



EFFICACY OF TRAVOPROST IN THE MANAGEMENT OF GLAUCOMA IN DOGS

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Abstract

A study was undertaken with the objective to evaluate the efficacy of Travoprost in the management of glaucoma in dogs. Six dogs with glaucoma irrespective of age, breed and sex were selected for the study. Intraocular pressure (IOP) was measured using applanation tonometer on the day of presentation, 7th, 14th and 28th day. All dogs were treated with topical instillation of Travoprost 0.004 per cent eye drops, one drop once daily for 28 days. A change in IOP from the initial day was noticed reaching the established normal level within two weeks of treatment in all the six dogs. Miosis was observed in three dogs as a side effect but resolved by the end of observation period. The study suggests that topical application with travoprost 0.004 per cent eye drop once daily was effective in reducing IOP in dogs with glaucoma.

Key words: Glaucoma, dogs, travoprost

Glaucoma is a painful ophthalmic emergency disease condition and is one of the most challenging disorders to manage. It is characterized by elevated IOP and a family of ocular diseases associated with altered retinal

ganglion degeneration and optic neuron loss, progressively leading to optic disc changes, decrease in visual field and blindness (Gelatt and Brooks, 1999). Among all the animals, dogs were most commonly affected by primary glaucoma and the condition was heritable in some dog breeds (Kallberg *et al.*, 2007). Reducing the IOP remains the main stem in treatment of glaucoma and, prompt and aggressive medical or surgical therapies may help to preserve vision. Medical management includes β -blockers, α -agonists and carbonic anhydrase inhibitors which suppresses the aqueous humour production, whereas cholinergic and adrenergic agonists were aimed at increasing the outflow. Prostaglandin analogues are potent ocular hypotensive drugs having main effect on increasing the outflow via uveoscleral pathway (Linden and Alm, 1999). The present study was undertaken with the objective to evaluate the efficacy of Travoprost 0.004% eye drops in the management of glaucoma in dogs.

Materials and Methods

The dogs presented with history of

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ophthalmic affections to University Veterinary Hospitals at Mannuthy and Kokkalai were thoroughly screened and IOP was measured in suspected cases. Six Chinese Pug dogs with glaucoma were selected for the study irrespective of age, breed and sex. Four dogs were females of two years old and two were males of one year of age. A general physical examination and thorough clinical examination were done in all the cases to rule out any systemic illness as eye is an indicator of many systemic illness. Two dogs were presented with clinical signs of healing corneal ulcers, two with corneal pigmentation, one with watery discharge and one with corneal opacity.

Tests for assessing the vision and neuro-ophthalmic tests were performed on the day of presentation and on subsequent observation periods. Basal and reflex tear production values were recorded in all the cases using Schirmer tear test (STT) sterile strips. The intraocular pressure was measured using digital applanation tonometry (Tonopen Vet) after desensitizing the cornea with topical instillation of 0.5% Proparacaine eye drops. The animals were placed in normal sitting position with minimal restraint to reduce the pressure on neck and eyelids were gently retracted. Holding the tonometer perpendicular to eye ball the corneal surface was gently touched by the tip of

Tonopen. Three consecutive readings with 95% accuracy level were noted and the average value was recorded as IOP in mm of Hg (Fig.1). Direct ophthalmoscopy was done to evaluate the fundus of eye. Ocular instillation of one drop of prostaglandin analogue Travoprost 0.004 per cent (TOVAXO®) eye drops was done in all the eyes once daily for 28 days. The observations were recorded on 7th, 14th and 28th day.

Results and Discussion

Glaucoma is an optic neuropathy leading to irreversible damage but loss of vision can be potentially preventable (Goel *et al.* 2010). The condition is usually difficult to diagnose at early stage because of the subtle clinical signs. In the present study the clinical signs observed were corneal edema, episcleral congestion, dilated pupils, buphthalmia and Habb's striae. The clinical signs like episcleral congestion, edematous cornea, pupillary dilation and optic nerve damage were important signs for diagnosis of glaucoma, which was chronically manifested as buphthalmia, severe corneal disease and Habb's striae (Abrams, 2001). Menace response, cotton ball test and obstacle course were found to be normal in all the cases except in one dog because of pigmentation and it persisted same throughout the observation period. Neuro-ophthalmic tests like pupillary

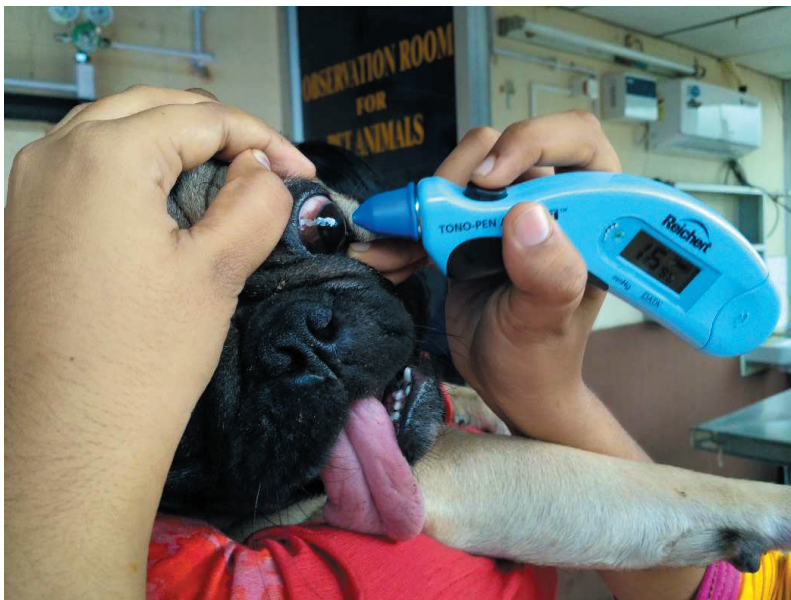


Fig.1. Measurement of IOP using digital applanation tonometer

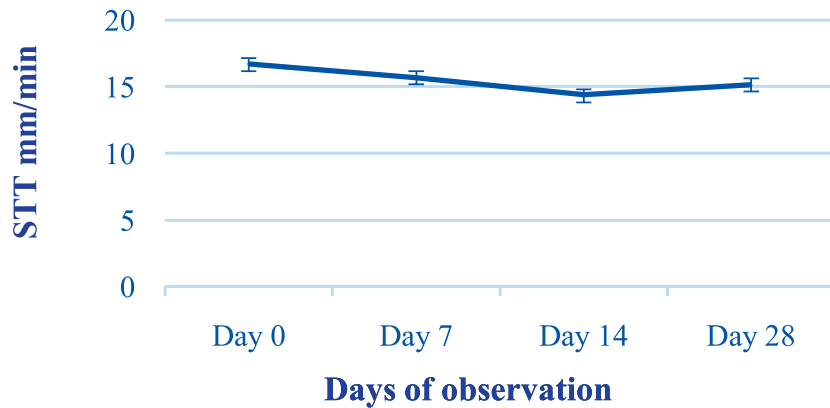


Fig. 2. Graph showing o of Schirmer tear test (mean±SE)

light reflex (PLR), dazzle reflex and palpebral reflexes were responsive in all the cases during the entire observation period except for PLR in three dogs on day seven and 14 because of occurrence of miosis. It got resolved by the end of observation period. Direct ophthalmoscopy was done to evaluate the fundic lesions associated with the glaucoma. It was not performed in three dogs as the cornea was not clear. All the other animals had a normal optic disc.

The mean STT value (mm/min) on the day of presentation was 16.67 ± 1.47 and it remained within the normal range throughout the observation period (Fig.2). There was no statistically significant difference between the days of observation ($P > 0.005$).

Among the six dogs two were having unilateral glaucoma and four were having bilateral glaucoma. The average IOP of the selected cases was 37.83 ± 0.60 on the day of presentation and it reduced to 16.83 ± 0.70 on 28th day (Fig.3). There was 21.58% reduction from base value of IOP on 7th day 44.05% on 14th day and 55.50% on 28th day. There was significant difference in IOP between the observation intervals ($P < 0.005$). Gelatt and MacKay (2004) opined that the prostaglandin analogues caused a greater and long term reduction in IOP of glaucomatous Beagle and found a reduction of 24 to 40 mm Hg (40-76 per cent) of IOP.

The side effects noticed in three cases after instillation of travoprost 0.004 per cent

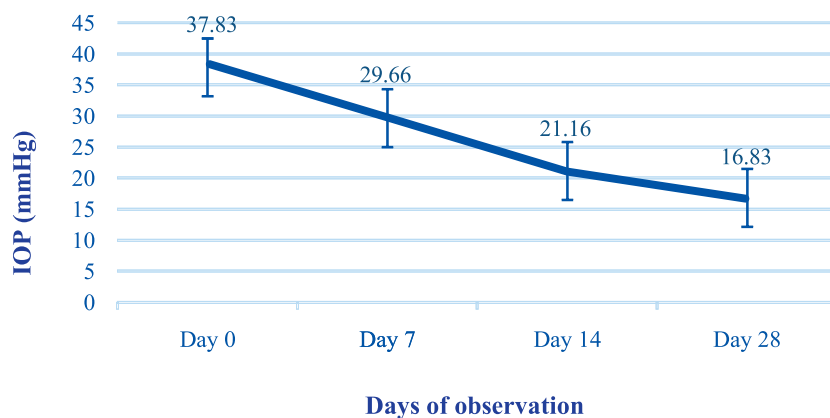


Fig. 3. Graph showing observations on IOP (mean±SE)

was miosis which was in accordance with the observations of Carvalho *et al.* (2006), Mackay *et al.* (2012) and Studer *et al.* (2000). Gelatt and MacKay (2004) also noticed miosis and conjunctival hyperemia in their study in dogs. According to Abrams (2001) the occurrence of miosis after instillation of prostaglandin analogues would indicate the effectiveness of the drug.

From the present study it is concluded that travoprost 0.004% eye drops at the rate of one drop once daily is effective in reducing the IOP in dogs for the treatment of glaucoma.

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