



By your veterinary ophthalmologist

Dr. Franck Ollivier
DMV, Ph.D, Dipl ACVO et ECVO
Veterinary ophthalmology specialist (FR)

Glaucoma

What is a glaucoma?

Glaucoma is defined as increased pressure within the eye that causes degenerative changes in the optic nerve and retina with subsequent blindness.

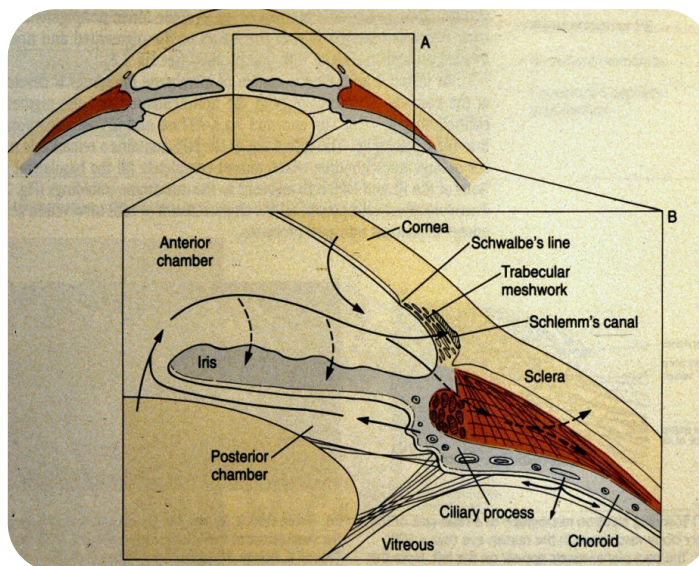
What causes glaucoma?

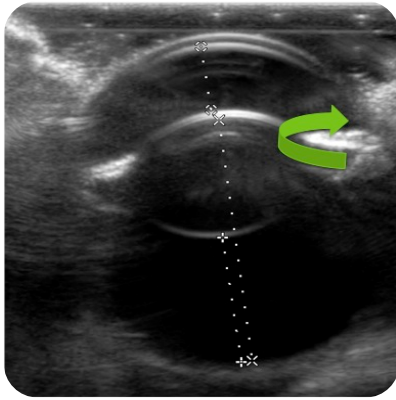
Cells inside the eye behind the iris, called the ciliary body epithelium, continuously make the fluid ("aqueous humor") that fills the front portion of the eye. Glaucoma develops when the normal flow of this fluid out of the eye is impaired.

In most cases, this is caused by a hereditary defect where the filtering mechanism ("drainage angle") around the periphery of the iris is blocked off. This is referred to as "primary glaucoma" and is most commonly seen in pure bred dogs such as the Cocker Spaniel, Basset Hound, Bouvier, Springer Spaniel, Beagle, Shar Pei, Chow Chow, as well as many others.

"Secondary glaucoma" refers to increased pressure in the eye due to other diseases such as anterior uveitis (inflammation inside the eye), lens luxation (dislocation of the lens from its normal position), and hyphema (bleeding inside the eye).

Anatomical view of the ciliary body, lens, iris and pupil, irido-corneal angle and cornea with the flux of the aqueous humour.





a)



b)



c)

a) On this ultrasound image of the eye, the normal flux of the aqueous humour is represented with the green Arrow: produced by the ciliary body, it goes to the posterior chamber, goes in between the lens and the iris, through the pupil to reach the anterior chamber. It is then drained through the irido-corneal angle.

b) Blood in the eye can lead to glaucoma (called secondary)

c) Lens luxation can lead to glaucoma (called secondary)

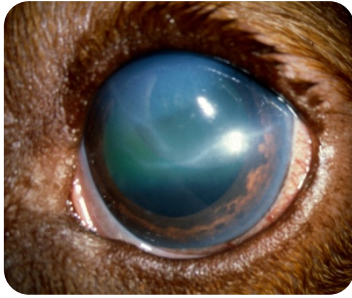
The measurement of the pressure inside of the eye is called tonometry and can be performed with various instruments or tonometers: Tonopen, Tonovet. The production and the drainage of the aqueous maintain a normal pressure of 15 to 25 mmHg in the eye of most animals.



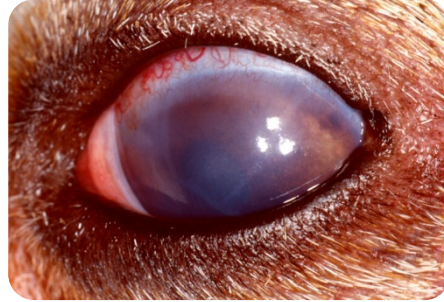
The Tonovet is one of the tonometers that can be used to measure the pressure inside of the eye in our pets.

What are the signs of glaucoma?

The signs associated with glaucoma may include all or some of the following: red eye, bluish/cloudy cornea, pain, dilated pupil, discharge from the eye, blindness, enlargement of the eye.



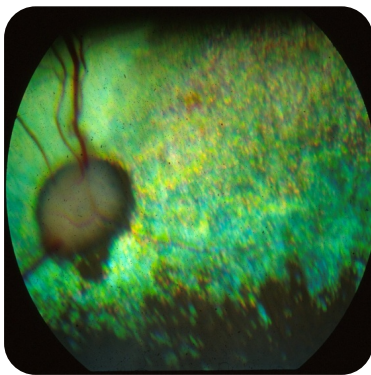
Blueish aspect of the cornea dilated pupil, non visual eye in a dog with glaucoma.



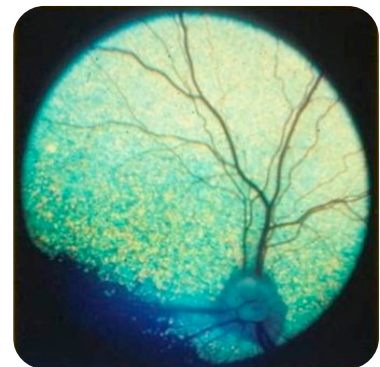
Blueish aspect of the cornea and redness non visual eye in a dog with glaucoma



Buphthalmia in a puppy with glaucoma



The increased pressure will destroy the optic nerve and the retina causing the blindness (The vessels are fewer and thinner, the optic nerve is smaller and more gray in comparison to those on the picture of a normal dog retina on the right).



How is glaucoma treated?

The goals of glaucoma treatment are to save as much vision as possible for as long as possible and to keep the patient comfortable. The treatment program is determined by the type of glaucoma, the severity and duration; the pet's other medical problems, and the possibility of saving vision. Treatment ranges from using eye drops at home, to hospitalization for intense therapy, to possible surgery. A treatment plan for your pet will be discussed with you as the pet is evaluated and as the response to treatment is noted

What can I expect after treatment?

Unfortunately, the only thing predictable about glaucoma is that it usually gets worse (either quickly or gradually) and that each patient requires careful and frequent follow up so the treatment program can keep pace with the disease.

However, in many patients vision loss can be postponed or prevented and, in virtually all situations, the patient can remain comfortable with medication and / or surgery.