Keratoconjunctivitis Sicca or "dry eye"

What is dry eye?

Dry eye or keratoconjunctivitis sicca (KCS) is the term used to describe inadequate tear production. Tears are important to provide lubrication, wetting and nourishment to the the cornea (transparent anterior part of the eye, see 'anatomy of the eye' information sheet). Without tears, the cornea becomes lacklustre and unhealthy, and may be painful.

Where are tears normally produced?

Watery tears are produced by two glands. The lacrimal gland produces two-thirds of the watery tears and is situated above the eye. The nictitans gland produces the remaining third, and is located behind the third eyelid.

There are also mucus tears and oily tears.

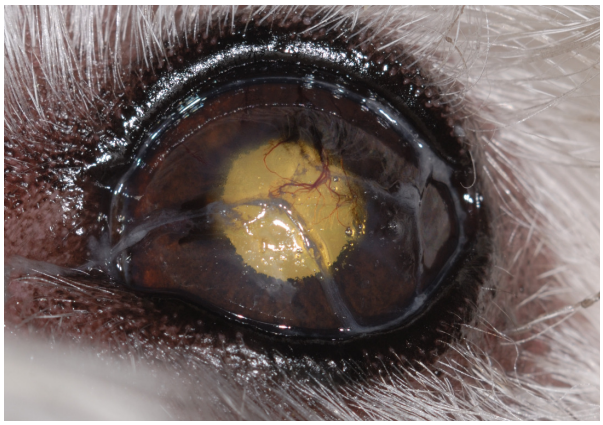
What are the signs of dry eye?

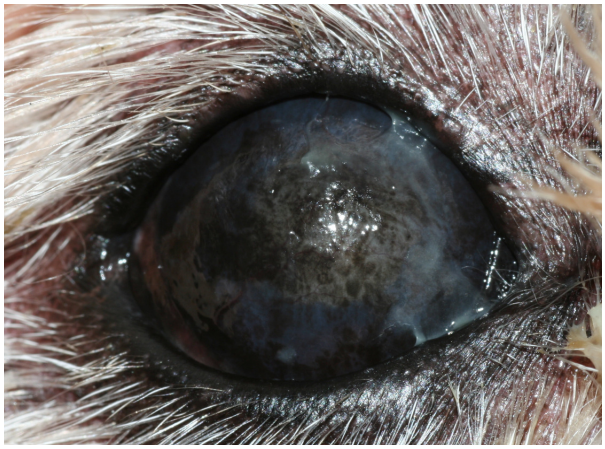
In the early stages, your pet may suffer from intermittent conjunctivitis which may appear to improve with antibiotic drops or ointment. As the disease progresses the cornea becomes lacklustre and dry with a thick sticky discharge, and the eyes are itchy and inflamed.

Eventually blood vessels and pigment are carried across it. This makes the cornea thick and less transparent and can eventually impair vision. The cornea is also more likely to become ulcerated.

How is dry eye diagnosed?

Tear production is measured using a small strip of filter paper called a Schirmer Tear Test. The strip is tucked under the eyelid for one minute and the paper turns blue when wet. A normal dog's tears wet more than 15mm along the strip in one minute. Dogs with dry eye wet less than 10mm of the strip in a minute, with some severely affected dogs not registering any tear production at all.





Two WHWTs with varying severity of "dry eye". In the second eye the cornea is almost completely pigmented and you cannot see the pupil.

Schirmer tear test paper in position in a dog's eye

What causes dry eye?

There are many recognised causes of dry eye.

The most common form is seen when the immune system attacks the lacrimal gland and progressively destroys it. This occurs most commonly in the following breeds:

- West Highland White terrier
- Yorkshire Terrier
- Cavalier King Charles Spaniel
- Cocker Spaniel
- Bulldog
- Shih Tzu
- Pug

Dry eye can be congenital due to absence or reduced size of the gland (present from birth), and can also be caused by trauma, infection (such as Distemper), nerve damage, side effects of medications given for other conditions, and other illnesses (such as hypothyroidism).

How is dry eye treated?

The only licensed treatment for dry eye is 'Optimmune'. Optimmune contains an anti-rejection drug which, when applied to the eye, stops the body attacking the lacrimal gland and also stimulates natural tear production. This drug also helps to reduce any corneal pigment and scarring which has occurred prior to diagnosis. It can take up to six weeks for an improvement to be seen.

If there is no response to Optimmune it is possible to use the active ingredient, cyclosporine, compounded into higher strength solutions. These eye drops have to be specially formulated by a veterinary surgeon. A newer and more potent drug with a similar mode of action has also become available, called tacrolimus, which can be effective in some cases that do not respond to cyclosporine.

Artificial tears are helpful to use alongside cyclosporine or tacrolimus, but are not a replacement for these drugs. They cannot be applied often enough to replace natural tears and they do not have an anti-inflammatory effect.

When dry eye occurs secondary to another illness it is important that your pet receives appropriate treatment for the underlying condition. If a nerve problem is diagnosed, your pet may have an underlying ear disease, requiring investigation with X-rays and/or an MRI or CT scan. A completely different treatment is needed to stimulate tear production in these cases as it needs a drug that actively stimulates the damaged nerves.

What can be done if drops and ointment don't work?

If your pet does not respond to ointment or drops, and no other underlying problem can be identified, then surgery may be considered. A 'parotid duct transposition' can be performed. The salivary duct that empties saliva into the mouth from the parotid salivary gland can be redirected to the eye to provide saliva as a tear replacement (see parotid duct transposition information sheet).

Can dry eye be cured?

It is not usually possible to cure dry eye. If diagnosed early it possible to achieve comfortable, visual eyes with careful lifelong management.

If you have any further questions do not hesitate to contact the Ophthalmology department at Rutland House Referrals on 01744 853510.