

The Eyes Have It! Your Guide to Canine Ophthalmology

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The eyes are a very special organ system; so special in fact, that there are many veterinary ophthalmologists across the nation. Like your family doctor, your veterinarian has been trained in ophthalmology and can handle most routine cases. Since eyes are so delicate and each dog only has two of them, we follow eye cases very closely and refer to our ophthalmologist very quickly if we don't like what we are seeing. You should follow the same guidelines: if you see problems in your dog's eyes, call your veterinarian immediately.

Most of the problems we see in dogs' eyes are in one of the following areas: the conjunctiva or membranes surrounding the eyes, the cornea or clear outer portion of the eye, the iris or colored portion of the eye and the fluid that bathes the iris called aqueous humor, the lens, and the retina which is like the film in your camera. In this article, we'll discuss three of the most common ophthalmologic problems: conjunctivitis, glaucoma, and cataracts.

Conjunctivitis

Conjunctivitis, or inflammation of the conjunctiva, produces the common problem of red eye. However, there are many other conditions of the eye that produce a red or irritated eye. Glaucoma, uveitis (inflammation of the interior of the eye), and corneal ulcers will also make the eyes red. If the eye is very painful, enlarged, cloudy, or there is a sudden loss of vision, you are more than likely dealing with something more serious than conjunctivitis.

There are a lot of causes of conjunctivitis including physical irritation from foreign objects, inverted or everted eyelids (called entropion/ectropion), infections, allergies, immune system diseases, and poor tear production. Many will respond to symptomatic treatment, but often we need to look further into the problem and you know what that means: tests! Bacterial cultures can help identify what bacteria are causing the problem and more importantly, what antibiotics will work and which ones won't. Scrapings can be done to look for irregular cells and can point us towards an allergic, viral, or bacterial cause. Fluorescein staining of the cornea will show if the cornea has an ulcer and should be done before any preparation with cortisone in it is used in the eye. This is because cortisone will make any existing ulcer worse.

Dry eye, or keratoconjunctivitis sicca (called KCS, thank goodness), is probably the most common cause of conjunctivitis. KCS is a deficiency in the production of tears; either the quantity or quality of the tears is affected. KCS results in a thick, usually green or yellow discharge being produced and quite a red eye results. KCS is caused by viruses, toxicity to certain medications, or, most often by the dog's own immune system destroying the tear glands. KCS is easy to diagnose by using the Schirmer tear test (STT), which is a simple test using strips of special (and expensive) paper to measure tear production. KCS is treated using topical cyclosporine, which both shuts down the immune response and stimulates tear production. It is expensive and usually must be used for life; once the eye

responds we can use it at lower doses to save a little money. In addition, we often use artificial tear preparations and antibiotic ointments to provide relief. KCS is a serious condition and can cause blindness if left untreated.

Glaucoma (take a look at our Tonometer!)

Glaucoma is seen in a lot of dog breeds; since it occurs in man also, people are familiar with this disease. Some of the more common breeds affected are beagles, cocker spaniels, mini and toy poodles, malteses, shih tzus, and many of the terriers. In glaucoma, the pressure inside the eye (IOP for intraocular pressure) increases. This increased IOP causes severe pain and can lead to blindness from pressure damage to the optic nerve. The IOP goes up because of an imbalance between the production and drainage of aqueous humor, the fluid that bathes and provides nutrition to the eye. It either can be a primary, hereditary disease or can occur secondary to other diseases/conditions.

Glaucomas are categorized as either open or closed angle. This angle is the iridocorneal angle, which is where the iris or colored portion of the eye joins both the lens and the cornea on the side of the globe. This is where the aqueous fluid leaves the eye; if it can't leave, we've got problems. Yes it is complicated. To see if the angle is open or closed, an ophthalmologist uses a tool called a gonioscope; I have never been in the office of a general practitioner who had a gonioscope! This is an important part of the equation because closed angle glaucomas don't usually respond to medications but are best treated with surgery.

If the angle is open, a variety of different drugs can be tried. If it is an emergency, intravenous medications will be used. The maintenance medications' aims are to either produce less aqueous humor, help it leave quicker, or both. The drugs that help the humor leave do so primarily by causing the iris to close down making the pupil very small. These are called miotics. A good analogy is an accordion type closet door all bunched up (pupil open) and then closing it to stretch it out (pupil constricted). The next class of drugs decreases the production of aqueous humor. Some of these are eye drops and some are in pill form. Timolol was widely used and generally thought to be effective, but now we are learning that it needs to be used in much higher doses than in man and these higher doses may have cardiac side effects. Oral drugs such as daranide are also used to lower humor production: these have been in use for over 40 years, have few side effects, and decrease IOP by about 20-30%.

Cataracts

Cataracts are very common in dogs. They should not be confused, however, with nuclear sclerosis, which is a normal age related hardening of the lens. A cataract is an abnormal opacification or crystallization of the lens. Most of the cataracts seen in dogs are hereditary and they usually occur eventually in both eyes although not at the same time or at the same rate. Other causes besides heredity are diabetes, pups fed milk replacers, chemicals, radiation, and trauma.

Cataracts are staged according to the degree of involvement. Incipient cataracts are small cataracts and do not usually affect vision. When it increases to involve more of the lens, it

is called an immature cataract; the retina can still be seen through an ophthalmoscope and the dog may or may not be blind. When the entire lens is cloudy it is a mature cataract, the retina cannot be seen, and these dogs are blind. If the cataract starts to then get smaller or resorb a little, it is called hypermature. Hypermature cataracts can rarely result in a restoration of vision, but don't count on it.

Cataracts are treated surgically. Over the years, many claims have been made about eye drops that will restore vision and cause cataracts to resorb. None has been proven with scientific data to work; any anecdotal successes were probably hypermature cataracts spontaneously resorbing. Surgery has been refined over the years; one study showed success rates in dogs rising from 37% in 1961 to currently over 90%. There are four methods: two involve removing the lens and two involve fragmenting the lens through a small needle and sucking the remnants out; this is called phacofragmentation or phacoemulsification (both of which are underlined on my spell checker!). This is the more common method used today but it really depends on multiple conditions as to which technique the surgeon chooses.

Ophthalmology is a fun and interesting field of veterinary medicine. It is one discipline in which we are fortunate to have specialists available to refer to. Some are more amenable towards working with the referring veterinarian than others, so make sure to discuss this with your veterinarian beforehand.