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Ehrlichiosis in a Labrador Dog: A case study

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Abstract

The present study was conducted at Sanjay Gandhi animal care centre (SGACC) Rajouri Garden, New Delhi, India. Ehrlichiosis is an important and clinically significant tick borne disease transmitted by *Rhipicephalus sanguineus* (*R. sanguineus*), caused by intracellular gram negative bacteria of the genus *Ehrlichia*. The study was carried out on dog was presented to SGACC, New Delhi, India, for treatment with a history of anorexia, pyrexia, tick infestation, severe epistaxis, staggering gait, swollen prefemoral lymphnodes and melena. Peripheral blood smear examination revealed presence of intracytoplasmic morula of (*E.Canis*). Blood samples were collected to analyze hematobiochemical parameters. Confirmative diagnosis was done by peripheral blood smear examination for presence of morula. On the day of presentation to hospital Oxytetracyclin @ 22 mg/kg IV along with Normal saline 250 ml IV, Meloxicam @ 2.5mg/kg BW IM, Botropose @ 0.5 ml IV Stat, Siquil @ 0.5 ml IV stat, followed by Oxytetracyclin @ 22 mg/kg IV along with Normal saline 200 ml IV BID for 7 days and other supportive therapy. The dog recovered uneventfully after 7 days of BID treatment.

Keywords: Canine ehrlichiosis, *E. canis*, Oxytetracyclin, *Rhipicephalus sanguineus*

Introduction

Ehrlichias are Gram-negative bacteria that live within membrane-bound vacuoles in the cytoplasm of cells [1]. They were originally classified according to the host cells and mammalian species they infected and their geographic location. In the 1990s the development of cell culture systems for most of these strictly intracellular organisms and advances in molecular biology techniques facilitated the serotypic and genotypic characterization of the ehrlichias, and led to their phylogenetic positions being more clearly defined. The techniques have also greatly facilitated the diagnosis of ehrlichioses, and research on ehrlichias has been stimulated by the finding that they cause disease in people [2].

Tickborne haemoprotzoan infections are frequently encountered across tropical subtropical regions, where *Rhipicephalus sanguineus*, brown dog tick acts as important vector for many diseases in dogs [3]. Canine monocytic ehrlichiosis mainly seen in three forms. Acute form followed by subclinical and chronic forms. Disease is mainly characterized by fever, anorexia, weakness, epistaxis, lymphadenopathy, tick infestation, and ocular changes [4].

Treatment

Treatment of *E. canis* infections is considered to be successful when dogs recover clinically, the haematology and biochemistry values return to normal and the organism can no longer be shown to be present in the body. There are numerous anecdotal reports of the efficacy of antimicrobials in the treatment of *E. canis* infections. Drugs reported to be effective against *E. canis* include doxycycline [5], short and long-acting oxytetracycline [5-7], imidocarb dipropionate [8, 9], chloramphenicol [10], sulfapyridine [11] and sulfamethazine [12]. Antibiotics reported to be ineffective against *E. canis* include penicillin G [12], erythromycin [7] and chloramphenicol [14]. The present investigation deals with the *Ehrlichia canis* infection in a 8 month old Labrador male dog and also deals with the hematobiochemical changes, treatment, clinical recovery by use of specific and supportive therapy over a period of 7 days.

Case history, clinical observations and diagnosis

A male labrador dog six months old was presented to Sanjay Gandhi animal care Centre Rajouri garden New Delhi, India with a history anorexia, pyrexia, tick infestation, severe epistaxis, staggering gait, swollen prefemoral lymphnodes and melena. Clinical examination of the dog revealed rise in body temperature (105.6°F), tachypnea (44/min), tachycardia

(100bpm) (Table 1), pale mucus membranes and dullness. Blood was collected and subjected to routine haematology and biochemistry. Peripheral blood, whole blood with EDTA was collected for laboratory examination. Diagnosis was based on presence of morulae on peripheral blood smear examination which confirmed the presence of ehrlichia infection (Figure 01). Hematology revealed Anaemia ((Hb- 8.80 g/dl), RBC'S (4.65×10⁶/ μL), Packed cell volume (27 %), Thrombocytopenia (Platelet count- 120 thousand/mm³) and Neutropenia (54 %) (Table 2). Based on clinical signs, haematological and biochemical report case was suspected for hemaprotzoan infection and blood smear confirmed it as *E. canis* infection.

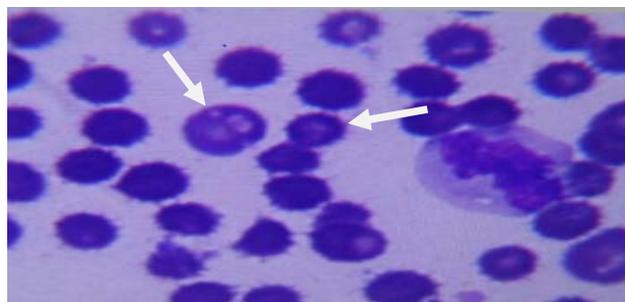


Fig 1: Showing the presence of intracytoplasmic Morulae in monocyte (Giemsa, 100x)

Table 1: Vital parameters pre and post-treatment in dogb suffering from Ehrlichiosis,

Parameters	Pre treatment	Post treatment
Temperature (°F)	105.6	102.4
Respiration rate (/min)	44	30
Heart rate (bpm)	100	80

Table 2: Hematological findings pre and post-treatment.

Parameters	Pre treatment	Post treatment
Hemoglobin (g/dl)	8.80	10.92
TEC (×10 ⁶ /μl)	4.56	8.34
PCV (%)	27	33
Platelets (thou/mm ³)	120	312

Results

Based on clinical signs, haematological and biochemical report case was suspected for hemaprotzoan infection and blood smear confirmed it as *E. canis* infection because the presence of morula in peripheral blood smear.

On the day of presentation to hospital the dog was treated with Oxytetracyclin @ 22 mg/kg IV along with Normal saline 250 ml IV, Meloxicam @ 2.5mg/kg BW IM, Botropose @ 0.5 ml IV Stat, Siquil @ 0.5 ml IV stat, followed by Oxytetracyclin @ 22 mg/kg IV along with Normal saline 200 ml IV BID for 7 days along with syrup immunol (Himaliya) one teaspoon BID, liver tonic (Liv-52) one teaspoon BID and hemoglobin and RBC booster syrup *aRBC'S* (Vetoquinol) were administered for 12 days. Botroclot (local application) to control nasal bleeding and Inj. Botropose @0.5ml IV till reduction of epistaxis. On day 7 of the treatment, vital parameters were normal (Table 1), parasitemia was reduced significantly with clinical and hematological improvement. After 7 days of treatment dog recovered successfully.

Discussion

Treatment of *E. canis* infections is considered to be successful

when dogs recover clinically, the haematology and biochemistry values return to normal and the organism can no longer be shown to be present in the body. There are numerous anecdotal reports of the efficacy of antimicrobials in the treatment of *E. canis* infections. Drugs reported to be effective against *E. canis* include doxycycline [5], short and long-acting oxytetracycline [6, 5, 7] imidocarb dipropionate [8, 9] chloramphenicol [10], sulfapyridine [11] and sulfamethazine [12]. Antibiotics reported to be ineffective against *E. canis* include penicillin G [12], erythromycin [7] and chloramphenicol [13]. In general, the significance of these reports is difficult to interpret, as in many cases they were based only on clinical improvement of dogs following treatment, and in some cases the disappearance of *E. canis* morulae from blood smears. These changes also occur, however, in dogs that remain infected and progress from the acute to the subclinical phase of the disease.

There are now a number of more controlled studies on the efficacy of tetracyclines in the treatment of experimentally- and naturally-acquired *E. canis* infections. Tetracycline therapy has been found to be effective in bringing about the resolution of clinical and laboratory abnormalities and the elimination of *E. canis* in 78 % (36/46) of dogs experimentally infected with the organism and treated under closely controlled experimental conditions [9, 14, 15]. Tetracycline therapy of naturally-infected dogs treated at home was less effective, with only 50% (207/418) of the dogs responding to treatment [13, 16, 17]. The efficacy of tetracyclines against *E. canis* is supported by the results of *in vitro* studies, where doxycycline was found to have a rickettsiocidal effect on the organism [18].

Tetracyclines have also been reported to be effective against *E. ewingii* [19], the agent of human granulocytic ehrlichiosis [20, 21], *E. platys* [22], *E. risticii* [23], *N. helminthoeca* [24] and *N. elokominica* [24] infections in dogs.

Conclusion

Presence of morula on blood smear examination is snap shot approach for diagnosis of ehrlichiosis and tetracycline is effectively remove the infection of ehrlichiosis in a dog

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