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Babesiosis in Rottweiler dog: A case report

Dr. Jitendra kumar MVSc Scholar Veterinary Medicine
Dr. Alok Singh Assistant professor Veterinary Medicine
Dr. Sonu Jaiswal HOD Veterinary Clinical Complex
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Abstract

A four-years-old male Rottweiler dog with inappetence, pyrexia, weakness, vomition, blood in the urine, and lateral recumbency since a week had been brought in the VCC. Clinical examination exhibited icteric mucous membranes, dehydration, high fever as well as ticks on the body surface. Anemia, leucocytosis, and thrombocytopenia were found in complete blood count. *Babesia gibsoni* was found to be present in RBCs under microscopic examination. Babesiosis was identified based on the patient's medical history, clinical symptoms, and laboratory findings. Atovaquone, Azithromycin and supportive therapy were all used to treat the dog successfully.

Keywords: - Icterus mucus membrane, ticks, *Babesia gibsoni*, Atovaquone, Azithromycin

INTRODUCTION

Canine Babesiosis is a clinically important and widely distributed hemoprotozoan illness in domesticated dogs and wild canids (Irwin, 2010) .Canine babesiosis is a common and clinically significant tick-borne disease caused by obligate hematozoan parasites of the genus Babesia. Lethargy, anorexia, fever, jaundice, hemolytic anemia, hemoglobinuria/bilirubinuria, weight loss and sometimes death are the most common encountered clinical signs of the acute infection.[1] The tick vector *Rhipicephalus sanguineus* transmits it naturally. According to the morphological characteristics, the causative agents of canine babesiosis can routinely be divided into two distinct classes including the large Babesia measuring 3.00 - 5.00 µm known as *Babesia canis* which mainly appears to be pyriform, and the smaller counterpart with the size of 1.00 - 3.00 µm, known as *B. gibsoni* which mainly appears to be signet ring form.[2] Diagnosis of canine babesiosis can be achieved by microscopic examination of Giemsa-stained blood smears, sereological tests and molecular methods such as polymerase chain reaction (PCR). The main drawbacks for serological assays and microscopic detection of *Babesia* spp. are cross-reactions, low sensitivity and difficulty of differentiating between the involved species. The PCR presents a higher sensitivity and specificity than traditional diagnostic methods to detect babesial infection at the subspecies level differentiation.[3] The present case report describes a new case of the infection by *B. canis* in a dog suffering from hemolytic anemia. High fever, jaundice, pale or icteric mucous membranes, hematuria and epistaxis lymphadenopathy, and thrombocytopenia are

common in dogs with babesiosis (Vial and Gorenflot, 2006; Gonde et al., 2016).

CASE PRESENTATION

A Four-years-old male Rottweiler was brought to the VCC, College of Veterinary Science and Animal Husbandry Kumarganj Ayodhya with a seven-day history of decreased food intake, vomiting, blood mixed urinating, and lethargy. The owner stated that the dog had received routine vaccinations and deworming. The infected dog's body temperature was 104.6º Fahrenheit, increased heart rate (150 bpm) and tachypnoea (52/min) along with respiratory distress, visible mucous membrane was icteric, and ticks were identified on the body surface during clinical exams. The blood samples were collected into plain and EDTA-containing tubes for hemato-biochemical and molecular examinations. The Giemsa-stained blood smears were prepared for detection of pathogens under a light microscope. Blood samples were examined for haematological changes and the presence of haemoprotozoa for diagnostic purposes. Anemia, erythrocytopenia, thrombocytopenia, and leucocytosis were recorded on hemogram. Babesia gibsoni was found in RBCs in a blood smear produced from peripheral blood and stained with Giemsa stain and viewed under oil immersion (x100). The case was diagnosed as canine Babesiosis based on clinical signs, tick history, and microscopic inspection of a blood smear.

Table.1 Routine haematology

Parameters	Observed Values
Haemoglobin (g/dl)	7.2
PCV (%)	22.7
RBC ($\times 10^6/\mu l$)	3.65
WBC ($\times 10^3/\mu l$)	10.8
Platelets ($\times 10^3/\mu l$)	157
Neutrophils %	72.8
Lymphocytes %	20.2
Monocytes %	4.4
Eosinophils %	2.6

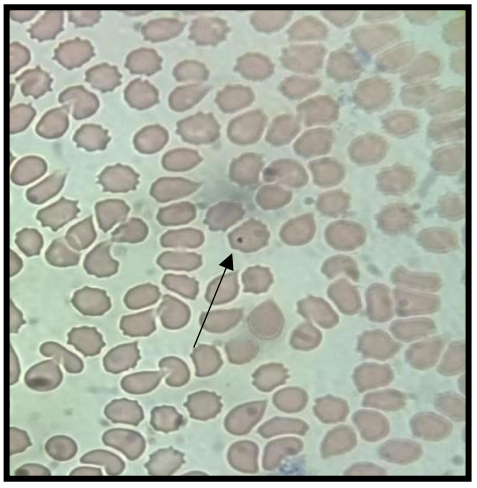

Figure 1. Blood smear (100 X, Leishman-Giemsa) Babesia gibsoni - Annular or signet ring shaped piroplasms

TREATMENT AND DISCUSSION

Based on the clinical signs, and laboratory examination, the condition was diagnosed as babesiosis in dog. Initially treatment was given with injection Nurobion forte @ 2 ml, inj. Meloxicam @ 0.5 mg/kg body weight, on the day of presentation. After confirmation of the condition tablet Atovaquone @ 13.3 mg/kg body weight orally every 8 hours (TID) for 10 days. The antibiotic Azithromycin 10 mg/kg body weight orally once daily for 10 days. The supportive treatment includes fluid replacement via IV infusion of 5 percent DNS followed by Ringers lactate (RL) for 7 days, (ii) Pantoprazole @1 mg/kg IV daily for 7 days, and (iii) To control vomiting Ondansetron at a rate of 0.1 mg/kg body weight IV

for 7 days. Injection of Vitamin B-complex @2ml IV OD for 5 days, followed by 10 ml hematinic syrup PO BID for 7 days. Ticks carry Babesia species, which are intra-erythrocytic parasites. The presence of merozoites in a peripheral blood smear is commonly used to diagnose Babesia spp. infection. Fever, anorexia, dullness, hemoglobinuria, icterus, anaemia, and thrombocytopenia were seen in this instance, which were also reported by Peterson, 2006; Nelson and Couto, 2009[45]. Hb, PCV, TEC, and total platelet count were all significantly lower in the dog, following treatment although they returned to normal. Low haemoglobin levels indicate anaemia, which could be caused by haemoglobin loss owing to RBC rupture in dogs (Kshama, 2017; Venkatesakumar etal., 2018)[67].

Furthermore, there is was a significant decrease in PCV and total RBC count, which could be attributable to Babesia gibsoni-induced reductions in RBCs in the blood (Birkenheuer, 2012; Harrus et al., 1997; Venkatesakumar et al., 2018)[89]. Because of the parasites' poisons, the affected dog developed leukocytosis. Babesia causes hemolyticanemia and multiple organ dysfunction syndrome (MODS), both of which are caused by the systemic inflammatory response syndrome (Jadhav et al., 2011)[10]. The current communication showed a raised amount of bilirubin and increased ALT activity, both of which are signs of liver stress, which could be caused by inflammatory cytokines or hypoxia that causes liver damage (Gonde et al., 2016)[11]. In our case, the high BUN and creatinine were most likely related to babesiosis, which damages renal cells due to the development of refractory hypotension, resulting in decreased renal tissue perfusion and glomerular filtration rate (Zygner and Wedrychowicz, 2009; Venkatesakumar et al., 2018)[12]. *Babesia Gibsoni* in clinical cases treated with Atovaquone and Azithromycin has also been reported (Wulansari et al., 2003). The present case was followed up on the ten days of treatment. A peripheral blood smear stained with Giemsa stain on day 18 after therapy revealed that Babesia gibsoni was not present. The haemato-biochemical parameters were greatly improved. The dog recovered completely clinically, with a spectacular response and uneventful recovery. The treatment of babesiosis in dogs requires both specific and supportive techniques. The goal of supportive treatment is to restore appropriate tissue oxygenation by correcting anaemia, particularly if it is severe, as well as dehydration and electrolyte abnormalities.

Conclusion

The results of this clinical case study demonstrated that a combination therapy of Atovaquone @13.3mg/kg and Azithromycine @ 10mg/kg, together with supportive therapy, is effective against *B. gibsoni* with no side effects and the dog recovered without difficulty.

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