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KERATO CONJUNCTIVITIS SICCA OR DRY EYE

Keratoconjunctivitis sicca, usually abbreviated to KCS, is a condition of the eye, where insufficient tears are produced. The result is an eye that is dry, hence the more common name of 'Dry Eye'. Although it can affect many domestic species, including cats and horses, KCS is most commonly seen in dogs. In a recent study of dogs with eye problems, an amazing 40% were diagnosed with KCS – so, as you can see, it is a surprisingly common condition. So how can you tell if your pet is affected?

Which dogs get Dry Eye?

Any dog can be affected by KCS, but some breeds are predisposed. These include:

- Westies
- Cocker Spaniels
- Cavalier King Charles Spaniels
- Lhasa Apso
- Labradors
- Springer Spaniels
- Yorkshire Terriers
- Jack Russell Terriers
- Shit Tzu
- Bull Dogs
- Collies

The condition can occur at any age, but is most commonly seen in dogs of 6 to 10 year of age.

How can I tell if my dog has Dry Eye?



The earliest symptom of Dry Eye is conjunctivitis, or inflammation of the inner eyelids. Frequently, this conjunctivitis seems to respond to antibiotic drops, but quickly returns when the course is finished. As the condition develops, mucous threads may be noticed on the surface of the eye, which move as the dog blinks, or build up at the bottom of the eye, near the lower lid. With time, some of the mucous can build up around the eye, becoming dry and crusty. Owners of affected animals often report how frequently they need to clean their pet's eyes.

Without proper diagnosis and treatment, the condition progresses to keratitis, inflammation of the cornea or front of the eye. At this stage, the cornea will appear dull and lacklustre. This is particularly noticeable if the dog is turned towards a light bulb or bright window – instead of seeing a clear reflection of the bulb or window, the reflection is indistinct and blurred. Dogs will often show signs of discomfort by squinting and rubbing their eyes, and corneal ulcers are frequently present at this stage.

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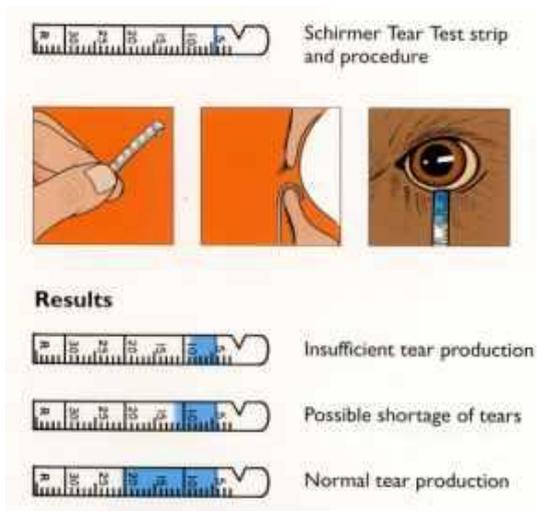
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As the condition progresses, the cornea becomes invaded with blood vessels, scarred and pigmented, leading to reduced vision and eventually blindness. Sadly, these changes are irreversible.

How is KCS diagnosed?

Most cases of KCS have very characteristic symptoms, which may lead you and your vet to be suspicious. However, as these symptoms can resemble simple conjunctivitis, to be sure of KCS, the dog's tear flow has to be measured.



This is done by the 'Schirmer Tear Test', and takes just one minute! It involves placing a standard paper strip between the lower eyelid and the eyeball for 60 seconds, and measuring the distance that the tears move along the strip. If the tears have moved more than 15mm, the dog is definitely normal. If the tears have moved less than 10mm, the dog is definitely abnormal and has KCS. There is a 'grey area', of 10-15mm where affected individuals could be either normal or abnormal. In dogs that have very characteristic symptoms, the usual practice is to treat the eye symptomatically, and retest one month later if the symptoms have not subsided.

What causes KCS?

There are a number of possible causes of KCS, these include:

- **Autoimmune** – The commonest cause of Dry Eye is the dog's own immune system. Usually this works to protect the animal against disease. However, in cases of dry eye, the immune system identifies the dog's own tear glands as 'foreign', and attempts to destroy them. As a result, tear production is progressively reduced, and left untreated, can be lost all together.
- **Congenital** – Some dogs are born with defective tear glands.

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- **Trauma** – Damage or inflammation of the tear gland or of its nerve supply.
- **Drug Reaction** – Certain drugs can cause KCS, including sulphonamide antibiotics or sulphasalazine (used in the treatment of colitis), and aspirin.
- **Viral Infections** – e.g. Canine Distemper, Feline Herpesvirus.
- **Hormone Imbalance** – e.g. Hypothyroidism (underactive thyroid gland).
- **Idiopathic** – This means there is no identifiable cause. This is due to the limit of our knowledge of this disease, and in due course, further causes are likely to be discovered.

How is Dry Eye treated?

Unfortunately, there is no cure for KCS. However, the good news is that the condition can usually be very successfully managed:

MEDICAL TREATMENT

There are three types of eye drops that may be needed in the medical treatment for KCS:

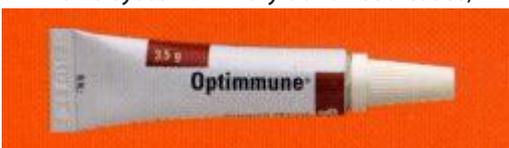
- Artificial tears, used to keep the eye moist
- Drugs which are used to stimulate tear production
- Antibiotics – used to control secondary corneal infections (keratitis) resulting from the dry eye

1. Artificial tears

These preparations are slightly viscous drops that wet the eye and have some residual moisturising and protective effect rather than dropping instantly away like water would. The problem with these artificial tears is that they have to be applied to the eye very frequently to be successful. Typically this means every 2-4 hours. The effectiveness of these drops varies – polyvinyl drops such as hypromellose tend to last only an hour or two whereas Carbomer gels (e.g. Viscotears) and the latest modified hyaluronic acid gels (e.g. Remend) can last for up to 4-6 hours.

2. Drugs used to stimulate tear production

Ciclosporin – This drug is marketed in the UK as 'Optimmune', and is available as an ointment that is applied to the eye usually twice a day. Ciclosporin is a powerful suppressor of the immune system, and when applied to the eye acts to prevent the immune system from destroying the tear glands, without effecting the rest of the dog's immune system. In very advanced cases, where all of the tear glands have been destroyed, this drug is not effective.



Fortunately, Optimmune is usually very successful in managing KCS, and an increase in tear production is usually seen within one month of the start of its use. The main problem with Optimmune is

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its cost: it is a very expensive drug, with treatment costing approximately £1 per day. This drug restores natural tear production is the treatment of choice for the vast majority of cases.

There is also another form of Ciclosporin that can be prepared in the surgery using a generic supply and is considerably cheaper – it can also be prepared to a higher concentration than Optimune (0.5% or 1% - Optimune is only 0.2%) and is useful in cases where cost is a concern or if Optimune is not proving effective. However as the only officially licensed medication the first choice for treatment is usually Optimune.

Pilocarpine – This drug is given orally to stimulate tear production by the tear glands. It has proved useful when nerve damage is the cause of the KCS, but otherwise is rarely used nowadays.

3. Antibiotic drops

The front surface of the eye (the cornea) may be more prone to infections due to the reduced tear production leading to keratitis (inflammation) and even ulcers. Ulcers are bacterial erosions on the surface of the cornea that need rapid diagnosis and rigorous management to stop them progressing which could result in the loss of the eye. Therefore close monitoring of the health of the cornea is required and if the eye suddenly seems uncomfortable or a sticky discharge develops then an appointment should be made at the vets as soon as possible to ensure that an ulcer hasn't formed. A special dye is needed to identify ulcers which are not usually visible to the naked eye.

In many cases a combination of the above treatments may be needed to manage the condition effectively and it may be a case of trial and error to work out what regime best suits your dog.

SURGICAL TREATMENT

Where KCS is unsuitable for medical treatment, there is a surgical procedure to move the outflow from the salivary glands into the eye, called 'Parotid Duct Transposition'. Normally the parotid salivary gland empties saliva into the mouth. If this gland is working properly, and has not been affected by the cause of the KCS, this operation can be performed by a specialist eye surgeon. However, there are a number of potential problems with this procedure:

- saliva is not a perfect replacement for tears
- saliva flow is much less than tear production
- saliva salt crystals can form in the eye
- the procedure is expensive (typically £1500-2500) and there is a risk of the surgery failing due to wound breakdown and infection

For this reason, a Parotid Duct Transposition should not be undertaken lightly, and only after medical treatment has proven unsuccessful.

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The outlook for affected dogs

The outlook depends on what the underlying cause is and how long the dog has been affected with the disease. In dogs that have thyroid hormone deficiencies, the outlook is invariably very good – normal function can be expected to be restored with thyroid hormone tablets.

Most cases of idiopathic, autoimmune or drug-induced KCS will respond very well to ciclosporin treatment and it is the mainstay of treatment. Unfortunately, if the disease has been present for a long time there may be quite severe scarring to the front of the eye which will have an irreversible long term effect on vision, irrespective of whether or not tear production returns. Repeated infections or ulcers will also result in progressive scarring of the cornea and may eventually lead to blindness.

If parotid duct transposition is performed, it is important not to forget that the dog still has KCS and keep to a regime of regular food intake to stimulate tear production.

If cyclosporin is unsuccessful, and parotid duct transposition not considered feasible, the only treatment option is frequent administration of artificial tears and it is inevitable that these dogs will do less well than those managed by other treatments.

If you are concerned that your dog may have KCS, or even if you want the peace of mind from knowing that he/she doesn't have KCS, contact the practice to book a Schirmer Tear Test.

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