

InTown Veterinary Group Newsletter

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January 2010

InTown Veterinary Group is dedicated to providing referring veterinarians and their clients with an unparalleled range of emergency & specialty services.

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Acupuncture:

Essex Referral, N. Andover, MA
Mass Vet, Woburn, MA

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Lectures, Newsletters & More - all on the InTown Website:

Lectures:

A new schedule of lecture dates for 2010 will be posted online as soon as they have been finalized. To register online or to see the schedule for the year, follow the links on www.InTownVet.com, or go directly to www.InTownVet.com/InTown/Seminars.html anytime.

Symposium:

Save the Date: Sunday, April 25, 2010: This year's symposium will be on the subject of Surgery. Speakers and topics will be posted on the website as they become available.

Newsletters:

Newsletter archives are available online. You can also sign up to receive an electronic version of our quarterly newsletter. Go to www.InTownVet.com and follow the links for "newsletter," or go directly to: www.InTownVet.com/InTown/Newsletters.html.



New Online Radiology Interpretation Service now Available:

We now provide an online digital radiograph interpretation & data back up service for your hospital. If you already have digital radiography, or are considering upgrading your equipment, this service will be an excellent (and easy to use) addition to your practice. Go to www.InTownOnline.com for more details and a handy how-to guide.



Hospital Information:

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www.InTownEssexVet.com

■ Port City Veterinary Referral Hospital
215 Commerce Way, Suite 100,
Portsmouth, NH 03801
Tel: (603) 433-0056, Fax: (603) 433-0029
www.InTownPortCity.com

■ Massachusetts Veterinary Referral Hospital
20 Cabot Road, Woburn, MA 01801
Tel: (781) 932-5802, Fax: (781) 932-5837
www.InTownMassVet.com



Canine Keratoconjunctivitis Sicca – Diagnosis and Treatment.

Ruth Marrion, DVM, PhD, DACVO

Keratoconjunctivitis sicca (KCS, dry eye) is one of the most common ophthalmic problems in pet dogs. This condition is also very under-diagnosed, though testing for this disease is easy, inexpensive and non-invasive. By definition, the test takes two minutes and you can teach your technician(s) to perform this test in a very short period of time. My goal in writing this article is to have you test for KCS in every dog presented to you for a red or painful eye, or ocular discharge. (Keratoconjunctivitis sicca in cats is quite a different condition from the canine disease and I do not address it in this article).

Diagnosis

Dogs with KCS typically exhibit blepharospasm, conjunctival hyperemia, mucoid to mucopurulent ocular discharge and often resultant ulceration. Diagnosis is straightforward using a Schirmer tear test. Perform the tear test prior to applying drops to the eye. Topical anesthetics will artificially decrease the reading so it is especially important to apply topical anesthesia, if necessary, after performing the tear test.

To perform a Schirmer tear test:

- Open one of the individual packages and hold the tear strip by the straight end.
- Place the rounded tip behind the lower lid, with the notch at the lid margin.
- Hold the dog's eyelids closed and bend the strip down so that the straight end is pointing inferiorly.
- Leave the strip in for one minute, then take the strip out and read the result.
- Most Schirmer strips are impregnated with a blue dye, to read the result you simply record the number indicated by the dye.
- With the older strips you need to place the wetted strip on the millimeter ruler supplied with the test and read the millimeters of wetting.

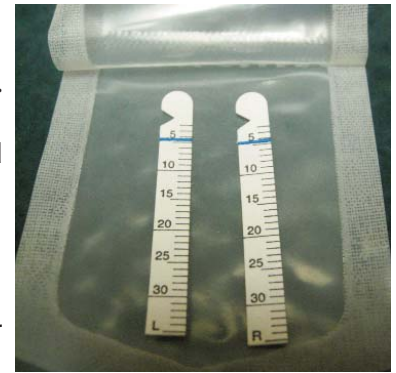


Fig 1. Schirmer tear test strips come in sets of two strips.

The round end is placed posterior to the lower eyelid, with the notch at the eyelid margin.

A normal value is 15 mm wetting per minute or greater. If the reading is less than 15 mm/minute you should institute treatment.

Treatment

Treatment for dry eye involves several types of medications, depending upon the severity and presence of secondary conditions such as bacterial conjunctivitis and corneal ulceration. The main categories of therapeutic medications for KCS are:

1. Lacrimal stimulants two to three times daily +/-
2. Topical antibiotics three times daily
3. Artificial tear preparations as needed
4. NOT topical steroids

A couple of concepts are useful to keep in mind when prescribing treatment for dry eye:

The first is just practical – keep the number of treatments to a minimum. Owners can become overwhelmed by needing to apply numerous medications several times daily. If you prescribe too many treatments, owners are likely to skip some, and most owners do not know which medications are the most important so may skip the critical ones (see below).

The first concept leads into the second – whenever possible, prescribe medications in an ointment form. This becomes increasingly important with increasingly severe cases of dry eye. Medications in an ointment are in an artificial tear base; so every time the owner applies a medication, he/she is applying artificial tears as well. For example, use triple antibiotic ointment (neomycin/polymyxin/bacitracin) instead of tobramycin and an artificial tear preparation.

Lacrimal Stimulants

The main problem in KCS is decreased tear production by the lacrimal glands; therefore the mainstay of treatment is application of lacrimal stimulants (lacromimetics) to increase tear production. The lacromimetics currently used are topical cyclosporine and tacrolimus. Both are immunosuppressive medications.

The history of cyclosporine use for canine dry eye is interesting. In the 1980's, Renee Kaswan and associates examined the lacrimal glands of dogs with dry eye and found signs of immune-mediated destruction of the glands. They tried treatment of affected eyes with topical cyclosporine, a lipophilic immunosuppressant medication, suspended in oil. Hoping for increased tear production due to suppressed autoimmune activity after a few weeks, the investigators were surprised to find increased tear stimulation within 24 hours. It turns out that cyclosporine has a direct lacrimal stimulatory effect, completely separate from its immunosuppressive activity. During the 1980's and 1990's, cyclosporine was the core of treatment for canine keratoconjunctivitis sicca, and is still used today.

However, cyclosporine does not result in stimulation of tear production in some dogs with severe or absolute dry eye (tear production of 5 mm/minute or less). Tacrolimus, another immunosuppressive medication, has been shown to stimulate tear production in some dogs with dry eye refractory to cyclosporine treatment (Berdoulay et al., 2005). The authors of this publication use 0.02% tacrolimus drops; I have found tacrolimus 0.03% in artificial tear ointment even more effective in stimulating tear production in dogs with dry eye. Ointments can be more difficult to administer than eye drops, and warming the tube of ointment by keeping it in a pants pocket for a few minutes prior to application softens the ointment and improves ease of application. However, some owners find application of ointment difficult under the best of circumstances. For these owners, use of tacrolimus 0.02% in drops, though

perhaps not quite as effective as the ointment, is a good alternative for treatment of dry eye. We have our tacrolimus compounded by the Prescription Center in North Carolina, 800 682-4664. Cyclosporine, in either ointment (Optimmune, available commercially or compounded 1% or 2% in oil) is still commonly used.

In cases of mild or moderate dry eye, application of a lacrimal stimulant two to three times daily is sufficient to control clinical signs. Dogs with moderate to severe dry eye may have enough mucoid to mucopurulent ocular discharge that they benefit from over the counter eye wash in the morning and sometimes later in the day, to remove the discharge prior to application of lacrimal stimulants. Explain to owners that eyes should be rinsed out PRIOR to application of medications.



Fig 2. Dog having his tear production measured with a Schirmer tear test strip.

Topical Antibiotics

If you suspect a bacterial conjunctivitis, you may prescribe topical antibiotics along with tacrolimus or cyclosporine. My first choice is neomycin/polymyxin/bacitracin, for its broad spectrum of activity as well as its lubricant properties. If a dog or owner has trouble with this, you may try a topical aminoglycoside such as gentamicin or tobramycin. In general, I recommend not using fluoroquinolones unless the pet has an infected corneal ulcer. I typically prescribe topical antibiotics three times daily for a week or two, depending upon the severity of the dry eye.

Artificial tears

If a dog is being treated with cyclosporine or tacrolimus along with topical antibiotics and is still painful, consider application of artificial tear preparations as well. Several different types of artificial tear medications are available for use in people, and depending upon the individual's needs, which vary during the day. There are aqueous eye drops which are thin in consistency and do not blur vision. People use these during the day when they need good visual acuity for reading, driving etc. Since people can keep the eye drops on them, it is not much of an inconvenience to apply them once to twice every hour. There are more viscous preparations available for individuals with severe dry eye or for night time use – these blur vision but this is not a big concern for most of our patients.

Application of Medications

The order of application of medications is important. Topical ophthalmic drops are gradually diluted by tears in the "lacrimal lake" (the tear film on the surface of the


eye), whereas ointments remain on the surface of the eye for hours. When owners are applying multiple ophthalmic medications to a dog, I give them specific instructions about the order of medications. I instruct owners to apply drops first before ointments, waiting three to five minutes between drops, and that they may apply ointments simultaneously, five minutes after drops.

If an owner is applying cyclosporine or tacrolimus ointment, they are effectively giving artificial tear preparation at that time. If the dog is still uncomfortable, ideally the owner will apply artificial tear preparations when the eyes appear dry, several hours after application of tacrolimus/cyclosporine.

Keratoconjunctivitis sicca refractory to medical treatment

Parotid duct transposition was the standard treatment for dry eye in dogs decades ago, and treatment with cyclosporine resulted in a greatly reduced need for this procedure. The addition of tacrolimus to our armamentarium of ophthalmic medications made this surgery necessary in even fewer cases. Nevertheless, I still see a small number of dogs for which I recommend this surgical procedure.

A parotid duct transposition surgery is a good alternative for dogs that are uncomfortable (squinting, rubbing) on maximal medical therapy. Maximal medical therapy is the maximum treatment that the owner is able to apply. Owners who are away for long periods during the day may only be able to apply medications three times daily; where owners who are home may be able to give medications six or more times daily.

Owners should realize that most patients will still need ocular medications after parotid duct transposition surgery. The difference is that the patient will be comfortable and will only need to have medication applied two to three times daily. 

References Available upon Request



Practical Ophthalmic Drug Use

Nancy Cottrill, DVM, MS, DAVCO

Ophthalmic drugs can be confusing, (and difficult to spell!), in terms of their use and when to use which one. The goal of this article is to make practical recommendations for a selection of ophthalmic drugs used for common conditions.

Corneal ulcers

What should I use for a routine corneal ulcer in a dog?

In general, a broad-spectrum antibiotic such as neomycin-polymixin B-gramicidin *solution* is a good choice. Another good choice is tobramycin or gentamicin. Solutions are preferable to ointments for corneal disease and are easier for owners to administer. Antibiotics are used to prevent infection of ulcers, since bacteria and viruses rarely cause ulcers. Solutions should be used four times daily during waking hours.

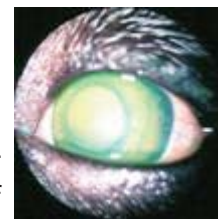


Fig 1: Canine Corneal Ulcer

What should I use for a corneal ulcer in a cat?

Anti-virals: Most corneal ulcers in cats are caused by feline herpes virus; anti-virals are essential. Most anti-virals are virostatic necessitating frequent application.

Good choices include:

- cidofovir solution given twice daily (owners like this!);
- 0.1% idoxuridine solution given every 4 hours for the first 48 hours, then every 6 hours around the clock (not as happy about this!);
- 1% triflurthymidine [Viroptic®] every 3 hours for the first 24 hours, then every 4-6 hours.



Fig 2: Feline Corneal Ulcer

Both cidofovir and idoxuridine are available from compounding pharmacies. Triflurthymidine is commercially available at pharmacies. Cats should be treated for two weeks after epithelialization is complete. Cats may get secondary bacterial infections due to Mycoplasma and Chlamydia. Effective drugs for these bacteria include topical fluoroquinolones [ofloxacin, ciprofloxacin, moxifloxacin, etc.], terramycin (currently difficult to obtain), and erythromycin. The fluoroquinolones are solutions and are used four times daily. Terramycin and erythromycin are ointments used 3-4 times daily.

What antibiotics should be avoided in cats?

Neomycin-polymixin B-gramicidin/bacitracin has been implicated in anaphylactic reactions and death in cats with topical use. This medication combination has been in use for years. The mechanism of this reaction is unknown.

What should I use for an indolent corneal ulcer?

You should use the drugs listed above under routine corneal ulcer. The choice of antibiotic rarely makes a difference in these ulcers as they are more akin to a broken leg than an infection. The issue is adherence of the new cells. Debriding the epithelium, creating a grid keratotomy, and placing a soft contact lens are the most important components for successful healing in a reasonable amount of time.

What if the ulcer is deep or melting?

These patients are usually best treated by hospitalizing and giving topical fluoroquinolones. Moxifloxacin (expensive, Vigamox®), or ofloxacin (generic available and inexpensive, Ocuflor®) are preferable to ciprofloxacin due to better efficacy, spectrum, and penetration into deep corneal layers and even the anterior chamber) every 2 hours around the clock for the first 24-48 hours, then every 4 hours until signs of infection are gone, then every 6 hours until one week after corneal epithelialization. Most pet owners can't possibly do this without being on the brink of exhaustion. The best course of action is to refer these patients as they



Fig 3: Melting Corneal Ulcer

may require corneal grafting surgery and need 24 hour care. The fluoroquinolones should be reserved for severe infections to decrease the chance of resistance. Already, ciprofloxacin has decreased in efficacy. This class of drugs affects adherence of migrating epithelial cells during corneal healing and should be avoided in indolent ulcers.

Corneal pain

What should I use for corneal pain?

Topical 1% atropine solution decreases corneal pain by blocking ciliary spasms inside the eye in response. Solution is used in dogs, ointment is more frequently used in cats. Ointments travel down the nasolacrimal duct less than solutions, so are less likely to produce the salivation and foaming reaction to the bitter taste when the drug reaches the mouth. Cats are more sensitive to this atropine effect. Small dogs may become tachycardic or systemically atropinized (both pupils are dilated instead of just the one being treated). Punctal occlusion is recommended. This technique involves applying firm pressure over the medial canthus for 1-2 minutes to block the punctal exit to the nose and mouth. An additional benefit of this technique is the increased absorption of the ophthalmic drug in to the eye. The frequency of atropine use is determined by the degree of inflammation or miosis, but is a minimum of once daily until the ulcer is healed.

Topical nalbuphine, once touted as helpful for corneal pain, has been shown recently to be toxic to the corneal epithelium, and not that helpful. Oral tramadol is useful for treating corneal pain and is a good alternative when atropine is contraindicated as in dry eye patients.

Glaucoma

What should I use for glaucoma until the patient can get to an ophthalmologist?

The most effective anti-glaucoma agent is one of the topical prostaglandin analogues including 0.005% latanaprost (Xalatan®), bimatoprost (Lumigan®), or travoprost (Travatan®). These are used every 12 or 24 hours with every 12 hours more common. If used once daily, use at night to avoid the photophobia and vision restriction that can occur with the profound miosis produced by these drugs. Miosis in the presence of an anterior lens luxation can constrict the pupil around the vitreous that also moves forward, raising the intraocular pressure. These drugs can decrease IOP by 50% in glaucomatous dogs. Their use is questionable in cats due

to lack of scientific support of their efficacy, however, there is some clinical support for their use if the drugs below are not helpful.

Most feline glaucoma is secondary to anterior uveitis, making the use of a prostaglandin analogue contraindicated due to the potential inflammatory effects in an already inflamed eye.

The topical carbonic-anhydrase inhibitors (CAI) reduced IOP by about 40-50% in the glaucomatous dog. These drugs do not change pupil size, particularly helpful if the lens is luxated or if its position is uncertain. Dorzolamide (Trusopt®) has an acidic pH that tends to cause stinging.

It comes in generic form and is less expensive than brinzolamide (Azopt®). Azopt does not tend to sting, possibly leading to better owner and pet compliance. The CAI drugs are usually used every 8 hours. It is important to specify this interval since some pet owners interpret "3 times daily" as breakfast, lunch and dinner, leaving a long interval between the "dinner" and "breakfast" dose.



Fig 4: Lumigan, an effective anti-glaucoma agent

Timolol (0.5%) produces a minimal decrease of only 4-5 mm Hg in glaucomatous dogs. If a 4-8% concentration of this drug was available, it could be helpful, however it would likely produce systemic side effects. There are much more effective drugs that do not have the potential for causing bradycardia or exacerbating respiratory problems (asthma, COPD) as this beta-blocker does. Monotherapy with timolol is ineffective for canine glaucoma. Timolol is available as a combination drug with dorzolamide one of the topical carbonic-anhydrase inhibitors (CAI). This combination (Cosopt®), is helpful due to the CAI but does not allow alteration of the frequency of the individual drugs in the event of side effects such as bradycardia.

A combination drug consisting of latanaprost and timolol (Xalacom®) has been introduced recently. In a study presented at the 2009 ACVO meeting, latanoprost alone was as effective at lowering IOP as the latanoprost/timolol combination in normal dogs given twice daily. Glaucomatous dogs react differently than non-glaucomatous dogs to therapy, so this needs to be studied in glaucomatous dogs. The important part of this study was that timolol will cause a significant (22%) decrease in heart rate in normal dogs. This is important considering the breed population that often presents with glaucoma, such as cocker spaniels with pre-existing

partial A-V block. In small breeds, the amount of topical drug absorbed compared to their body weight can cause bradycardia. This is another instance when punctal occlusion is helpful.

Diagnosics

What drug should I use to dilate the pupil for diagnostics?

Tropicamide (1%) is the drug of choice as a short-acting mydriatic-cycloplegic. It takes 20-30 minutes for maximum effect and lasts approximately 8 hours. Topical 1% atropine can last up to two weeks in the uninflamed eye and should never be used for diagnostics.

What drug should I use as a topical anesthetic?

Topical proparacaine is the least toxic to the corneal epithelium of the topical anesthetics. It takes 6-11 seconds to work and lasts 20-30 minutes. Tetracaine has been implicated in anaphylaxis and death in cats as an idiosyncratic reaction. Incidentally, topical anesthetics should never be used therapeutically for corneal pain due to their toxic effects on the epithelium and the development of a refractory state after a few applications.

Uveitis

Anti-inflammatory therapy is the mainstay of uveitis treatment. Effective topical agents include 1% prednisolone acetate solution and dexamethasone (0.1%) sodium phosphate solution. These drugs are used every 4-6 hours around the clock depending on the severity of the inflammation. This is continued for two weeks, then slowly tapered to avoid rebound inflammation.

Atropine is also used for uveitis, not only for ocular pain, but to return the uveal blood vessels to their normal permeability by stabilizing the blood-aqueous barrier, and to dilate the pupil to decrease synechiae formation.

Topical NSAIDs are less effective than corticosteroids for decreasing inflammation. They can be used to help prevent inflammation or control low-grade lens-induced uveitis in diabetics, or cats at risk for herpes reactivation via topical corticosteroid use.

Oral NSAIDs are quite helpful in uveitis cases. Oral tepoxalin (Zubrin®) is the most effective of

the NSAIDs in decreasing intraocular inflammation according to one recent study. Oral corticosteroids are helpful of course, but systemic disease must be ruled out before their use.


This is by no means a complete list of ophthalmic drugs, but hopefully it will help you with daily clinical conditions. 



Fig 5: Anti-Inflammatory therapy is the mainstay of uveitis treatment

Massage now at Port City Veterinary Referral Hospital

Massage is now available for your clients' pets as part of Port City Veterinary Referral Hospital's Physical Therapy & Rehabilitation department. Please call for more information or to make an appointment.

Ren Evans, LMT is a certified licensed massage therapist, she is certified in Swedish, Lymphatic and Neuromuscular massage. Techniques utilized during a massage include myofascial release, strain/counter strain and muscle energy technique.

By themselves, or in combination with each other, and Physical Therapy and Rehabilitation, these massage modalities can provide the following results:

- Relaxation/Sedation
- Pain Relief
- Increased Lymph Flow
- Relieves Congestion
- Increased Tissue Mobility
- Increased Toxin Elimination
- Reduction in Swelling/Inflammation
- Improved Range of Motion
- Mobilization of Tendon, Ligaments, Joint Capsules and Muscle Tissue
- Increased Nutrition and Oxygen to Soft Tissue and Bone

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Announcement

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Now Available at Essex Vet, N. Andover, MA

Surgeons at Essex Vet



Michelle Y. Powers
DVM, DACVS
Mon. - Wed.
(Sat. - Sun. as needed)



Lauren L. Blaeser
DVM, DACVS
Thurs. - Fri.
(Sat. - Sun. as needed)

Essex Vet is located at
247 Chickering Road
N. Andover, MA 01845

T: (978) 725-5544
F: (978) 975-0133

www.InTownEssexVet.com

Referring Veterinarians,

We are very pleased to announce that as of December 14, 2009 Essex County Veterinary Referral Hospital (Essex Vet) will have two board-certified surgeons on staff. Drs. Lauren Blaeser and Michelle Powers, both board certified surgeons, will be available for appointments & surgery five days per week, with weekend coverage available as needed.

In addition to our ability to now provide increased appointments for board certified surgical services at Essex Vet, we are also able to expand services to include PennHIP Certification radiographs for clients.

Surgical Services at Essex Vet:

- Abdominal Surgery
- Arthroscopy
- Gastrointestinal Surgery
- Laparoscopy
- Neurologic Surgery
- Oncologic Surgery
- Orthopedic Surgery
- PennHIP Certification Radiographs
- Respiratory Surgery
- Skin & Reconstructive Surgery
- Thoracic Surgery
- Thoracoscopy
- TPLO
- Urogenital Surgery

Michelle Powers, DVM, DACVS received her veterinary degree from Ross University in 1998 and completed an internship in small animal medicine and surgery at Purdue University in 1999. Following a year practicing in emergency/critical care medicine at Anne Arundle Emergency Clinic in Annapolis, MD, she completed a surgical internship at Chesapeake Veterinary Referral Center in Annapolis. From 2001-2003 she was the PennHIP post-doctoral fellow at the University of Pennsylvania School of Veterinary Medicine. Between 2003 and 2007 she conducted research for the Comparative Orthopedic Research Laboratory, and completed a three year residency in small animal surgery at Washington State University (WSU) College of Veterinary Medicine. Dr. Powers earned board certification in 2008. She also serves in the Army's Veterinary Corps and spent part of 2008 – 2009 working with DOD military working dogs, TSA dogs and Border Patrol dogs at Ft. Huachuca, AZ.

Dr. Powers has particular interest in soft tissue surgery and sports medicine. She is also experienced in many routinely performed orthopedic procedures, including Tibial Plateau Leveling Osteotomy (TPLO) and fracture repair; she is PennHIP certified.

If you have any questions about this service or any of the other services we offer at any of our hospitals, please do not hesitate to call. We are always happy to learn how we can improve the services provided to you and your clients. Referral forms and quarterly newsletters are always available on our website. Go to www.InTownEssexVet.com and click on "Referring Veterinarians".

Best Wishes,

Karen Belden, DVM
Medical Director