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Medical management of chorioretinitis in a golden retriever dog affected with canine ehrlichiosis

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Abstract
A 10-month-old female Golden Retriever pup with 24 kg body weight was presented to Veterinary Hospital, Bhoiguda, College of Veterinary Science, P.V. Narsimha Rao Telangana Veterinary University with history of being unable to see, walking into furniture and walls, searching for food and other things for 4 days. The owner reported previous history of tick infestation. On ophthalmic examination, there was absence of both pupillary light reflex and menace reflex. There was bilateral pupil dilation and mild lenticular opacity. Ophthalmoscopy revealed engorged, dilated retinal vessels and congestion indicating chorioretinitis. Haematology showed normocytic hypochromic anaemia and thrombocytopenia while there were elevated ALT, ALP levels in serum biochemistry. The lateral flow antibody detection test was positive for Ehrlichia canis. The dog was given doxycycline @ 5 mg/kg BW intravenously in the morning and orally in the evening for 5 days. From day-6 onwards oral doxycycline @ 5 mg/kg BW twice a day was administered for 3 weeks. Prednisolone @ 0.5 mg/kg BW was given intramuscularly for 5 days and orally for next 3 alternate days. Moxifloxacin and prednisolone combination eye drops were given 6 hourly for 2 weeks. Supportive treatment with Vitamin A, D, E intramuscular injections was given weekly once for 3 weeks along with daily oral powder with ocular supportive components and anti-oxidants. Oral haematinics, hepatic stimulants and platelet-boosters were also given for 1 month. There was gradual improvement in the vision with sluggish reflexes within 5 days. The dog recovered uneventfully with complete recovery of vision, resolution of anaemia, thrombocytopenia and normal liver enzyme levels within 21 days.

Keywords: Chorioretinitis, canine ehrlichiosis, golden retriever dog

Introduction
Canine ehrlichiosis or canine monocytic ehrlichiosis (CME), is a tick-borne disease caused by the gram-negative ricketssia *Ehrlichia canis* [1, 2, 3]. It is considered an important infectious disease of the dog, worldwide [4]. It is an obligate intracellular ricketssial with tropism for hematopoietic cells causing leukopenia and thrombocytopenia [5]. CME is transmitted by the brown dog tick *Rhipicephalus sanguineus* [6].
The pathogenesis of ehrlichiosis can be divided into acute, subclinical and chronic phases of the disease [2, 4]. The ocular signs may be present in all phases of the disease involving every structure of the eye [6, 7, 8, 9].
Ehrlichiosis is endemic in Hyderabad and adjacent areas. It is very difficult to control, because of lack of awareness on control of tick population. The aim of this paper is to draw attention to the fact that ehrlichiosis can cause ocular manifestations and it could manifest itself without a definite pattern.
The present case discussed is tick fever in a Golden Retriever pup that was presented to the hospital with an acute loss of vision and its successful medical management.

Materials and Methods
A 10-month-old female Golden Retriever pup with 24 kg body weight was presented to Veterinary Hospital, Bhoiguda, College of Veterinary Science, P.V. Narsimha Rao Telangana Veterinary University with history of being unable to see, walking into furniture and walls, searching for food and other things for 4 days. The owner reported previous history of tick infestation. All the vital signs were normal. On ophthalmic examination, there was absence of both pupillary light reflex and menace reflex. There was bilateral pupil dilation (Fig.1) and mild lenticular opacity. Indirect ophthalmoscopy (Fig. 2) revealed that there were engorged, dilated retinal vessels and congestion indicating chorioretinitis. Haematology showed

normocytic hypochromic anaemia and thrombocytopenia while there were elevated ALT, ALP levels in serum biochemistry. The lateral flow antibody detection test (Combo 4Dx Snap test) was positive for *Ehrlichia canis*. The dog was given doxycycline @ 5 mg/kg BW intravenously in the morning and orally in the evening for 5 days. From day-6 onwards oral doxycycline @ 5 mg/kg BW twice a day was administered for 3 weeks. Prednisolone @ 0.5 mg/kg BW was given intramuscularly for 5 days and orally for next 3 alternate days. Moxifloxacin and prednisolone combination eye drops were given 6 hourly for 2 weeks. Supportive treatment with Vitamin A, D, E intramuscular injections was given weekly once for 3 weeks along with daily oral powder with lutein, beta-carotene, vitamin C, E, l-glutathione, methylcobalamine, zinc, manganese, selenium, copper, grape seed extract and ginseng extract. Oral haematinics, hepatic stimulants and platelet-boosters were also given for 1 month.

Fig 1: The pup when presented showed dilated pupils with negative pupillary light reflex

Fig 2: Indirect ophthalmoscopy being performed

Results and Discussion

There was gradual improvement in the vision with sluggish menace and pupillary light reflexes seen within 5 days of treatment. Complete vision was regained within 2 weeks of medication with good menace and pupillary light reflexes. Significant haematological improvement was observed in the values of haemoglobin, PCV and RBC count along with serum biochemical values of ALT and ALP post treatment that reflected the recovery.

Acute loss of vision seen in the present case was due to chorioretinitis that was ocular manifestation of *E. canis* infection. The most prevalent ocular manifestation of ehrlichiosis is uveitis, which can be classified into anterior uveitis, posterior uveitis, and panuveitis [10, 11]. Chorioretinitis is a type of posterior uveitis. The choroid is the vascular layer of the eye, that is responsible for blood supply to the retina. An inflammation of these layers *i.e.* chorioretinitis can lead to vision-threatening complications [12]. In the present case, there was no pyrexia, loss of appetite or superficial bleeding which is characteristically seen in ehrlichiosis cases, but the sole symptom seen was acute loss of vision.

The response to treatment was good with complete resolution of symptoms after three weeks of systemic and topical therapy, indicating that the animal was in the acute phase of infection. Recovery after treatment with doxycycline-glucocorticoid combination with antibiotic-glucocorticoid eye drops was reported in other studies [3, 5, 11, 13].

Control of existing tick infestation was advised with fipronil spray every 15 days for 3 times along with monthly spot-on application thereafter for prevention of future tick infestation.

Conclusions

The dog which was in the acute phase of ehrlichiosis responded well to the treatment with complete recovery of both ocular and systemic abnormalities, after a 3-week therapy.

Canine ehrlichiosis can cause ocular manifestations and can occur without pyrexia or superficial bleeding that is characteristically seen in *E. canis* infection.

Tick control regimens need to be advised and implemented for prevention of tick-borne haemoprotozoan infection in endemic areas.

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