

Glaucoma in dogs and cats

Don't turn a blind eye!

Michele E. Stengård, DVM
Diplomate, American College of Veterinary Ophthalmologists
Affiliate member, ECVO
Zürich, Switzerland

Glaucoma represents a critical ophthalmic emergency in veterinary medicine that requires prompt recognition and intervention to preserve vision. When presented with the red eye, veterinarians must systematically evaluate a comprehensive differential diagnosis including conjunctivitis, episcleritis/scleritis, corneal ulceration/keratitis, uveitis, and glaucoma. A thorough ophthalmic examination incorporating a minimum database of Schirmer tear test, fluorescein staining, and tonometry is essential for accurate diagnosis and therapeutic intervention.

Glaucoma presents with distinctive clinical signs including conjunctival hyperemia and episcleral injection, variable blepharospasm, corneal edema (typically occurring when intraocular pressure exceeds 35 mmHg), mydriasis, acute blindness, and in chronic cases, buphthalmos and optic nerve cupping or atrophy. Accurate tonometry is fundamental to diagnosis, with rebound tonometry (Tonovet) and applanation tonometry (Tonopen) representing the most reliable methods in clinical practice. Proper technique is critical—avoiding pressure on the neck, mandible, or eyelids—as falsely elevated readings represent the most common technical error. The Tonovet requires no topical anesthesia and precise positioning, while the Tonopen requires proparacaine and central corneal application. Advanced diagnostics including ocular ultrasonography assist in evaluating intraocular structures when visualization is compromised, particularly for ruling out lens luxation or neoplasia. Caliper measurements help differentiate buphthalmos from exophthalmos.

The etiology of glaucoma differs significantly between species. Primary glaucoma predominates in dogs, including breeds such as Cocker Spaniels, Chow Chows, Shar-Peis, Basset Hounds, Basenjis, Shiba Inus, Vizslas, Siberian Huskies, Burmese, and Siamese cats to name a few. This form has a genetic basis and typically affects both eyes asynchronously. Secondary glaucoma represents the most common form in cats, resulting from anterior uveitis, intraocular neoplasia, anterior lens luxation, infection, or hyphema.

Medical management encompasses multiple pharmacological approaches targeting aqueous humor dynamics. Oral carbonic anhydrase inhibitors (methazolamide, dichlorphenamide, acetazolamide) decrease aqueous production but may cause gastrointestinal side effects. Topical beta-blockers (timolol 0.5%) similarly reduce aqueous production with minimal systemic effects. Topical carbonic anhydrase inhibitors (dorzolamide 2%, brinzolamide 1%) provide localized production suppression. Prostaglandin analogues (latanoprost, travoprost, bimatoprost) enhance aqueous outflow and serve also as emergency medications, potentially reducing intraocular pressure from 65 to 11 mmHg within 30 minutes.

Surgical intervention becomes necessary when medical management fails. Options include aqueous

shunt devices (goniovalves, gonioimplants) that redirect aqueous humor to subconjunctival spaces, and transscleral or endoscopic diode laser cyclophotocoagulation for preservation of the globe and vision. Salvage procedures such as pharmacological ciliary body ablation, and enucleation are good solutions for relief from blind, painful eyes. Prognosis varies considerably depending on primary versus secondary etiology, chronicity at presentation, and initial visual status.

Critical clinical recommendations include establishing a minimum ophthalmic database for all red eyes, maintaining high clinical suspicion for glaucoma in predisposed breeds, initiating prophylactic medical therapy for the contralateral eye in primary glaucoma cases, and performing comprehensive systemic evaluation in secondary glaucoma patients. Early recognition and aggressive intervention optimize visual outcomes in this vision-threatening condition.

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