

# Keratoconjunctivitis Sicca

## ABOUT THE DIAGNOSIS

Keratoconjunctivitis sicca (KCS), also known as “dry eye,” is a disease that results when the eye does not produce enough tears. The tear glands normally produce tears that coat the eye and keep the surface of the eye healthy. If these glands are damaged or have reduced function, there are not enough tears to keep the eye moist. The cornea (the clear “window” that makes up the front of the eye) and the conjunctiva (the thin pink membrane covering the white of the eye) become dry and inflamed. KCS is a chronic problem that usually remains for the rest of an animal’s life. If not treated correctly, KCS can result in discomfort and pain and, if not recognized and treated, it can lead to blindness.

KCS affects dogs more often than cats. The disease happens disproportionately often in certain breeds such as the cocker spaniel, shih tzu, and pug. The most common cause of KCS is immune-mediated. This means that the dog’s own immune system “mistakenly” attacks the tear-producing glands and reduces their function. Less commonly, it can occur at the same time as generalized disorders such as hormone imbalances (hypothyroidism) or secondary to adverse reactions to certain medications such as sulfa-type antibiotics. Other recognized causes of KCS include chronic infections or inflammation of the conjunctiva. If your dog has had a prolapsed third eyelid (cherry eye), removal of the gland rather than replacement may lead to reduced tear formation months or years later.

When KCS occurs, both eyes are usually affected. The eyes try to make up for the loss of moisture by producing more mucus, which appears as a green or yellow thick discharge from the eyes. Other symptoms include redness, squinting, discomfort (rubbing or pawing at the face), cloudiness of the cornea, and signs of vision loss such as bumping into objects. If KCS progresses without treatment, the cornea will become cloudy and pigmented because of constant irritation. Eventually the normally transparent cornea takes on a leathery, opaque appearance, and the dog is blind.

To make a diagnosis of KCS, your veterinarian will perform a complete physical and eye exam. Schirmer tear test is a simple, essential test that measures tear production. For this test, a small strip of paper is placed inside the lower eyelid for 1 minute. The Schirmer tear test strip wicks up the tears produced. The extent of moistening of the strip during 1 minute’s time is measured to see if tear production is adequate. Another ophthalmic (eye) test is the application of a fluorescent green dye (fluorescein) to the eye to detect corneal scratches or corneal ulcers. Ulceration of the cornea occurs often with KCS because a dry eye is easily damaged, and if a corneal ulcer is present, treatment must be given to help the cornea heal. A swab of the eye may be taken to check for bacteria. Blood tests may also be necessary, to reveal systemic problems such as hypothyroidism.

## LIVING WITH THE DIAGNOSIS

Keratoconjunctivitis sicca is a chronic disease, meaning that it continues indefinitely and often is often lifelong. In most cases, there is no cure. It is progressive and will result in blindness if not detected and treated. However, with medication given at home, most dogs with KCS maintain normal vision, have comfortable eyes, and the discharge and pain of the affected eye(s) resolve completely. In other words, when it is identified early and treated appropriately, this vision-threatening disease can be kept at bay

and affected dogs and cats can enjoy a normal quality of life and normal life expectancy.

Specific treatments involve applying several types of eye drops or ointment (see below) and cleaning discharge from the eyes daily initially. This mucoid discharge is produced in an attempt to lubricate the eyes in the face of reduced tear production, but it can trap bacteria and is uncomfortable. Applying a lukewarm, damp facecloth to the haired surface around the eyes and face to soften the thick sticky mucus or using an eye irrigating solution may help loosen ocular mucus and bring comfort. Cautiously trimming the hair around the eyes in the case of a long-haired dog will also make this task easier.

Because this is a lifelong condition, dogs with KCS will need to see a veterinarian on a regular basis to monitor whether the treatment is effective and to watch for changes in the eyes. It is important to be attentive to any signs that the disease is worsening, such as increased redness or discomfort or signs of vision loss such as bumping into furniture.

## TREATMENT

The treatment plan involves cleaning the discharge from the eyes and applying ointment or drops. The most commonly used medication is cyclosporine, an immune-suppressing drug, to slow the immune-mediated attack on the tear-producing (lacrimal) glands. If an eye infection or ulcer is present, antibiotic ointments or drops will also be needed. Note that any of these medications should *not* contain cortisone or cortisone-like ingredients, since these make corneal damage worse.

Replacing the tear film with an artificial tear product is also helpful. The medicated ointments usually need to be applied every 12 to 24 hours, but artificial tears need to be used often through the day, typically every 6 hours or so. Your veterinarian can help you determine whether artificial tears are necessary. A follow-up visit shows whether tear production has improved with treatment, which it often does. In such cases, cyclosporine treatment continues, but other ointments or drops can be reduced or discontinued.

There is also a surgical procedure performed by veterinary eye specialists, which moves a salivary gland duct so that it drains saliva onto the surface of the eye for constant lubrication. This would only be considered if medications did not work, which is uncommon.

## DOs

- Follow your veterinarian’s instructions regarding medication and recheck appointments. If you are applying many different medications to the eye(s) several times per day, it may be helpful to prepare a chart to keep track of treatments.
- Note any changes in eye color, redness, corneal cloudiness, or comfort level and contact your veterinarian if these occur.
- Make sure any veterinarian seeing your dog knows of his or her condition.
- If the treatment schedule involves more than one medication and you need to apply drops and ointment at the same time, apply the drops first and wait at least 5 minutes between medications. Otherwise, the drops will slide off the ointment and not be absorbed.
- Try to clean discharge from the eyes using warm moist compresses to soften the material. An eye-irrigating solution, available at any drugstore, can also be helpful.
- Trim any long hair on your dog’s face around the eyes to make cleaning easier.

- Realize that with a good response to treatment, normal tear production can return, but that maintaining this tear production requires ongoing daily treatment of the affected eye(s).

### **DON'Ts**

- Do not ignore any changes in your dog's eyes. Some complications can occur quickly, such as corneal ulcers, and mild changes such as reddening of the whites of the eyes may be the first clue that allow you to prevent these from worsening.
- Do not stop administering medications prescribed by your veterinarian just because the situation looks better—a relapse can occur easily if medications are decreased or stopped.

### **WHEN TO CALL YOUR VETERINARIAN**

- If you are unable to give any medication prescribed as directed.
- If you note any worsening of signs or symptoms as listed below.

### **SIGNS TO WATCH FOR**

- If your dog has not been diagnosed with KCS, watch for these signs, especially in the breeds predisposed to KCS (cocker spaniel, shih tzu). If you already have a diagnosis, watch for these signs as a warning of possible worsening of the condition:
  - Redness, squinting of the eyes.
  - Recurrent (day after day) thick, yellow or green discharge accumulating in the corners of the eyes or even directly on the surface of the eyes, often worse in the morning.
  - Loss of vision.
- Note that a small amount (pinhead-size) of black discharge is normally formed every day in the corner of the eye of most healthy dogs. This is not a concern; rather, if the discharge is yellow or green, moist, matting the eyelashes, or occurring at the same time as the symptoms mentioned just above, KCS may be present, and a visit to the veterinarian is warranted.

### **ROUTINE FOLLOW-UP**

- Follow-up appointments will be necessary after KCS is confirmed. At first, these may be frequent to make sure the medications are working and the disease is stabilized.

- The frequency of the appointments will depend on the severity of the disease and the response to therapy.

### **ADDITIONAL INFORMATION**

- Several other disease processes can have the same signs as keratoconjunctivitis sicca. Inflammation of the cornea, sclera (whites of the eye), and conjunctiva can happen for a variety of reasons. Other conditions (pannus and pigmentary keratitis) result in abnormal pigment forming on the sclera and cornea, but tear production will be normal. It is important to have specific tests done to identify whether KCS or another problem altogether is the cause of the eye symptoms.

*Other information that may be useful: "How-To" Client Education Sheet:*

- How to Administer Eye Medications

Practice Stamp or Name & Address

Also available in Spanish.