

OPHTHALMIC EMERGENCIES IN DOGS

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Ophthalmic emergencies situations that demand rapid assessment of the situation and immediate employment of medical and surgical therapy. They are common presenting complaints and can be frustrating and intimidating for veterinarians. Most ophthalmic emergencies can be treated and stabilized, however, until an expert attention is received. Most ocular emergencies involve loss of vision, compromised globe integrity, or severe ocular pain, if not attended immediately.

This article discusses, in brief, the clinical signs, diagnosis, and emergency treatment to be employed as well as the prognosis of some of the more common ophthalmic emergencies.

Lid Lacerations

Eyelid lacerations may be partial or full thickness, marginal or non-marginal and some times including the lacrimal canaliculi. Healing of such wounds by second intention may cause distortion of the eyelid margin. So such wounds are sutured directly even if they are more than eight hours old.

The wound is irrigated thoroughly. Minimal mechanical debridement is preferred. Full thickness lacerations are sutured in two layers – palpebral conjunctiva with simple continuous sutures with 6-0 or 8-0 absorbable sutures, preferably without knots and skin in interrupted pattern with 5-0 or 6-0 non-absorbable sutures. Wound at the edge of the lid margin can be apposed with a figure-of-8 suture. Parenteral and topical antibiotics and application of Elizabethan collar are advised as after care.

Traumatic proptosis

Proptosis of the eye is the sudden forward displacement of the globe from the orbit and

subsequent entrapment of the eyelids behind the equator. It commonly occurs as a consequence of trauma (eg., hit by a car, head trauma) and the degree of trauma required in brachycephalic dogs is minimum.

Emergency treatment for proptosis involves replacement of the globe and placement of a temporary tarsorrhaphy. Enucleation of the globe may be considered if the damage to the eye is severe. Other signs of trauma, particularly head trauma (eg., oral, nasal or aural bleeding; fractures; elevated intracranial pressure) should be evaluated and stabilized before the surgery to reposition the eye is pursued. Sterile lubricant can be placed on the eye every 1 to 2 hours until definitive treatment can be performed.

The animal is placed under general anesthesia. The area around the eye is clipped and prepared with dilute povidone-iodine solution. The proptosed globe and the allied structures are irrigated thoroughly with normal saline. A generous amount of ophthalmic antibiotic cream is placed on the globe and the eyelids are pulled away from the globe. The globe is replaced by gentle pressure applied on the eyeball through a sterile gauze pad placed over it. If it is too difficult to replace the eyeball, because of the retrobulbar haemorrhage and oedema, lateral canthotomy can be performed. Temporary tarsorrhaphy shall be performed with non-absorbable suture materials of 2-0 to 4-0 size in two or three horizontal mattress sutures with stents, leaving some space at the medial canthus to facilitate the application of topical medicaments. Canthotomy incision is apposed in simple interrupted pattern.

Topically antibiotics, 1% atropine sulphate solution and antiinflammatory drugs like flurbiprofen and oral broad-spectrum antibiotics and corticosteroids should be administered postoperatively. Warm fomentation will help to reduce the oedema on subsequent days. An Elizabethan collar should be worn to prevent self-mutilation and premature removal of the sutures.

If attended immediately, even if the vision cannot be conserved, globe can be salvaged for cosmetic purpose. Eyes having papillary light reflex initially gives a good prognosis.

Hyphema

Hyphema, or blood in the anterior chamber, may be the only clinical finding in an animal with a red eye. There are numerous causes of hyphema like congenital anomalies, trauma, uveitis, coagulopathy, neoplasia, thrombocytopenia, coagulation factor deficiency, systemic hypertension, chronic glaucoma, retinal detachment etc.

Treatment for hyphema involves identifying and addressing the underlying cause and the blood should gradually reabsorb. Atropine sulphate 1% solution administered topically twice daily is indicated to minimize the chance of posterior synechiae but only if the IOP can be closely monitored. The use of topical corticosteroids and antibiotics has not been conclusively shown to be of benefit.

The prognosis is dependent on the underlying cause and whether the bleeding can be controlled. The prognosis for vision was found to be poor.

Corneal ulcer

An ulcer involves the loss of corneal epithelium and corneal stroma. Although usually traumatic in origin, foreign bodies, eyelid conformation like entropion and lagophthalmos, topical irritants, or an underlying disease process may predispose an animal to develop an ulcer. Lagophthalmic breeds (like Chinese Pug) are frequently susceptible to central corneal ulcers. Fluorescein dye test to characterize the ulcer should be performed.

Clinical signs of corneal ulceration include blepharospasm, conjunctival hyperemia, a relatively clear ocular discharge, corneal edema, and miosis.

A yellow-white stromal infiltrate usually accompanies infected ulcers. Infected ulcers tend to be deep and can progress quickly if untreated. Gram-negative rods produce proteases (collagenases), which can result in rapid and progressive destruction ("melting") of corneal tissue.

Corneal ulcers can be superficial or deep. Uncomplicated superficial ulcers heal within 3 to 5 days. Those do not heal within the expected time are called indolent ulcers. Deep corneal ulcers (stromal ulcers) require vascularization, particularly if they involve more than a third of the corneal thickness. These ulcers can take up to 3 weeks to heal. If the ulcer is deep enough to expose and herniated Descemet's membrane (decemetocoele) perforation of the globe is imminent.

The emergency treatment of corneal ulcers depends on the depth of the ulcer, whether or not infection is present, and the underlying cause. If a topical irritant is suspected, the eye should be irrigated with copious amounts of saline. In the following situations corneal ulcers may need expert surgical intervention: ulcer is deep (>80% stromal loss), ulcer progresses (deepens) in spite of appropriate medical therapy or corneal perforation or a descemetocoele is present.

Although surgery may be indicated, it is not always possible. In these animals, medical therapy should be initiated and the eye rechecked frequently. Medical therapy for corneal ulcerations should focus on relief of pain and treatment of infection, if present. Atropine sulphates 1% solution administered topically two to four times daily and antibiotic therapy topically and systemically are advised. Topical corticosteroids are contraindicated in the treatment of corneal ulcers. Topical non-steroidal anti-inflammatory drugs (NSAIDs) can also delay healing of ulcers but less so than topical steroids. Placement of an Elizabethan collar is essential.

Descemetocoele

A descemetocoele is a surgical emergency. Medical therapy can be started before surgery as in case of corneal ulcer. The animal should be handled with extreme care, and any unnecessary pressure on the globe should be avoided. Cage rest must be strictly enforced.

Corneal perforations and lacerations

A corneal perforation/laceration is another surgical emergency. Clinical signs include blepharospasm, pain, corneal edema, a misshapen cornea, and pink or red tissue over the defect and there may be a change in anterior chamber depth and dyscoria. The iris may be adherent to the rent in the cornea or prolapse through as a brown or black mass.

If surgery is not possible, corneal perforations/lacerations are treated much like an infected corneal ulcer, with the addition of systemic broad-spectrum antibiotics and NSAIDs. Topical use of atropine sulphate 1% solution is particularly important, especially if the iris is prolapsed through the wound. The animal should be handled with extreme care, and any unnecessary pressure on the globe should be avoided. Cage rest must be strictly enforced.

The prognosis for a corneal perforation/laceration is guarded. Prompt surgical repair of the cornea can save the eye and, possibly, vision. If surgery is not possible and the response to medical therapy is poor, enucleation is appropriate.

Conjunctival/Corneal foreign body

A foreign body can become partially embedded in the conjunctival cul-de-sac, cornea or extend full thickness into the anterior chamber. After administration of a topical anesthetic (Lignocaine HCl 4%), the eye can be gently flushed with copious amounts of sterile saline or eyewash to try to dislodge the foreign object. A 25-gauge needle can also be used to try to lift the foreign object free of the superficial corneal tissue. If the object is removed, treatment for a corneal ulcer should be started.

Conjunctivitis

Conjunctivitis, or inflammation of the conjunctiva is presented with clinical signs including conjunctival hyperemia, chemosis, ocular discharge, and blepharospasm. Local or systemic infections, allergies, keratoconjunctivitis sicca are the common cause of conjunctivitis in dogs.

Treatment involves the topical antibiotic and anti-inflammatory therapy with systemic antibiotics, depending upon the severity and cause of the condition.

The prognosis is dependent on the underlying cause.

Sudden blindness

A thorough history and physical examination are important in all cases of sudden blindness. Common causes for sudden blindness are trauma causing retinal detachment, Sudden Acquired Retinal Degeneration Syndrome, optic neuritis (as in Canine Distemper, toxoplasmosis, Lyme disease). It is also possible that an "acute" blindness has resulted from a slowly progressive insidious disease (eg., progressive retinal atrophy).

The condition requires detailed expert investigations to identify the cause. Treatment is according to the cause.

Anterior uveitis

Anterior uveitis, inflammation of the iris and ciliary body, is a relatively common emergency. The animal is usually presented for a painful red eye, with or without vision loss. Clinical signs include conjunctival hyperemia, a protruding third eyelid, an inflamed, reddened and swollen iris, miotic pupil, aqueous flare, hypopyon, hyphema, and blepharospasm. The intraocular pressure (IOP) may be decreased to less than 10 mm Hg as a result of decreased aqueous production.

Possible causes of anterior uveitis are trauma, infections (fungal, bacterial, toxoplasmosis, leptospirosis), sepsis, lens luxation, immune mediated diseases and neoplasms.

The emergency treatment of anterior uveitis involves controlling ocular inflammation as well as treating the underlying cause if found. Topical therapy with corticosteroids mydriatic-cycloplegic drug (1% atropine sulphate or tropicamide topical solution administered two to four times daily).

The prognosis is dependent on the underlying cause and severity.

Glaucoma

Glaucoma is a neurodegenerative disease that results in the death of the retinal ganglion cell (RGC) and the optic nerve and is associated with an increase in IOP. It is a disturbance to aqueous humor flow that results in changes in IOP. Aqueous humor produced by the ciliary body leaves the anterior chamber through the irido-scleral junction; obstruction to its outflow results in increased IOP. Glaucoma can be considered primary or

secondary. Primary glaucoma is a bilateral disease associated with production and drainage of aqueous humor. Causes of secondary glaucoma include anterior uveitis, lens luxation, intraocular neoplasia, hyphema and cataract.

A history of a red or cloudy painful eye, lethargy, and vision loss are typical of acute congestive glaucoma. Clinical signs include blepharospasm, a cloudy cornea, a dilated unresponsive pupil, episcleral vascular congestion, and vision loss. The IOP in acute congestive glaucoma is usually greater than 40 mm Hg and can be as high as 80 mm Hg (normal range 15 to 25 mm of Hg).

The emergency treatment of acute congestive glaucoma in dogs should be directed toward one goal - rapid reduction of IOP before permanent blindness occurs. Vision may be preserved, or some vision may be regained, with appropriate treatment.

Therapeutic agents that rapidly and significantly decrease pressure include hyperosmotics. Mannitol (1–2 g/kg administered intravenously over 20–30 minutes) and glycerol (2 mg/kg administered orally) dehydrate the aqueous humor and vitreous body. Food and water should be withheld from the animal for several hours after administration of mannitol.

Latanoprost, a prostaglandin analogue administered once daily, increases drainage of aqueous humor mainly through an alternative outflow route (uveoscleral outflow).

An oral carbonic anhydrase inhibitor (CAI) should be considered to maximize the reduction

in IOP. CAIs (eg., methazolamide at a dose of 2.5–5 mg/kg) decrease aqueous humor production by the ciliary body. Side effects like gastrointestinal signs, panting, and disorientation are frequently noted. Topical CAIs (eg., dorzolamide administered three times daily) have been developed to reduce these adverse side effects. Topical α -antagonists (eg., 0.5% timolol) and epinephrine compounds (eg, dipivefrin) are medications that can be added to reduce IOP further.

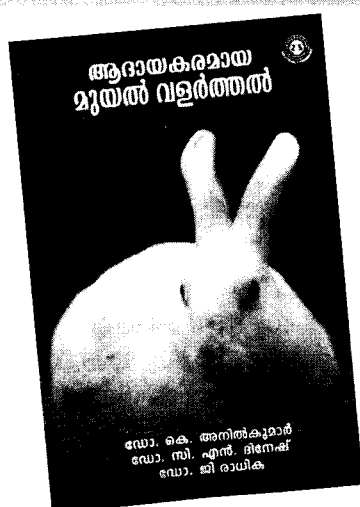
After the initial reduction in IOP, vision may or may not improve. The IOP needs to be maintained within normal limits using a combination of topical and oral medications. If the initial glaucoma attack resulted in temporary blindness, it may take days to weeks for limited vision to return. In some dogs, despite aggressive treatment of acute glaucoma, vision never returns.

Systemic corticosteroids at an anti-inflammatory dose have been shown to improve optic nerve head edema in acute glaucoma.

After emergency treatment for acute congestive glaucoma, the dog sent for expert opinion.

Ophthalmic emergencies discussed in this article are a few of the situations which donate extreme anxious moments to the owners as well as to the dogs. Conservation of vision and relief of pain of the patient by timely identification and management of the condition will definitely gift the veterinarian professional satisfaction and lifelong gratitude from the clients and their loving pets.

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BOOK REVIEW

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Dr. K. Anil Kumar, Dr. C.N. Dinesh and Dr. G. Radhika

The authors have presented in a concise and lucid manner the essentials of profitable rabbit keeping. The book has 98 pages and has been published by Dharmanilayam Charitable Society, Kottayam. It is reasonably priced at Rs. 70/-. This guide to rabbit rearing has been written under the leadership of Dr. K. Anilkumar, Associate Professor, COVAS, Pookot, who has over two decades of experience in this field. He has been assisted by Dr. C.N. Dinesh and Dr. G. Radhika of the same department. This book would be very useful as a reference book for technical personnel in this area besides professional students and students of vocational Higher Secondary School