

DRY EYE SYNDROME

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[Every effort has been made to ensure accuracy of information. However, this is not a substitute for prompt veterinary care. Any similarity to other publications is unintentional. Published online at Sealyhealthguard.org, 8/1/11. Originally published in ASTC The Barks 2002]

Dry eye, or *keratoconjunctivitis sicca*, describes the changes in the eye which result from lack of tear production.

In humans, it can be associated with rheumatoid arthritis, diabetes, Sjogren's syndrome (dry eyes, dry mouth and lupus), thyroiditis, rosacea menopause and aging. Tear volume decreases as much as 60 percent by age 65 from the volume at age 18. Dry eye affects 75 percent of people over 65.

In dogs, it can also be age-related and can also be caused by certain drugs (like sulfas), chronic untreated conjunctivitis, viral infections, hypothyroidism or trauma. It can also be an autoimmune disease, in which the tear glands are recognized as foreign and are destroyed by the body. Some breeds are predisposed to dry eye, including miniature schnauzers, cocker spaniels, beagles, basset hounds, West Highland White Terriers, Yorkshire terriers and bulldogs.

George Padgett, DVM lists dry eye as a genetic disease of the Sealyham Terrier in his book *Control of Canine Genetic Diseases*.

Symptoms of dry eye include chronic mucus or pus discharge, conjunctivitis, squinting, crust around the eyes, rubbing of the eyes and inflammation of the cornea. Frequent eye infections can occur due to the lack of tears. In a normal eye, oxygen and nourishment are supplied to the cornea (clear portion at the front of the eye) by a three-layered tear film. There is no blood supply in the cornea. The outermost layer of the tear film is an oily layer supplied by glands in the eyelids. This layer helps prevent evaporation of the next layer.

The middle layer is the watery layer produced by the main tear gland and a gland in the third eyelid. This is the layer where the decrease in tear production takes place. The innermost layer, in direct contact with the cornea, is mucus produced by glands located in the folds of the eyelid. This helps the liquid layer remain attached to the cornea.

A breakdown of the tear film by a decrease in production of the water layer causes dry eye. This results in dryness to areas of the corneal surface and in advanced cases, drying of the entire corneal surface. The cornea is deprived of nourishment and oxygen and rapidly undergoes destructive changes.

These changes result in brown pigmentation, scar tissue growth, blood vessel growth and even ulcer development. This can lead to partial or total vision loss. It is a common cause of canine blindness. The eyes of a dog with dry eye sting constantly; the dog is uncomfortable almost all the time. Because of a lack of the watery layer of the tears, the oil and mucous layer production is increased. This leads to a thick, gunky, greenish discharge that sticks to the hairs around the eye. Often this is the main reason the owner takes the dog to the veterinarian. The discharge will clear up when medication is used frequently enough but will return when the drug is stopped.

Treatments in the past have included topical anti-inflammatory drugs and cortisone when there is no ulceration, antibiotics and artificial tear ointments.

Pilocarpine is a drug which stimulates the tear gland, but also may stimulate glands all over the body. In December 2002 the FDA approved the human drug Restasis for chronic dry eye. This drug is based on University of Georgia research conducted by veterinary ophthalmologist Renee Kaswan, a former professor at the UGA College of Veterinary Medicine. This drug reduces the inflammation of the tear ducts and enables them to result their normal functions.

Many previous treatments were basically wetting agents. This drug allows tear glands to regenerate and decreases inflammation in the cornea, conjunctiva and eyelids, further relieving the signs and symptoms of dry eye.

More than a decade ago, Kaswan began developing and implementing a treatment for dry eye. She found that ultra-low doses of cyclosporine, a drug used in organ transplant patients to suppress the body's rejection response, are an effective treatment for canine dry eye. Her research netted her the University's Inventor of the Year Award in 1998 and its Creative Research Medal in 1992. Her canine drug invention, Optimmune, was the first of its kind and was approved for use in dogs in 1994. The late University mascot, UGA IV was among the first canines to benefit from the treatment.

Cyclosporine, which is referred to as a "major breakthrough" on the CERF website, is about 75 percent effective in stimulating new tears in the dog. It has to be used absolutely as directed. If you skip a dose or run out of the medication, the dry eye symptoms will immediately recur. In addition, it is crucial that you have your dog checked as directed to monitor treatment success.

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