CASE REPORT
JIVA 18(3) December 2020

Received: 18.09.2020
Accepted: 20.10.2020

# A CASE REPORT ON CHRONIC RENAL FAILURE DUE TO OCCULT BABESIOSIS IN A DOG

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## ABSTRACT

A three-year-old Saint Bernard was presented with history of chronic gastro intestinal disorder, with progressively elevating creatinine values and without any response to treatment. Molecular detection by polymerase chain reaction aided in diagnosis of the condition as chronic canine babesiosis with Multi Organ Dysfunction (MODS). Animal responded to treatment for *Babesia gibsoni* infection with Clindamycin and Doxycycline parenterally in the initial stages but succumbed to the infection later. The present paper describes a case of *B. gibsoni* infection leading to Chronic Kidney Disease (CKD) and its sequelae.

**Key words**: *B. gibsoni*, multi organ dysfunction, chronic kidney disease

## INTRODUCTION

Canine babesiosis is a tickborne disease which is caused by intraerythrocytic haemoprotozoa. The most commonly encountered species in dogs include *B. canis* and *B. gibsoni.* It can be exhibited as complicated or uncomplicated cases depending on the clinical manifestations. Uncomplicated babesiosis leads to anemia resulting from haemolysis whereas manifestations in complicated babesiosis are variable. This is attributed to cytokine induced phenomenon which leads to multiorgan dysfunction and systemic inflammatory response syndrome (SIRS). According to Lobetti *et al.*(1996), the insult to kidneys resulted in acute renal injury due to anaemic hypoxia, reduction in renal blood flow, and hypotension with intra-renal vasoconstriction and renal ischaemia. The exact pathogenesis attributed to kidney damage is still obscure.

## CASE HISTORY AND OBSERVATION

A three-year-old male Saint Bernard was presented to Teaching Veterinary Clinical Complex, Mannuthy

with a history of inappetence, vomiting and lethargy. The animal was being treated for more than a year for recurrent episodes of gastrointestinal disorders. It was treated with metronidazole, ceftriaxone, ivermectin, B vitamins, Lactobacillus probiotics, anti-emetics, antacids, appetite stimulants (cyproheptadine, aristozyme) and liver protective. Animal had severe anaemia with VPRC of 9.9 per cent and serum creatinine value of 7.8 mg/dl. Haemoparasites could not be identified in the peripheral blood smear examination conducted one week prior to presentation. On the day of presentation, haematological analysis revealed severe anaemia (RBC-1.83X $10^6$ /µl, Hb-3.4g/dl, HCT-9.9 per cent, MCV-54.1, MCH-18.6µg). Creatinine level was 11.86 mg/dl on serum biochemical examination. Blood gas analysis revealed metabolic acidosis (Bicarbonate level-11 m mol /l) and all electrolytes were within normal limits. Urine analysis was also carried out, which revealed proteinuria and lower range of specific gravity (1.015), confirming the severity of renal damage.

Supportive therapy was initiated with sodium bicarbonate 7.5 per cent 60 ml, pantoprazole 40mg, darbepoetin 0.2 ml subcutaneous and fresh blood transfusion of 570 ml on the next day to alleviate anaemia. During the consecutive days, animal had slight improvement with VPRC elevating to 14.5 per cent, but later on reduced to 13 per cent. In addition, creatinine level increased to 16.1 mg/dl, indicating the possibility of an etiological agent causing persistent anaemia and renal injury. Even though repeated peripheral blood smear examination did not reveal any haemoparasites, due to the persistent anaemia and unresponsiveness to treatment, blood was collected for molecular detection of any blood parasite. On polymerase chain reaction, the animal was found to be positive for *B.gibsoni* and negative for *Ehrlichia canis* and *B. canis*.

## TREATMENT AND DISCUSSION

Conservative treatment for babesiosis was initiated with Doxycycline @ 2.5 mg/kg bwt (Intravenous) and Clindamycin @ 5.5 mg/ bwt (Intravenous) avoiding all nephrotoxic drugs like imidocarb, metronidazole and buparvaquone. By second week of treatment, anaemia had improved with an elevated PCV of 16.2 per cent but creatinine values had increased to 18.32 mg/dl revealing the poor prognosis of the condition. Animal deteriorated in condition by third week and succumbed to the infection.

Renal involvement is common in complicated and uncomplicated babesiosis. It resembles as that of failure due to sepsis by common infectious agents

like brucellosis, ehrlichiosis, leptospirosis and heart worm disease. In babesiosis of dogs, chronic antigenic stimulation may lead to sequelae such as membranoproliferative glomerulonephritis with IgM deposits that has been demonstrated in experimental infection with the California isolates (Wozniak *et al.*, 1997) and has persistently elevated creatinine levels. Proteinuria is reported to be another consistent finding even though not necessarily reflecting a renal failure as observed by Lobetti and Jackson (2001). Tarini *et al.* (2018) also reported azotemia and proteinuria in dogs infected with *B. gibsoni.* Depending on the type of *Babesia* species, stage of diagnosis and treatment protocol used, the prognosis of most cases are 50-90 per cent whereas in complicated babesiosis causing SIRS and MODS, the prognosis is poor. Mortality can reach upto 50 - 100 per cent, despite intensive, technically advanced interventions in such cases (Welzl *et al.,* 2001).

## SUMMARY

Early detection of SIRS and MODS is of major importance in clinical practice for providing insight about severity and outcome of the disease and therapy. The presented case showed the importance of early detection of the primary cause of kidney injury in young animals for a favorable prognosis. Molecular detection plays a vital role in finding etiological agent when conventional methods do not aid in a confirmatory diagnosis. The presented case described chronic babesiosis in dogs, leading to irreversible kidney damage.

**Ethics statement:** This study does not involve animal experimentation and was conducted on cases reported in the hospitals, following standard operating protocols of animal handling and sample examination, upon informed consent of owners.

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