

## ANTERIOR CHAMBER CENTESIS AS AN EMERGENCY RELIEF PROCEDURE FOR APHAIC GLAUCOMA IN A DOG

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### Introduction

Glaucoma in canines is defined as a group of ocular diseases that exhibit increased levels of intraocular pressure (IOP), which is detrimental to maintenance of vision and health of eye (Gelatt, 1991). In animals with glaucomas, an elevated IOP remain the principal risk factor (Gelatt and Brooks, 1999). Aphakic glaucoma (Glaucoma developing in an eye where lens had been removed) in dogs usually occurs within the first few weeks after lens and cataract extraction (Gelatt, 1991). Once the condition is diagnosed, vigorous medical treatment is to be initiated, failing which, surgical intervention is necessary. This paper reports centesis of aqueous humour as an emergency relief procedure for aphakic glaucoma in a dog.

### Case History and Observations

A nine-year-old male Lhasa Apso was presented with visual deficit and whiteness of both eyes (OU\*). Previous medical record of the dog revealed systemic hypertension - renal in origin, cataract (OU), lens subluxation (OS\*\*) and vision threatening ocular hypertension (OS). The systemic hypertension had been managed medically and the ocular hypertension (OS) was treated by an intracapsular cataract extraction (ICCE) of the subluxated lens (OS), 20 days prior to the day of presentation. There was near normal menace response and pupillary light response after ICCE. On the day of presentation, the eye (OS) was buphthalmic (turgid and prominent), the menace response was negative and the pupil was dilated and not responding to light. Obstacle course tests - both in bright light and dim light - were negative. The cornea had a keratoconus appearance, was hazy and oedematous near the limbus. The eye

(OS) was severely hypertensive with an intraocular pressure of 72 mm of Hg (Tonopen-Vet, Reichert Inc., USA). Fundus was visible on indirect ophthalmoscopy. Vision was completely absent (OS). The haematological and serum biochemical values were within normal range. As an emergency relief of the severely elevated intraocular pressure, aqueous humour centesis was resorted to.

### Treatment and Results

The animal was premedicated with atropine sulphate at the rate of 0.04 mg/kg body weight intramuscular. Anaesthesia was induced with propofol at the rate of 5 mg/kg body weight intravenous "to effect". Anaesthesia was then maintained with 1.5 % isoflurane in 100% oxygen using Anaesthetic Delivery System - 1000 (ADS-1000, Engler Engineering Corporation, USA)

The animal was positioned in right lateral recumbency and the eye (OS) was cleaned with 0.5% povidone iodine and draped. Using a conjunctival forceps, the eye ball was held stable by grasping the bulbar conjunctiva. The 12 O' clock angle of the cornea, near the limbus, was selected for the centesis. The anterior chamber was entered using a 26 G needle, with the syringe attached. Aqueous humour (0.75 ml) was aspirated to relieve the IOP, which was then measured using applanation tonometer (Tonopen-Vet, Reichert, USA) and was found 8 mm Hg. A grid keratotomies (superficial corneal stroma is gently debrided in a grid pattern) over the oedematous cornea was performed using a hypodermic needle bent at its tip.

Postoperatively, topical antibiotic - Moxifloxacin (HIMOX, Hi Care Pharma, Chennai), anti-inflammatory - Flurbiprofen (PENFEN, Hi Care Pharma, Chennai) and hypertonic saline

\* both eyes, \*\* left eye

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(HYPER-SOL-5, Jawa Pharmaceuticals, Jaipur) eye drops were administered. All eye drops were administered thrice daily, with 15 minute time intervals between the medicines.

The condition of the eye (OS) was evaluated on the 5<sup>th</sup>, 7<sup>th</sup> and 14<sup>th</sup> postoperative days. IOP was found 15 mm of Hg throughout the period of observation. There was progressive improvement in the transparency of the cornea. Menace and pupillary light responses did not return to normal until 14<sup>th</sup> postoperative day. IOP (OD) was 14 mm Hg throughout the period of observation.

## Discussion

Secondary glaucoma due to lens subluxation or luxation and its treatment by early removal of the affected lens offering best long-term prognosis has been described (Curtis, 1990; Nasisse and Glover, 1997; Glover et al., 1995 and Gelatt and Brooks, 1999). Even if lens extraction is performed early, aphakic glaucoma can still develop. The present case, where in the aphakic glaucoma developed in the third post-operative week, was in accordance with earlier reported. Aphakic glaucoma can result from formation of peripheral anterior synechia (Gelatt and Brooks, 1999) or impaired aqueous outflow occurring at the level of the trabecular meshwork by herniated vitreous, inflammatory cells or debris from the breakdown of the blood-aqueous barrier (Glover et al., 1995 and Gwin et al., 1982). The reason for the development of glaucoma in the aphakic eye (OS) in this case is not known. The form of aphakic glaucoma characterized by angle closure and formation of peripheral anterior synechia develops in dog several months or even years after successful cataract surgery (Gelatt et al., 2007). Clinical signs may be either acute or chronic, but the elevations in IOP usually occur over several weeks. Aphakic glaucomas caused by either of these mechanisms may be difficult to reverse with intensive medical therapy; more often, they will require further surgery to relieve angle blockade. Aqueous humour centesis was done in this case as an emergency procedure to bring down the severely elevated IOP. Grid

keratotomy was done to debride and to aid in reducing subepithelial oedema. Hypertonic sodium chloride ophthalmic eye drops were given to decrease the subepithelial oedema by dehydrating the epithelium. It has been earlier reported that topical hyperosmotic agents, following debridement, will reduce subepithelial oedema and improve adherence of epithelium to stroma (Whitley 1991). Long-term monitoring of IOP is essential in this patient and recurrence of glaucoma necessitates definitive surgical treatment.

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