

Dry eye: Keratoconjunctivitis sicca (KCS)

Keratoconjunctivitis sicca or dry eye is a condition that can affect certain dog breeds and often older dogs. Some of the breeds that are predisposed to inherited dry eye include the English bulldog, Shih Tzu, American cocker spaniel, Cavalier King Charles spaniel, miniature schnauzer, Yorkshire terrier and pug.

The tear film is an important layer on your eye. There are three crucial layers that make up the tear film; the aqueous or water layer, the lipid or fat layer and the mucous layer. The tear film provides oxygen, nutrients, anti-bacterial and anti-fungal enzymes, lubricates the eyelids and provides a smooth surface. The tear film is like the defense shield of the eye. If the tear film isn't functioning appropriately then the eye is susceptible to infections and ulcers.

There are numerous causes of KCS but the most common cause is an immune mediated attack on the tear gland. This means that the body is attacking the gland that produces tears. When the body attacks the tear gland the gland gets inflamed and stops producing tears. There are certain medications that can cause low tear production such as sulfonamide antibiotics, etodolac, acetaminophen toxicity, opioids and anesthesia. Viral infections like canine distemper can cause dry eye. There can also be nerve abnormalities which prevent the tear gland from working effectively. This condition is called neurogenic dry eye. Lastly there can be a congenital abnormality in malformation of the tear gland most common in toy breeds.

The most common sign of dry eye is thick mucoid yellow, green discharge. Other signs of dry eye are rubbing at the eyes, red conjunctiva, corneal ulcers, pigmentation or blood vessels in the cornea which is the front, clear part of the eye.

A Schirmer tear test and tear film break up time are needed to diagnose KCS. A Schirmer tear test measures the water layer of the tear film and a tear film break up time evaluates the mucous and lipid layer of the tear film. Normal tear production with a Schirmer tear test is between 15-25 mm per minute. A Schirmer tear test less than 15mm/min is consistent with dry eye.

The goal of treatment for dry eye is to restore normal tear function. Topical medications like cyclosporine and tacrolimus are used lifelong to stimulate the tear gland to produce tears. Both of these medications are very successful in stimulating tear production only while being used. If treatment is discontinued the tear production decreases again. Artificial tear solutions and gels are used to supplement therapy but they are not a substitute for real tears. The last resort if therapy does not work is surgery to re-route a salivary duct to the eye. This will provide lubrication to the eye with saliva which is very close to the composition of tears. Regardless of the cause of dry eye, therapy and management will be lifelong.



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This dog is having a Schirmer tear test done to measure tear production.



This is an example of severe dry eye causing crusts to form on the surface of the cornea (the clear part of the eye).



This dog has mucoid discharge and crusts on the eyelids consistent with dry eye.