your patient on your combination product of choice – Pazeo, Elestat, Lastacraft, etc – and see that patient back for a follow up in 1-2 weeks. Patients who still are not satisfied with their level of relief can then be given a prescription for Alrex to use at the same time as the Pazeo. Once the patient is better, the Alrex can be discontinued.

### Oral medications

The alternative is oral medications. Some of the more popular drugs include diphenhydramine HCl (Benadryl), fexofenadine HCl (Allegra), loratadine (Claritin) and cetirizine HCl (Zyrtec). However, many of them have poor ocular penetration. I use them more to control systemic conditions when I think eye drops alone won't properly manage a patient's ocular symptoms.

Many patients think that the oral anti-allergy medications are stronger, but be forewarned. These drugs inhibit muscarinic receptors, leading to mucosal dryness. A dry eye with a defective tear film offers less protection against the allergens and pollutants.

Thus, oral antihistamines may actually exacerbate ocular allergies by lowering the defense offered by a healthy tear film.

### So, Why Manage Ocular Allergies?

- We utilize our therapeutic privileges and underscore our roles as primary care providers.
- By seeing patients back for follow-up visits when writing

these prescriptions, we will confirm that the patient is better and let you pursue additional therapy if the patient is not. As a side benefit, the “extra” office visits mean “extra” revenue for your practice.

- If you don't, somebody will treat this patient and you will ultimately lose that patient to that person. Patients rarely visit one eye care provider for glasses and contacts and another for ocular disease – at least not long-term.

### Clinical Pearls

- Always see patients back for follow up when writing a prescription for allergies. Doing so will confirm that the patient is better and let you pursue additional therapy if the patient is not
- If your patient has allergy complaints only dealing with his eyes and you have him on systemic medication, consider a change. Topical medications work much better for ocular symptoms
- Don't be afraid to prescribe topical steroids for moderate to severe cases of ocular allergies. Many of these patients will have some level of inflammation associated with their condition. Topical steroids will help your patients get better quicker.
- Take advantage of medications such as olopatadine (Patanol and Pataday) which were previously prescription and now are OTC.

## **CONTINUING EDUCATION QUIZ**

This article is worth two (2.0) continuing education credits. This COPE-approved program is accredited by the University of Alabama at Birmingham College of Optometry.

Once you have registered for the course, you will be given an access code and go to [www.flexiquiz.com](http://www.flexiquiz.com) where you will take the quiz. To earn credit, you must receive a grade of 70% or greater.

Please note that all 50 states have different rules and regulations concerning the acceptance of correspondence/internet continuing education. Please verify with your state board of optometry as to the amount of allowable hours and acceptable categories/topics in your particular state.

---

### **Questions**

- 1) What is one of the most frequently occurring ocular conditions seen by optometrists?
  - A) Foreign Bodies
  - B) Bacterial Conjunctivitis
  - C) Allergic Conjunctivitis
  - D) Glaucoma
  
- 2) How many bottles of OTC allergy drops are sold each year?
  - A) 40 million
  - B) 4 million
  - C) 1 million
  - D) 10,000
  
- 3) How many bottles of prescription allergy drops are sold each year?
  - A) 40 million
  - B) 4 million
  - C) 1 million
  - D) 10,000
  
- 4) What percentage of patients with systemic allergies suffer from ocular manifestations?
  - A) 85%
  - B) 100%
  - C) 10%
  - D) zero
  
- 5) What are the most commonly seen forms of allergic conjunctivitis?
  - A) AKC and VKC
  - B) AKC and SAC
  - C) VKC and PAC
  - D) SAC and PAC

- 6) What is released in the early phase of ocular allergies?
- A) Eosinophils and neutrophils
  - B) Histamine and prostaglandins
  - C) T lymphocytes and basophils
  - D) Prostaglandins and neutrophils
- 7) Which of the following is NOT included in the differential diagnosis of allergic conjunctivitis?
- A) Dry eye
  - B) Blepharitis
  - C) Glaucoma
  - D) Bacterial Conjunctivitis
- 8) Which of the following is the key complaint in a patient with allergic conjunctivitis?
- A) Burning
  - B) Discharge
  - C) Gritty feeling
  - D) Itching
- 9) Which statement is false?
- A) Allergic conjunctivitis is a curable condition
  - B) Allergic conjunctivitis is a treatable condition
  - C) One goal of treatment should be to manage symptoms and make the patient comfortable
  - D) A goal of treatment is to prevent damage to ocular tissue
- 10) Which medication is not available over the counter?
- A) Naphcon-A
  - B) Opcon-A
  - C) Visine-A
  - D) Cyclosporine
- 11) Which is not a problem associated with use of OTC drops?
- A) Stinging, burning sensation
  - B) Restricted availability
  - C) QID dosing does not provide full day relief
  - D) Chronic use causes rebound conjunctivitis
- 12) Which category is not used for symptom relief?
- A) Topical antihistamines
  - B) Topical mast cell stabilizers
  - C) Topical antibiotics
  - D) Topical steroids
- 13) Which class of drugs is used as first line of treatment?
- A) Topical antihistamines
  - B) Topical mast cell stabilizers

- C) Topical antihistamine/mast cell stabilizer
  - D) Topical antibiotics
- 14) Which agent is not a mast cell stabilizer?
- A) Livostin
  - B) Crolom
  - C) Alocril
  - D) Alomide
- 15) Mast cell stabilizers
- A) Work to counteract prostaglandins
  - B) Counteract the effects of histamine which has already been released
  - C) Block leukotriene synthesis
  - D) Reduce the amount of degranulation and histamine release
- 16) Which category of drug is olopatadine?
- A) Antihistamine
  - B) Steroid
  - C) Mast cell stabilizer
  - D) Antihistamine/Mast cell stabilizer
- 17) Steroids act by
- A) Blocking histamine release
  - B) Counteracting already released histamine
  - C) Blocking an enzyme in the pathway of prostaglandin synthesis
  - D) Stabilizing mast cells
- 18) Which of the following is not an acceptable way to use steroids in the treatment of conjunctivitis?
- A) Continuous, daily, first line use
  - B) In non-responders to combination products
  - C) In addition to a combination product, then taper off
  - D) Used for flare-ups in patients regularly on a combination product
- 19) Which is not a problem with oral medications used for ocular symptoms?
- A) Poor ocular penetration
  - B) Poor systemic absorption
  - C) Causes mucosal dryness
  - D) Use results in less protection against allergens
- 20) Which of the following topical steroids is frequently used in moderate to severe cases of ocular allergies?
- A) Prednisolone
  - B) Loteprednolol
  - C) Dexamethasone
  - D) FML