

## Equine Glaucoma

Glaucoma is a series of events in the eye that manifest as intraocular pressure (IOP) elevation, optic nerve damage, and vision loss. IOP is a balance of aqueous humor production by the ciliary body and aqueous humor outflow. Elevation in IOP is thought to be the most important risk factor for getting glaucoma, and this applies not only to humans and other species, but also to horses.

Equine glaucoma is common, but is uncommonly diagnosed. This could be because horses have efficient routes for the outflow of aqueous humor from the eye, or because there are few tools available for measuring IOP in horses. The prevalence is unknown, because early symptoms are so subtle that owners do not know care is needed. It is known, though, that horses older than 15 are at increased risk of getting glaucoma. Also, equine glaucoma is usually congenital or secondary to Equine Recurrent Uveitis (eye inflammation). The Appaloosa is the breed most likely to get glaucoma, since they are at increased risk of ERU.

When it comes to glaucoma diagnosis, horse owners most often complain of eye cloudiness or eyeball enlargement. However, horses with glaucoma can also present with corneal striae, corneal edema, corneal vascularization, dilated pupils, slight ocular pain, visual deficits, and frequent involuntary tight closing of the eyelid. These symptoms are usually subtle and present variably from horse to horse. Because of this, it is important to have a veterinarian examine the horse at first presentation of any of these symptoms, since a horse can go blind from glaucoma if not treated early on. This examination should begin with watching a horse in its natural environment in order to check for difficulties navigating, indicating vision loss. The horse should then be sedated and have an auriculopalpebral block. It is most important then to perform tonometry to measure IOP, as this is a main marker of glaucoma. This should be done with the horse's head above the heart, and may have to be measured on several occasions since IOP in horses can fluctuate daily. Then, gonioscopy, slit lamp biomicroscopy, and ophthalmoscopy should be done, if possible, in a dimly lit location in order to fully make a diagnosis of glaucoma.

Once a diagnosis of glaucoma is made, there are several therapies available for treatment, unless the glaucoma is congenital, which is not likely to respond to therapy. First-line therapy should begin with a beta blocker, such as timolol maleate 0.5%, or a carbonic anhydrase inhibitor, such as dorzolamide 2% or brinzolamide 1%. These are usually combined with a topical or systemic anti-inflammatory such as prednisolone or dexamethasone, for overall short term treatment. If glaucoma is detected early, surgery is also a

viable long-term option. Diode laser cyclophotocoagulation is the most common surgery which targets the ciliary body so it cannot make aqueous humor. Aqueous humor drainage implants are also an option that are still being studied, but show promise. Overall, the goal for treatment is to decrease IOP to below 20-25 mmHg. Once the eye has gone blind, intravitreal injection of gentamicin sulfate, enucleation, evisceration, or intrascleral silicone prosthesis are surgical options for pain relief.

Currently, equine glaucoma is difficult to manage and carries a poor prognosis for a horse's vision. But, this prognosis can be improved through the increased awareness by vets of the signs of glaucoma, as well as by making tonometry with handheld tonometers more common during checkups.

### References

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Submitted by: Sophia Beddoe,  
University of Mississippi School of Pharmacy



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