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Excerpts From the Podium -- The Red Eye, Part 2: Types of Conjunctivitis

Dr. Stephen Orlin:
I'm going to start off by talking about infectious conjunctivitis. I think this is by far the most common form of the red eye that you're going to encounter in your practices and certainly one of the most common causes of the red eye that I see in my practice. Infectious causes of conjunctivitis include viral, bacterial and a sub-category, which is very important of sexually transmitted diseases. The most common form of viral conjunctivitis is adenovirus, although you can get herpes simplex and varicella-zoster viruses causing the conjunctivitis. Moloscum is probably the most unusual cause of conjunctivitis, but certainly something that you need to keep in your mind. There are a number of bacteria such as strep and staph, as well as Chlamydia, which can cause a bacterial form of infection of the conjunctiva. And the sexually transmitted diseases include HIV, AIDS, gonorrhea, adult inclusion conjunctivitis and herpes simplex.

There are a number of serotypes of adenoviruses. There are about 40 of them and a hand full of them are associated with eye infections. We loosely subdivide viral conjunctivitis caused by adenoviruses into two kinds. The PCF, which stands for pharyngeal conjunctival fever which is usually caused by serotypes 3, 4, 7 and 14 and EKC, which stands for epidemic keratoconjunctivitis because it is a disease that runs in epidemic proportions, thus disease is spread from hand to eye touch, seen commonly in schools, swimming pools and places of employment, and it's a highly, highly contagious disease. I think that if you encounter it in your practice and we certainly do in ophthalmology, we have to close down that particular room that we might be using and have it cleaned out, because it's very, very dangerous for us to see 20, 30 or 40 patients in a day and each having passed through the same clinical room and then a week later we have another 40 patients with conjunctivitis. And one thing that you might not realize, but if a patient sitting in your waiting room picks up a magazine, reads it and then puts it down and then comes into your examining room and then the next patient comes through the waiting room, picks up the same magazine, reads it and before you know it you can have an epidemic running through your clinic.

The primary infection confers lifelong immunities. So, what particular viral strain might be causing the infection will not reoccur. But just like with flu epidemics different strains of the viruses come through on a yearly basis and we see epidemics once or twice a year that run through our areas, particularly where I work in Philadelphia. So, the basic difference between EKC and PCF is not huge, but PCF is more of a systemic illness where patients have a fever, they have an upper respiratory tract infection with maybe a runny nose and pharnygitis and usually occur in young children. EKC is associated with follicular conjunctivitis. All these patient's have a preauricular lymphadenopathy and that's one crucial differential that you could use in your evaluation of patient's with a dry eye to see whether or not they have a preauricular lymph node. And sometimes they might even have a submandibular lymph node, so that you should feel for those because it certainly can wrap up a diagnosis for you.

EKC it not that benign of disease and certainly if any of you have had it it's not very pleasant. You can get hemorrhaging of a conjunctiva and you can get corneal infiltrates, which can blur your vision and unfortunately these infiltrates can last a long time and they are very, very difficult to manage. Not uncommonly however one eye might be less involved than the first eye and the reason for this is that the patient already starts to develop some sort of immunity to the viral strain, so the infection in the second eye is oftentimes muted some what. They have eyelid swelling and they have a watery discharge. The discharge is critical also in viral conjunctivitis as opposed to bacterial forms of conjunctivitis where there's a purulent discharge. In EKC, the patient's just have a watery serous discharge. They can also get little membranes of the conjunctiva, which can be very, very uncomfortable. And then lastly, they can get infiltrates in the cornea, which can blur their vision considerably. One important thing that you should do is always retract the lower eyelid, because these patient's have little bumps in the lower eyelid called follicles. Follicles are little aggregates of lymphoid tissue which are triggered by the viral infection and that again is almost pathognomonic for viral conjunctivitis.

The cornea can also get involved in viral conjunctivitis and these start off usually about day three or four after the initial infection with just little subepithelial punctuate staining on the cornea, which we see when we put Fluorescein dye in the eye. And as the week goes by these infiltrates coalesce in the corneal epithelium becoming slightly elevated and because they are elevated they stain with Fluorescein dye and they cause the gritty foreign body sensation that patient's might have with EKC. And as time progresses, these infiltrates then go underneath the epithelium into the corneal stromal tissue, which is the next layer down beneath the epithelium and they can stay there for months and months and even years. And if you get a cluster of these infiltrates within your visual axis you can imagine how they can blur your vision. And they're very, very difficult to treat. They are very sensitive to topical steroids, but you need to maintain them on the steroids otherwise they come back when you stop them and you end up chasing yourself around and around in a circle trying to make them go away. In the meantime they just come back again once you wean the patient's off the medication.

I do not recommend prescribing antibiotics for viral conjunctivitis. They have no benefit at all, they are costly, some of the third and fourth generation of fluoroquinolones that are oftentimes prescribed can breed resistance and then when you really need them for significant infections, such as corneal ulcers, the patient doesn't respond to them. So, as a rule I would just advocate using supportive treatment with cool compresses, which give a lot of symptomatic relieve and use lots and lots of artificial tears for the grittiness and the foreign body sensation. Topical antibiotics do serve a purpose if the patient gets a super added bacterial infection, which can occur, but it's not that common. And topical steroids should only be used for symptomatic photophobia where the patient's are extremely light sensitive with their blurred vision and pain. But I would highly advocate that you do not use topical steroids, because they have significant risks of causing vision threatening diseases and blindness, predominantly cataract formation and elevated pressure with glaucoma.

Bacterial conjunctivitis in my practice is probably much, much less common than viral conjunctivitis, although we do see it. A number of organisms are commonly associated with bacterial conjunctivitis, including staph, strep, pseudomonas, H-flu and importantly gonorrhea. The presentation and the hallmark of bacterial conjunctivitis is a purulent exudate, so you have to look for puss. You see puss in the inferior fornix, you see puss caked on the eyelids and sometimes you see puss just all over the lids, which obviously is not a viral infection. And this is something that would be appropriately treated with topical antibiotics. The antibiotics that we use are third and fourth generation fluoroquinolones, such as Cipro, moxifloxacin, gatifloxacin and besifloxacin. They are very, very good antibiotics that have broad spectrum coverage and all of these antibiotics, although we use them more for _____ (08:21) infections, are approved by the FDA only for treating bacterial forms of conjunctivitis. If patients were sensitive to the fluoroquinolones we would use aminoglycosides or trimethoprim and probably mix some combination medications. So, again I think there is an appropriate place for the use of antibiotics, but I would reserve that for bacterial infections.

As a subset of bacterial infections I think it's very important for you to be aware of gonococcal conjunctivitis. And this is very different to what I just showed you. This is a hyperacute infection, which happens within 24 hours. The patient's have a copious discharge of puss, the eyelids are swollen, they have pain, they have also preauricular lymphadenopathy and the conjunctiva is hyperemic and _____ (09:10), which means it's swollen. The important thing about gonococcal infections is that the organism can penetrate easily through the attacked corneal epithelium causing corneal ulceration. And these patient's can melt their corneas and perforate their corneas in a very short space of time and go blind from GC infections. So, it's very, very important for us as ophthalmologists to treat them aggressively and also for us ophthalmologists to realize that even though the eye is infected it's a systemic disease and requires systemic therapy.

Other sexually transmitted diseases that we see in our practice include the big five, Chlamydia, both in the neonatal form and in adult conjunctivitis. Again, I'm not an obstetrician or gynecologist, but you know that when babies pass through the birth canal in mother's who are infected with either gonorrhea or Chlamydia can pass that infection onto the neonate and for this reason they get prophylactically treated at birth. In the early days they used to use silver nitrate, but that's not effective against Chlamydia, so now we use erythromycin as a stat dose in newborn babies. AIDS can present with conjunctivitis or with a _____ (10:22) sarcoma of the conjunctiva. Again, this was their presentation of their HIV disease, not being aware of it prior to this. Syphilis causes more corneal infections, such as interstitial keratitis, but that can also be associated with a red eye. And herpes that we spoke about earlier is primarily herpes type 1, which affects the head and neck area. But herpes type 2, the sexually transmitted form of the disease can also affect the eye in a similar fashion to what herpes simplex type 1 can do.

The hallmarks of allergic forms of conjunctivitis are itching, tearing and eye rubbing. So, in your history those are questions that you have to ask the patient. Do you rub your eyes? Are they itchy? Are they tearing? And invariably patients will certainly volunteer the itching, because that's the most important component of these allergies. They present with a red eye and they have a mucoid discharge. Sometimes it's stringy and ropey in its nature and they have these bumps underneath the eyelid. Again, not to belabor that point, but try and get into the habit of looking under the eyelids, both upper and lower, because you'll see some weird things there. These patient's also get swelling of the conjunctiva, which is called chemosis. The risk factors for allergic conjunctivitis include exposure to environmental allergens, it is climatic and seasonal in nature. So, patient's who live in hot, dry climates are more at risk for getting this form of allergy, but certainly you can see it in any part of the country. Some people have a genetic predisposition to it and it might be

associated with other systemic conditions, such as allergic rhinitis with allergies to dust mites, pollens, ragweed, grass, animal dander and molds.

There are a few types of allergic conjunctivitis that we subdivide into hay fever conjunctivitis, vernal conjunctivitis, atopic disease, contact lens induced and certain drug allergies. A lot of our patient's are on drugs for various diseases, such as glaucoma and anything else so it should be part of your history as to not only systemic medications patients are taking, but what topical medications the patient's are taking. Hay fever conjunctivitis is an acute type 1 hypersensitivity reaction mediated by IgE. These patient's present with watery, itchy eyes and classically have chemosis, it's swelling of the conjunctiva. So, if you see like a little bubble on the conjunctiva and it's not completely flat, it's bulging over the lower eyelid you have to think of conjunctival swelling. This is not red, in other words it's not a hemorrhage, but it's more just a transudate of fluid caused by the allergy. It's also associated with allergic rhinitis.

Vernal conjunctivitis is a little bit more complex and more problematic usually occurring in the springtime. It usually occurs in young male kids with an allergic history, again of itching, burning and photophobia. There are two forms of vernal conjunctivitis that can occur around the limbis, which is where the white part meets the color part of the eye and we call that limbal vernal conjunctivitis or it can occur underneath the upper eyelid on the palpebral conjunctiva, hence the name palpebral vernal conjunctivitis. If you get a lot of bumps under the eyelid they can be heavy, they can drag further down so these patient's can have ptosis. They have redness of their eye or they have a stringy, ropey and mucoid discharge and they have these giant bumps on their tarsal conjunctiva and if you see it in the limbal form they can have these limbal papili around the white part of the eye, which can sometimes have little white ducts in them and we call them Horner-Trantas dots. The cornea can become involved because of compression of those giant papili onto the corneal surface and they get these classic shield appearing ulcers.

Atopic disease and atopic keratoconjunctivitis is the most serious form of allergic conjunctivitis that we see, because these patient's get significant neovascularization of their cornea, which can cause lipid deposition of the cornea and scarring which can have visual implications. And they also oftentimes develop cataracts, which may or may not be induced by the steroids that they might need. They can also occur spontaneously as part of the disease. Topical vasoconstrictors are for cosmetic usage only and they have no bearing or impact upon the allergic process. In fact, I don't like to use them for the simple reason is that once the drug wears off you get a rebound vasodilation, oftentimes more intense then what they had before you treated them and the patient again ends up chasing themselves around and around in a circle to try to get cosmetic blanching of these blood vessels, but it really doesn't do them much good at all. _____ (15:05) stabilizers are beneficial more for maintenance therapy, not for acute management. Antihistamines are probably better for that and topical steroids should for the same reasons never be prescribed unless under the supervision of an ophthalmologist.

So, avoid the allergens as best as you can and that's where your history comes into play. You take a detailed history from the patient identifying what they might be allergic too. And oftentimes it's something very subtle that they are not aware of, but you need to delve quite deeply into the history and identify what allergens are associated with this particular inflammation. So, how do we manage allergic conjunctivitis? Either stepladder approach depending upon the severity. We use topical antihistamines, antihistamines combined with decongestants, mast cell stabilizers, histamine receptor, steroids and in the more severe cases we might have to resort to systemic immunosuppression. Oftentimes they'll manage these patient's in conjunction with an allergist, which will then give me some recommendations and a device with respect to desensitizing allergy shots.