

BASIC INFORMATION

Description

Glaucoma is an increase in pressure within the eye. It is a common eye disease of dogs. Primary or inherited glaucoma occurs in more than 40 different breeds, and both eyes are predisposed. Secondary or acquired glaucoma is also common and may affect only one eye, depending on the underlying cause.

Causes

With primary glaucoma, fluid in the front chamber of the eye backs up because of a malfunction in the drainage area, which causes an increase in pressure. The exact mechanism of the malfunction and the inheritance pattern of glaucoma are not clearly defined in many breeds. Primary glaucoma usually arises in adult dogs. Congenital glaucoma is very rare.

With secondary glaucoma, the movement of the fluid is obstructed somewhere along its usual route, so pressure increases. Causes of secondary glaucoma include uveitis, dislocation (luxation) of the lens, bleeding in the eye (hyphema), tumors, prior intraocular surgery, and other conditions.

Clinical Signs

Acute glaucoma can cause redness, watery discharge, pain (squinting, rubbing the eye), cloudiness, and blindness. Because many dogs are quite stoic and can function normally with vision in just one eye, glaucoma may not be discovered until it becomes chronic and the eye enlarges. Signs of glaucoma are also similar to those of many other eye diseases. Acute glaucoma usually affects one eye initially, unless uveitis (inflammation) is present in both eyes.

Diagnostic Tests

Glaucoma is diagnosed by measuring the pressure in the eye using a tonometer. A thorough eye examination is done to search for an underlying cause. Primary glaucoma is diagnosed when none of the causes of secondary glaucoma are found and the dog is of a predisposed breed. If the diagnosis and cause are uncertain or specialized treatment is needed, our veterinarians may refer your pet to a veterinary ophthalmologist for further evaluation.

TREATMENT AND FOLLOW-UP

Treatment Options

Acute glaucoma can be devastating to the eye and can result in blindness within a few hours. Aggressive therapy must be instituted quickly to try and save vision and relieve pain. Such therapy can involve the administration of intravenous mannitol and/or topical anti-glaucoma medications to bring the pressure down. Sometimes oral medications (glycerin, methazolamide) are also used. If the eye is inflamed, topical steroids may be given. Once

the pressure improves, several choices of therapy exist, depending on whether the eye still has visual function and whether the glaucoma is primary or secondary.

Most cases of primary glaucoma require surgery, because medications do not control the pressure well over the long term. Surgical options for sighted eyes include laser therapy, cryotherapy (freezing), and insertion of valves. Surgical options for blind eyes with glaucoma that cannot be controlled with medication alone include enucleation (removal of the eye), evisceration (removal of the internal contents of the eye) and prosthesis insertion, and sometimes a vitreal injection.

Treatment of secondary glaucoma involves administration of anti-glaucoma drugs and therapy for the underlying cause. For example, surgery may be done to remove a dislocated lens, the eye may be removed if a tumor is suspected, or treatment may be started for uveitis.

Topical glaucoma medications are commonly used for primary and secondary, acute and chronic glaucoma. Many different types of glaucoma medications can be used in dogs, and the choices depend on the type and severity of the glaucoma.

- Beta-blockers: timolol (*Timoptic*), levobunolol (*Betagen*), betaxolol (*Betoptic*)
- Carbonic anhydrase inhibitors: dorzolamide (*Trusopt*), brinzolamide (*Azopt*)
- Prostaglandin agents: latanoprost (*Xalatan*), bimatoprost (*Lumigan*), travoprost (*Travatan*)
- Combination products: timolol/dorzolamide (*Cosopt*), timolol/latanoprost (*Xalacom*), timolol/brimonidine (*Combigan*)
- Pupil constrictors: pilocarpine

Follow-up Care

Eyes with glaucoma require frequent monitoring and adjustment of medications. Over time, affected eyes may become less responsive to topical medications, so changes in medications or consideration of surgical options may be needed. If the glaucoma can be controlled with medications, therapy is lifelong in many cases.

In cases of primary glaucoma, topical medications are usually started to prevent glaucoma in the normal eye, and the pressure in that eye is periodically monitored. Any sign of redness, cloudiness, or decreased vision in the normal eye may indicate the onset of glaucoma, and the animal should be examined *immediately!*

Prognosis

Glaucoma is one of the most frustrating eye diseases to treat. Glaucoma does not always respond to medications; the medications must be administered painstakingly, and some are expensive. Primary glaucoma is extremely difficult to treat, and most affected eyes eventually go blind. The prognosis for secondary glaucoma varies, depending on the cause.