



## Keratoconjunctivitis Sicca (KCS) 'Dry Eye Syndrome'

### What is KCS?

KCS is defined as a deficiency of tears, which occurs commonly in dogs and infrequently in cats.

### What are the symptoms of KCS?

KCS is a chronic, progressive disorder, affecting one or both eyes. Dogs with a moderate decrease in tear production may have chronic or recurring conjunctivitis (swollen membranes around the eye) with minimal irritation to the eye's surface. As tear production decreases and the condition progresses, a sticky, mucoid discharge clings to the eyelids and the surface of the eyes, and may cause the lids to stick together. Additionally, the conjunctiva may become thickened, red and possibly pigmented. The surface of the eye loses its lustre and becomes dull; some animals may also develop a dry nostril on the affected side.

The degree of pain or discomfort associated with KCS varies between patients however both blinking and squinting are common symptoms. Some animals develop ulcers on the surface of the eye; these ulcers are not only terribly painful, but may potentially cause the eye to rupture.

Some breeds are predisposed to KCS; they include the Cocker Spaniel, West Highland White Terrier, Shih Tzu, Lhasa Apso, Cavalier King Charles Spaniel, Bull Terrier, Bulldog, Miniature Schnauzer, Dachshund, Chihuahua and Pekingese.

### What causes KCS?

There are a several potential causes of KCS. They are as follows:

**Autoimmune adenitis of glandular tissue:** the majority of KCS cases are attributed to this condition. The tear producing gland breaks down due to inflammation caused by the immune system, and subsequently stops producing tears.

**Congenital:** may be due to a lack of growth or a retarded functional development of the tear producing glands at birth. However, KCS is more common in older dogs.

**Trauma:** KCS due to trauma may be the result of damage to the nerves which supply the glands. In some cases, normal function may return over several months.

**Secondary to chronic conjunctivitis:** The swollen membranes around the eye may cause obstruction of the ducts leading from the glands.

**Distemper:** The distemper virus can destroy the tear producing glands.

### How is KCS treated?

#### **Medical Treatment**

In many cases, stimulation of tear production can be achieved through a combination of immunosuppressant eye drops (cyclosporin), antibiotics and corticosteroids. Cyclosporin not only



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stimulates tear production, but also slowly reverses some of the changes (scarring) on the surface of the eye.

While this treatment can be quite successful, it is important to note it is a treatment – not a cure. As such, you will need to continue the use of medication *forever*. **Stopping the treatment will result in the recurrence of glandular inflammation and cause further damage, potentially resulting in the need for surgery.** Frequent recheck appointments will be necessary at the onset of treatment. However, as your dog's tear production increases and secondary infections improve, recheck appointments will be decreased to several times a year.

### **Surgical Treatment**

Dog breeds with protruding eyes (ie: Pug, Shih Tzu, Pekingese, etc.) may benefit from surgery to close a portion of the eyelids; this may help to decrease the amount of moisture which evaporates from the eye.

Dogs that have developed corneal ulcers require a specific treatment including antibiotic drops or ointments. In cases where a deep ulcer is present, surgery to apply a 'conjunctival flap' is necessary to prevent perforation of the eye. This procedure involves attaching a portion of the soft tissue which surrounds the eye directly onto the ulcer. This provides protection and support for the weakened cornea, while supplying blood directly to the ulcer site which aids the healing process.

In cases where medical management has proven unsuccessful, a surgical option remains. Surgery is performed whereby the parotid salivary gland duct is removed from inside the patient's cheek, pulled into the conjunctiva and sewn in place, providing lubrication for the eye with saliva. Parotid saliva has a similar composition to tears and when necessary, is an adequate substitute. However, this procedure is not without potential complications, including the precipitation of salivary salts on the margins of the eyelids, requiring treatment with medicated drops and frequent cleaning. Fortunately, due to recent advances in medical therapy this procedure is now infrequently necessary.