



KERATOCONJUNCTIVITIS SICCA (Dry Eye, KCS)

Why is My Pet's Eye Red?

A “red eye” is usually inflamed. Eye inflammation can be the result of many different abnormalities. One type of eye inflammation is conjunctivitis, which is an inflammation of the mucous membrane that covers the front portion of the eyeball and lines the third eyelid at the inside corner of the eye and underside of the upper & lower lids. One cause of conjunctivitis is insufficient lubrication of the eye with tears.

Keratoconjunctivitis sicca is a condition where the surface of the eyeball is inflamed because of insufficient tear production. Specifically it is defined as: “A deficiency of aqueous tear film resulting in drying and inflammation of the cornea and conjunctiva.” In other words, the clear window in the front of the eyeball, the white of the eye, and the underside of the eyelids are inflamed.

This is very common in dogs, but much rarer in cats. Many breeds of dogs are predisposed, including the cocker spaniel, bulldog, West Highland white terrier, Lhasa apso, and shih tzu.

What Symptoms are Typical of This Disease?

Some of the signs we may see in a pet with this condition include: Tight, painful eyelids that are squeezed against the eye; Eye redness due to enlarged blood vessels; Swelling of the eye and surrounding tissues; Prominent third eyelids; Mucus or pus discharge; Corneal changes, including superficial blood vessels, patches of black pigmentation, and ulceration; Impaired or loss of vision if superficial corneal inflammation and pigmentation become severe.

What Causes it?

There are a number of possible causes, including:

- Immunologic—the most common cause is immunemediated inflammation of the tear glands.
- Congenital—pug and Yorkshire terrier.

- Neurogenic—occasionally seen after traumatic eye prolapsed or neurologic disease that interrupts the nerves to the tear gland.
 - Drug-induced—general anesthesia and atropine cause transient reduction in tear production.
 - Drug toxicity—some sulfa-containing drugs can cause transient or permanent KCS in some animals.
 - Removal of the nictitans gland (third eyelid) may predispose some animals to KCS.
 - X-ray therapy for cancer—when the eye area is treated.
 - Whole-body diseases—canine distemper virus or any debilitating disease.
 - Chronic conjunctivitis—occasionally seen in cats with chronic viral conjunctivitis or forms of chronic eyelidrelated conjunctivitis in dogs.
 - Breed-related predisposition
- KCS is easily confused with bacterial conjunctivitis, since most dogs with chronic KCS have secondary bacterial infection. It may be differentiated by use of the Schirmer tear test, which measures tear production. Fluorescein staining may be performed to evaluate for the possibility of corneal ulceration as well. Cell or discharge examination in the microscope may indicate the nature and degree of bacterial overgrowth.

How is It Treated?

It is typically treated on an outpatient basis, unless secondary disease and complications are noted. The treatment consists of:

- Clean the eyes gently with moistened Kleenex tissues before instilling medication.
- Keep your pet's eyes and eyelids clean and free of dried discharge.
- If your pet experiences an increase in eye pain, you should call at once, because animals with KCS are predisposed to severe corneal ulceration.



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The medications used include:

- Cyclosporine A is the drug of choice for treating KCS in dogs. It is most effective in the immune-mediated type of KCS, and one study showed it to be effective in promoting tear production in 80% of animals.
- A new medication called Tacrolimus may be even more effective than Cyclosporine A (up to 92% effective). It is only available through “compounding” pharmacies.
- Occasionally pilocarpine is effective in improving tear production by direct stimulation of the gland.
- Artificial tears and lubricant ointments help moisten the cornea but must be used frequently, and they only provide transient relief from drying.
- Eye antibiotics (drops or ointments) are often used in the initial treatment of a pet with chronic KCS due to secondary bacterial overgrowth.
- Topically applied corticosteroids (“cortisone”) were frequently used in animals with KCS before cyclosporine use. They minimize inflammation and are effective in reducing corneal vascularization and pigmentation. In some situations we will still use them.
- Rarely mucolytic agents are also used to help break up tenacious mucous discharge.

Are There Side-effects to the Treatments?

There can be. Topically applied cyclosporine is irritating in some animals. Topically applied pilocarpine is initially irritating; however, animals seem to develop a tolerance. Orally administered pilocarpine causes vomiting and diarrhea in some animals. Topically applied corticosteroids are best avoided in animals with a corneal ulcer as it will slow the healing.

What is the Long-term Prognosis and Care?

Some pets will respond very well and once they are making tears again, the medicines may be tapered off. Others will require medicine for the rest of their lives. Because of this variation, patients should be

rechecked at regular intervals to monitor the response and progress, and to determine if continued treatment is mandatory. Most animals with the immune-mediated form of KCS will need lifelong treatment. Other types of KCS may be transient, and treatment need only continue until tear production returns.

Special instructions: _____

Your next appointment is _____

Call Us If...

- Your pet’s eye(s) appears to be getting worse.
- You notice any degradation in your pet’s general health.
- You have trouble giving the prescribed medicine.

Thank you for this opportunity to serve you!