A CASE REPORT ON HEPATOZOON CANIS INFECTION IN A DOG

Abstract

A thin peripheral blood smear collected from a four years of old dog (Labrador breed) was received from the Referral Veterinary Clinical Complex, Indian Veterinary Research Institute, Izatnagar to the Division of Parasitology, Indian Veterinary Research Institute, Izatnagar for the diagnosis of haemoprotozoan disease during the month of October, 2023. Blood smear was screened for the parasitological examination using Giemsa's stain showed positive for *Hepatozoon canis.* The dog was treated with single dose of Imidocarb dipropionate @ 6.6 mg/kg subcutaneously and Doxycycline @ 5mg/kg orally for 28 days with supportive therapy. The dog was infected with *Hepatozoon canis* conventionally diagnosed as well as therapeutically managed. Incidence of *H. canis* was documented in a dog from Bareilly district of Uttar Paradesh.

Key words: Conventional diagnosis, Dog, *Hepatozoon canis,* Therapeutic management

Introduction

Canine hepatozoonosis, caused by *Hepatozoon canis*, is considered to be one of the most prevalent canine vector-borne infections in the world including India (11). This disease, caused by *H. canis* was first described in India in 1904 by Bentley (5) and is transmitted by the tick *Rhipicephalus sanguineus* (9). *R. sanguineus* is found in temperate and tropical regions worldwide, and cases of *H. canis* have been reported from different places like southern Europe, Asia, Africa, the Middle East and South America (3).

The infection with *H. canis* is caused primarily by the ingestion of infected ticks or tick parts containing mature oocysts with infective sporozoites through oral route (2). It is an intracellular, malaria like parasite affecting leucocytes of dogs. Leucocytes containing gamonts of *H. canis* are usually seen in peripheral blood smear particularly in neutrophils (6).

The infection level can vary from subclinical, usually associated with low parasitemia, to severe and life-threatening disease in animals with high parasitemia, often in puppies or immunosuppressed animals and infected dogs may persistently show latent parasitism for long periods of time (4). In this study, a dog infected with *H.canis* was conventionally diagnosed, and the prevalence and control strategies in India were described.

Clinical presentation of the animal

A four-year-old Labrador breed dog was presented to the Referral Veterinary Clinical Complex, Indian Veterinary Research Institute, Izatnagar during the month of October 2023 with the history of fever, vomiting and anorexia. Clinical examination of the dog revealed that pyrexia (104^{o}F), pale conjuctival and oral mucous membranes and tick infestation. The animal was suspected for the haemoprotozoan infection based on the clinical examination. A thin peripheral blood smear was received to the Division of Parasitology, Indian Veterinary Research Institute, Izatnagar for the parasitological examination.

Material and methods

The thin blood smear was fixed with methanol for 1 minute and stained using the Giemsa's stain at the dilution of 1: 10 with water to make working solution of Giemsa's kept for 40 minutes. After that, the slide was washed with tap water, dried and focused under oil immersion of a compound binocular light microscope.

Microscopic examination of the blood smear, stained with Giemsa's method and screened for the presence of haemoprotozoan parasites, revealed rectangular bodies surrounded by a capsule. These bodies stained pale blue with a dark reddish-purple nucleus and exhibited numerous pink granules in the cytoplasm of the gamonts found inside neutrophils (13), as shown in Figure 1.

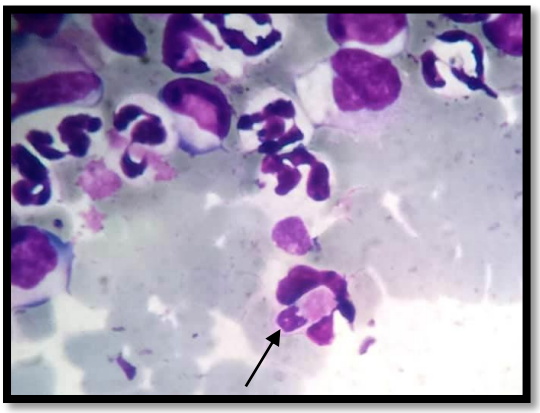

Figure 1. *H.canis* gamonts in neutrophils stained with Giemsa's stain (1000X)

Treatment protocol

Based on the clinical and microscopical examinations, the dog was diagnosed as infected with *Hepatozoon canis.* The appropriate treatment was given as a combination therapy, including a single dose of Imidocarb dipropionate @ 6.6 mg/kg subcutaneously and Doxycycline @ 5mg/kg orally for 28 days along with supportive therapy such as fluids, antiemetics and haematinics. Moreover, Protector spot on (Fibronil) was applied topically to control ticks. After four weeks of treatment protocol, the dog showed

remarked improvement in condition. Again, peripheral blood smear was examined found negative for *H.canis.*

Discussion

Thakur *et al.* (14) reported that the combination therapy of imidocarb dipropionate and doxycycline useful for successful management of *H.canis* infection in dogs. Murugesan, K., *et al.* (8) reported the *H.canis* in dogs from Namakkal district of Tamil Nadu using conventional and polymerase chain reaction. Singh, M. D., et al. (12) documented *H.canis* in dogs using loop-mediated isothermal amplification (LAMP) from Ludhiana, a district of Punjab state, India. Abd Rani, *et. al.* (1) revealed that *H. canis* was the most common canine TBD pathogen found infecting dogs in India followed by *E. canis*, *M. haemocanis* and *A. platys*.The genus *Rhipicephalus* was found to be the most common tick present in this study followed by *Haemaphysalis*. Lakshmanan, et. al. (7) documented the first report on molecular detection of *H. canis* in naturally infected dogs from Kerala. As Roux and Raoult (10) recommended that routine screening of the animals should be followed as the blood sucking vectors carry infected host blood and pathogens causing the disease in susceptible animals.

Conclusion

Early diagnosis of *H. canis* in dogs is crucial for treating them in an acute stage, preventing further losses. The combination therapeutic protocol of imidocarb dipropionate and doxycycline with supportive therapy could be useful for the management of *H. canis* infected dogs.

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