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ISSN: 0976-3031

International Journal of Recent Scientific Research
Vol. 6, Issue, 2, pp.2766-2767, February, 2015

International Journal of Recent Scientific Research

RESEARCH ARTICLE

ACUTE TO CHRONIC (CRYPTIC) BABESIOSIS IN A DOG AND ITS THERAPEUTIC MANAGEMENT

Kanta Bhattacharjee*[1], Prabhat Chandra Sarmah[1], Dipak Kumar Sarma[1], Ramgopal Laha[2] and Parikshit Kakati[1]

[1]Department of Parasitology, College of Veterinary Science, Khanapara, Guwahati Assam
[2]Division of Animal Health, ICAR Research Complex for NEH Region, Umiam Meghalaya

ARTICLE INFO

Article History:

Received 5th, January, 2015
Received in revised form 12th, January, 2015
Accepted 6th, February, 2015
Published online 28th, February, 2015

Key words:

Babesia canis, dog, anaemia, polychromasia, Nilberry, Clindamycin

ABSTRACT

Present communication describes a clinical case of babesiosis in a 15-month Labrador bitch which at its first presentation showed few piroplasms of *Babesia canis*, occasional nucleated red blood cells and polychromasia in Giemsa stained blood smear microscopy. Initial values of haemoglobin (Hb) 7 g% and packed cell volume (PCV) 22% further dropped to 3 g% Hb and 12% PCV in subsequent 90 days when the animal was presented in a critical condition with corresponding increase of nucleated RBC (18%), polychromasia and presence of howell jolly bodies. Polymerase chain reaction conducted in the blood revealed *Babesia* DNA despite negative in blood smear examination. Administration of Diminazene diaceturate, Clindamycin hydrochloride, cortisone and supportive fluid therapy, vitamins and mineral resulted noticeable improvement. Blood examination done after 45 days of treatment showed 9.2 g% Hb and 28% PCV without any red cell abnormality. Based on therapeutic response, performance of blood smear reading for red cell abnormalities characterizing regenerative anaemia as a diagnostic marker for occult/cryptic babesiosis of dog in endemic areas is discussed.

INTRODUCTION

Babesia canis and *Babesia gibsoni* are the two species of *Babesia* which infect dogs of all ages and breeds in tropical and subtropical regions of the world. *Rhipicephalus sanguineus* is the principal vector associated with transmission of these blood parasites. Diagnosis of *Babesia* infection is conventionally done by visualizing the organisms in red blood cells during microscopic examination of stained blood smear. However, *B. canis* infection in many cases remains undiagnosed due to its transient parasitaemia during early stage and cryptic most of the time. False negative parasitological finding is the usual outcome of blood examination in many clinical cases (Soulsby, 1982). The present communication describes one such clinical case of spontaneous babesiosis in a dog which escaped treatment until 90 days from its initial diagnosis and its successful therapeutic management.

Experimental procedures

A 15-month old Labrador female trekker dog owned by a paramilitary force was brought for health check-up to the Clinics of the College of Veterinary Science, Guwahati, Assam with history of capricious appetite, lethargy and occasional vomiting. Physical examination of the animal revealed fever (104^{o} F), pale mucous membrane and moderate dehydration. Routine blood examination showed 7g% haemoglobin (Hb) and 22% packed cell volume (PCV). Microscopic examination of Giemsa stained blood smears revealed detection in one a few large erythrocytic piroplasms of *Babesia canis*. There was presence of few nucleated red blood cells and polychromasia. Differential leucocyte count (DLC) included 19% lymphocyte, 75% neutrophil, 2% monocyte and 4% eosinophil. The animal at its first presentation could receive symptomatic treatment for pyrexia, dehydration and vomiting. After 63 days the animal was brought to the clinics with complaints of increased inappetance and depression. Blood smear examination conducted this time, although was negative for parasite, showed increased number of nucleated red blood cells, polychromasia and howell jolly bodies. The animal still under symptomatic treatment was presented again after another 26 days in a very critical condition which included among others severe weakness, depression, anaemia, anorexia, staggering and passing of deep yellow urine. Hb and PCV values were 3 g% and 12% respectively with 9% lymphocyte, 83% neutrophil, 4% each of monocyte and eosinophil in DLC. There was presence of 18% nucleated red blood cell, severe polychromasia, many howell jolly bodies and giant platelets of classical regenerative anaemia. The blood smear however was again found negative for parasite. Polymerase chain reaction

*Corresponding author: **Kanta Bhattacharjee**
Department of Parasitology, College of Veterinary Science, Khanapara, Guwahati Assam

analysis conducted in the blood demonstrated *Babesia* DNA (Laha *et al*., 2014).

RESULTS AND DISCUSSION

Antibabesial treatment was provided to the animal at its third presentation with two doses of Diminazene diaceturate (Nilberry) @ 1.3 ml i/m at 48 hrs interval followed by a course of Clindamycin hydrochloride (Clincin) injection @ 3 ml i/v, 12 hrly for 10 days along with supportive fluid therapy for 3 days, vitamins and mineral supplementation for 7 days. The animal responded well from 3rd day of treatment and clinical recovery as evidenced by improved appetite, physical activity and alertness was observed within a week. Blood examination conducted after 45 days revealed elevation of Hb to 9.2 g%, PCV to 28% and absence of any red cell abnormality in blood smear. The animal was perfectly normal and had no complaint of relapse infection thereafter.

Parasitological findings observed in the present case was comparable to that of Schalm *et al.* (1975) who reported *B. canis* detection in blood of a dog only once out of several examinations conducted during 10 month observation period. Microscopic evaluation of blood smear, although highly specific, has been stated to be unrewarding in many situations (Ayoob *et al.*, 2010) due to possible sequestration of parasites in blood vessels of visceral organs (Jefferies *et al*., 2007). Several other improved diagnostic tests like serology and molecular analysis have been developed to diagnose *Babesia* infection (Boozer and Macintire, 2003; Irwin, 2009). However, application of these methods in developing countries is still restricted to research laboratories and is seldom used in routine clinical diagnosis. Regenerative anaemia characterized by lowered Hb and PCV content and appearance of nucleated red blood cell, polychromasia, howell jolly body and no parasitaemia in peripheral blood observed in the present case are in agreement with those observed in spontaneous (Dantes-Torres and Figueredo, 2006) as well as experimental canine babesiosis (Jefferies *et al*., 2007). Haematological findings observed in the present case also corresponded with clinical symptoms, parasite detection in microscopy followed by PCR analysis.

Since accurate diagnosis of canine babesiosis especially the chronic ones is of paramount importance to treat clinical cases, it is suggested that in absence of serological and molecular diagnostic kits, red cell abnormalities may offer a valuable guide as diagnostic marker in endemic areas to justify adoption of antibabesial treatment of chronic cases with occult parasitaemia.

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How to cite this article:

Kanta Bhattacharjee *et al.* Acute to chronic (cryptic) babesiosis in a dog and its therapeutic management . *International Journal of Recent Scientific Research Vol. 6, Issue, 2, pp.2766-2767, February, 2015*

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