



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2020; 8(2): 936-937

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Received: 24-01-2020

Accepted: 25-02-2020

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Diagnosis and therapeutic management of *Hepatozoon canis*: A case report

Rajdeep Brar, Taranjot Kaur and Jagmeet Kaur

Abstract

A 2 year old Labrador retriever male dog was presented to the clinics with a history of intermittent fever, emaciation, diarrhoea and depression. Clinical examination revealed rectal temperature (103.5° F). Tachycardia and increased respiration rate. Haematological studies revealed Hemoglobin 9.2g/dl and neutrophilic leukocytosis. Thrombocytopenia was also observed. Biochemical analysis revealed hypoalbuminemia, increased creatinine kinase and alkaline phosphatase activity. The blood smear stained according to Romanovski Giemsa revealed oval shape gamonts in the cytoplasm of neutrophils. The dog was successfully treated with combined therapy of Imidocarb dipropionate @ 5 mg/kg intramuscularly at 14 days interval and Doxycycline at daily oral doses of 10 mg/kg for 21 days.

Keywords: Labrador retriever, *Hepatozoon canis*, imidocarb dipropionate, doxycycline

Introduction

Hepatozoon canis is a protozoa belonging to *Apicomplexa* family, detected in India for the first time in the blood of dogs and described as *Leukocytozoon canis* ^[1, 2]. Life cycle of *H. canis* consist of gametogony and sporogony in the definitive host and schizogony followed by formation of gametes in the intermediate host. The definitive host of *H. canis* is the brown dog tick *Rhipicephalus sanguineus* belonging to family Ixodidae and intermediate host is dog ^[3]. *H. canis* infects leukocytes and parenchymal tissue in contrast to other tick borne protozoa. It is transmitted to dogs by ingestion of ticks containing mature oocysts ^[4]. After ingestion of ticks, sporozoites are released. These sporozoites then spread to different organs like spleen, lung, liver, kidney *etc.* via blood stream or lymph. Meronts are then formed in these organs which undergo several cycles of merogony, forming and releasing merozoites. These merozoites then invade white blood cells mostly monocytes and neutrophils. In these cells, gamonts are formed ^[5]. The life cycle of *H. canis* is completed when a vector ingests the infected blood. The infection with low level of parasitaemia could be asymptomatic in dogs or could be manifested as a severe life threatening disease with fever, anemia, cachexia in dogs with high parasitemia ^[6].

Case Report

In November, 2019, intact male Labrador retriever was presented to the Veterinary clinical complex of Baba Hira Das College of Veterinary Pharmacy with a history of intermittent fever, emaciation, diarrhoea, depression and severe tick infestation. Clinical examination revealed rectal temperature (103.5° F), pale mucus membrane and cachectic body condition. Tachycardia and increased respiration rate were also observed. Haematological studies revealed Hemoglobin 9.2g/dl and neutrophilic leukocytosis. Thrombocytopenia was also observed. Biochemical analysis revealed hypoproteinemia and hypoalbuminemia, increased creatinine kinase and alkaline phosphatase activity. The blood smear stained according to Romanovski Giemsa revealed oval shape gamonts in the cytoplasm of neutrophils as shown in figure 1. Abdominal ultrasounds were also performed which revealed hepatomegaly and splenomegaly. The dog was treated with combined therapy of Imidocarb dipropionate @ 5 mg/kg intramuscularly at 14 days interval and Doxycycline at daily oral doses of 10 mg/kg for 21 days. Case was monitored regularly and dog got cured completely after three weeks as hemato-biochemical values were found within range after 21 days.

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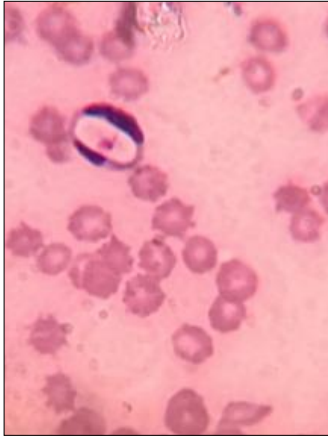


Fig 1.

Discussion

Hepatozoonosis is diagnosed on the basis of clinical, hemato-biochemical and blood smear examination. Weight loss, anemia, lethargy observed in present study are in agreement with earlier reports of Roopali *et al.* [7] and Thakur *et al.* [8]. Anemia can be due to blood loss due to massive infestation with ticks, reduced erythropoiesis, or due to combination of several other factors. Bitton *et al.* [9] and Marchetti *et al.* [10] in their study have also reported these similar changes. Hypoproteinemia is believed to be due to destruction of hepatocytes at increased rate in case of Hepatozoonosis. Sarma *et al.* [11] and Ingole *et al.* [12] have also reported almost similar clinical, haematological and biochemical picture before of *H.canis*. *H.canis* in this case was diagnosed from blood smear stained according to Romanovski Giemsa. Ingole *et al.* [12] has also earlier confirmed presence of gametocytes within leukocytes in peripheral blood smears. In this case dog was successfully treated with combined therapy of Imidocarb dipropionate and Doxycycline. Kumar *et al.* [13] have also earlier successfully treated case of Hepatozoonosis, but they used Diminazene aceturate along with Doxycycline. Thus it was concluded that *H.canis* can be diagnosed from blood smear and can be successfully treated with combined therapy of Imidocarb dipropionate and Doxycycline.

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