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Life in Focus

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Medications Update

Antiobiotics

Fourth generation fluoroquinolones (moxifloxacin and gatifloxacin) have replaced other fluoroquinolones as the first-line monotherapy treatment of corneal and conjunctival infections. A recent study published in American Journal of Ophthalmology found **gatifloxacin (Zymar)** to be more effective than **ciprofloxacin (Ciloxan)** in treating bacterial ulcers caused by gram positive organisms. Both gatifloxacin (Zymar) and moxifloxacin (Vigamox) have excellent gram negative coverage as well. Therefore, they are an excellent choice in corneal ulcers in contact lens wearers. Vigamox has demonstrated concentrations of conjunctival tissue penetration that are seven-fold higher than other fluoroquinolones. Therefore, it could be the first-line topical drug of choice for bacterial conjunctivitis.

Some bacterial isolates, however, are resistant to the fourth generation fluoroquinolones. New drugs are in the pipeline, including topical **azithromycin**, to treat ocular infections.

Postoperative prophylaxis after laser vision correction may be achieved with either Zymar or Vigamox. A recent study published in the Journal of Refractive Surgery reports no difference in outcomes at six months after PRK. In PRK and LASIK, the topical antibiotic is generally prescribed for one week postoperatively at QID dosage.

Postoperative prophylaxis after cataract and lens surgery can be achieved with either Zymar or Vigamox as well. The drops are typically used for one week postoperatively at QID dosage.

Anti-Allergy

Medications with anti-histamine and mast-cell stabilizing effects are generally considered a first-line treatment of choice for ocular allergy. They are safer than steroids and NSAIDs and they are more effective than medications that are only mast-cell stabilizers or only antihistamines. Topical **olopatadine 0.2% (Pataday)** is a new once a day medication that has been shown to be effective to relieve the signs and symptoms of allergic conjunctivitis. Pataday is twice as concentrated as Patanol (olopatadine 0.1%). Patanol is a twice a day eye drop. Studies show that while 80% of patients are satisfied with the relief they experience with Patanol, 90% are satisfied with Pataday. Perhaps improved compliance with the longer lasting eye drop contributes to greater symptom relief and patient satisfaction.

Epinastine (Elestat) is the newest topical anti-histamine used twice a day to treat ocular itching. It does have some mast-cell stabilizing activity, but its primary action is to block H1 and H2 histamine receptors, thereby relieving ocular itching. Patients must remove their contact lenses prior to instilling Elestat and wait 10 minutes before reinserting them because the BAK preservative may be absorbed by the soft contacts.

Until recently, **ketotifen (Zaditor)** was available by prescription only. It is now over-the-counter. Zaditor combines anti-histamine, mast cell stabilizer, and eosinophil inhibiting action. Because of its inhibitory effect on cellular infiltration, it is a better choice for atopic conjunctivitis than Pataday which is a better first-line choice for seasonal allergic conjunctivitis. Zaditor is a twice a day drop.

In severe cases of vernal and atopic keratoconjunctivitis, **Cyclosporine A ointment** may provide relief.

Patients with atopic keratoconjunctivitis often have associate blepharitis and lid eczema. When the periocular skin is affected, it can be the source of itching. Mild lid changes can be treated with **topical hydrocortisone 0.5% or 1%** bid for two weeks. More significant atopic lid changes can be treated with a more potent steroid, such as **desonide**, for example. Fluorinated steroids such as fluorometholone should be avoided. Nonsteroidal topical immune response modifiers, such as **tacrolimus (Protopic)** or **pimecroliums (Elidel)**, may be a

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good option. Topical Tobradex ointment should be avoided.

Oral antihistamines can often cause dryness. Dryness can exacerbate the symptoms of allergic and atopic conjunctivitis, especially in contact lens wearers. Rather than prescribing oral antihistamines, an oral **montelukast (Singulair)** 10 mg po QID can be considered. Singulair is a leukotriene inhibitor indicated for treatment of asthma. It has also shown to be effective in treating the symptoms of nasal allergies.

NSAIDs

Two new topical NSAIDs have now entered our practices – **bromfenac (Xibrom)** and **nepafenac (Nevanac)**. Unlike other topical NSAIDs, Xibrom is a BID drop. Nevenac is a TID drop. Although topical NSAIDs are often used to control post-PRK pain, they can delay epithelial healing and sometimes even be associated with corneal haze. Therefore, NSAIDs should be used with caution in patients with compromised epithelial integrity. The recommended daily dosing should not be exceeded and the duration of use should be limited.

NSAIDs are also used after cataract and surgery and YAG laser capsulotomy to prophylax against cystoid macular edema. Typically, they are used for one month postoperatively. A double-masked randomized study comparing Nevanac, Xibrom, and ketorolac (Acular) concentration in aqueous humor showed that the greatest concentration is achieved by Nevanac.

Dry Eye Therapy

The newest eye drops to alleviate dry eyes are going beyond directly replacing the aqueous layer of the tear film. The emollient, Soothe, incorporates an oil layer to protect the aqueous component provided by the drop. Systane offers the same mode of treatment. However, there is a tendency for the aqueous component to evaporate before the oil layer can spread across the eye. **Soothe** provides an oil layer that disperses quickly enough to protect the aqueous layer offering hours of dry eye relief. Soothe is used up to QID and patients are advised to give a few good blinks following installation to spread the product and decrease blur time.

Optive is the newest lubricant to treat more than a lack of aqueous in the eye. It contains carboxymethylcellulose sodium like many other lubricants, but also contains glycerin to create a dual-action in treating dryness. When the ocular surface becomes dry, the osmotic balance of the epithelial cells change and fluid is drawn out of the cells. Optive provides intracellular osmotic protection by adding glycerin and compatible solutes to maintain a balance of osmotic compounds inside and outside of the epithelial cells. In combination with the lubricant of the drop, Optive can provide longer lasting relief without blurring vision after instillation. The drop is preserved by PURITE, which has been shown to be much more tolerated in the eye with frequent dosing compared to BAK.

Lubricants with carboxymethylcellulose sodium are beneficial for post-LASIK SPK. It is recommended that non-preserved artificial tears (Refresh Plus) are used every 1-2 hours and Refresh Celluvisc QHS during the first 1-2 weeks following surgery even in asymptomatic patients. The lubricants are then tapered based on the healing of the patient. Studies have shown an increased incidence of regression with significant dry eyes. Oil based lubricants, such as Systane and Soothe, are avoided during the first 2 weeks after surgery. It is believed that the oil carrier of the drop can penetrate the flap edge creating a channel for epithelial cells to grow. Restasis may also be started 1-2 weeks after surgery.

An interesting product on the market today is **Dakrina** lubricating drop (The Dry Eye Company, LLC). It contains retinyl palmitate (vitamin A). This drop may be well-suited for challenging dry eye cases, e.g., Sjogrens, Rheumatoid Arthritis, lupus, and other conditions that have persistent dry eye symptoms despite other therapies.

New Topical Analgesic

Ocular pain control can be achieved with either oral or topical analgesics. Oral analgesics can lead to systemic side effects. Topical proparacaine, lidocaine, tetracaine, and other –caines can delay corneal re-epithelialization because they block sodium potassium channels not only on the nerve cells, but also on the replicating epithelium. Even dilute topical anesthetic can delay corneal re-epithelialization. Topical NSAIDs can also delay corneal re-epithelialization, cause corneal haze, infiltrates, and some NSAIDs can even cause corneal melting under extreme circumstances. Clearly, there is a need for a safe and effective ocular pain reliever.

At Pacific Vision Institute, we have conducted a randomized, double-blind, placebo controlled trial of 0.5% topical morphine for pain control after PRK. The data was presented at the 2007 American Society of Cataract and Refractive Surgery Meeting in San Diego. The study showed that patients in the topical morphine group achieved up to 50% more pain relief than patients in the vehicle control group. There were no adverse reactions and no delay in epithelial healing. More studies are on the way to evaluate the safety and efficacy of other concentrations and other associated drugs.

Ocular medications and the pregnant patient

A recent article published in EyeWorld publication from the American Society of Cataract and Refractive Surgery explored the ocular medications that are safe, and not so safe, to use in a pregnant patient. All patients using eye drops benefit from occluding their punctae for at least 60 seconds after they put the drop in. A consultation with the patient's obstetrician prior to initiating the treatment is recommended.

Artificial tears	OK
Oral supplements (fish oil, flaxseed oil, black currant seed oil)	OK
Restasis	Avoid
Topical steroids	Lotemax is ok, if patient has severe dry eye unresponsive to punctal occlusion, artificial tears, and oral supplements. Stronger steroids should be avoided.
Patanol and Elestat	OK, if patient has severe allergies
Oral anti-histamines and/or decongenstants	Avoid
Dilating drops	OK, if patient experiences flashes and floaters and needs an urgent dilated examination
Topical antibiotics	Erythromycin and polymyxin B are the safest. Fluoroquinolones should be avoided.
Glaucoma medications	Generally, they should be avoided. All glaucoma medications are classified in category C on the Food and Drug Administration, meaning that these drugs have uncertain safety profile. Brimonidine is the only glaucoma drop in category B and may be a reasonable option.

Calendar of the Upcoming Events for PVI Affiliated Doctors:

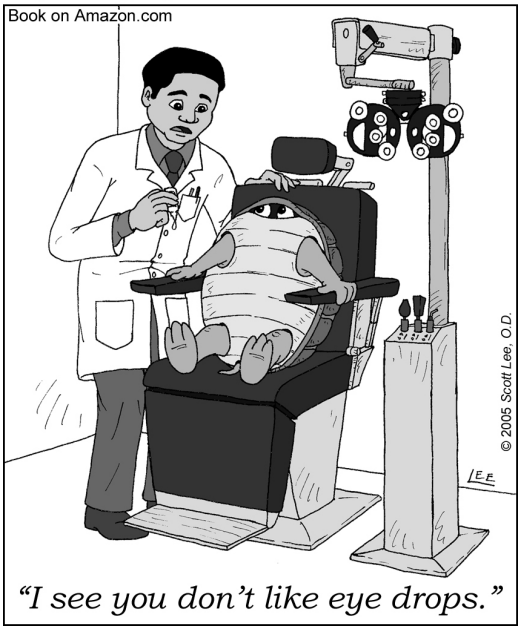
By invitation only:

07/25/07	Cataract and Lens Grand Rounds, Pacific Vision Institute, San Francisco, CA
09/20/07	Glaucoma Grand Rounds, Pacific Vision Institute, San Francisco, San Francisco, CA
10/18/07	Antibiotics Grand Rounds, Pacific Vision Institute, Peninsula, Peninsula, CA
11/15/07	Retina Grand Rounds, Pacific Vision Institute, San Francisco, CA
12/13/07	Holiday Dinner and PVI affiliated doctors' focus group, Pacific Vision Institute, San Francisco, CA
01/18/08	Cataract Surgery and Presbyopic IOL selection, Pacific Vision Institute, Marin, CA

General Educational Events:

03/21/08	7th Annual San Francisco Cornea, Cataract, and Refractive Surgery Symposium, San Francisco, CA

Sight Gags *by Scott Lee, O.D.*



"I see you don't like eye drops."

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