

SUCCESSFUL TREATMENT OF *BABESIA GIBSONI* INFECTION IN A PUG DOG - A CASE REPORT

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A 1.5year old male pug was brought to Veterinary Clinical Complex, Mannuthy, Thrissur with the complaint of anorexia and weakness. General clinical examination revealed icteric mucous membranes with normal body temperature. On abdominal palpation splenomegaly was noticed. Peripheral blood smear was positive for *Babesia gibsoni* (++++). Complete blood count revealed severe anemia and thrombocytopenia. On Serum biochemical profile showed elevated alkaline phosphatase, total and direct bilirubin. The case was diagnosed as *B. gibsoni* infection. Packed red blood cell (pRBC) transfusion was performed to correct the hematocrit. Animal was treated with Doxycycline @10mg/kg bwt. i/v, Clindamycin @ 11mg/kg bwt i/v, Metronidazole @15mg/kg bwt i/v, Prednisolone @1mg/kg bwt i/m, oral hematinics and liver supplements for two weeks. Dog showed an uneventful recovery after two weeks of treatment.

Keywords: Canine babesiosis, *Babesia gibsoni*, Packed Red Blood cell (pRBC) transfusion.

The large *B. canis* and small *B. gibsoni* are two organisms commonly known to infect the dogs. The *B. gibsoni* is mainly transmitted by *Haemaphysalis longicornis* and *Rhipicephalus sanguineus* ticks (Solano *et al.*, 2011). Canine babesiosis is clinically classified as uncomplicated and complicated forms. Uncomplicated clinical cases have been suggested to be a consequence of hemolysis while complicated canine babesiosis is due to development of the systemic inflammatory response syndrome (SIRS) and multiple organ dysfunction syndromes (MODS). Typical symptoms include fever, anemia, jaundice, hemoglobinuria, and weakness. The diagnosis of babesiosis is made by demonstrating the piroplasms of *B. gibsoni* (1.5-2.5 μ m, signet ring shaped) in infected erythrocytes (Conrad *et al.*, 1991). Primary therapeutic aim in the treatment of Babesiosis is the reversal of life-threatening anemia through blood transfusion and elimination of parasite with specific anti babesial drugs.

Case history and Observations

A male pug dog aged 1.5years weighing 10kg was brought to Veterinary Clinical Complex, Mannuthy, Thrissur with a complaint of anorexia and weakness. On clinical examination animal had a temperature of 101.7°F with icteric

conjunctival and oral mucus membranes. Abdominal palpation revealed splenomegaly. No ova of parasites were observed on examination of fecal sample. Peripheral blood smear was positive for *B. gibsoni* (++++)(Fig.1).

Haematology revealed anemia (RBC- $1.65 \times 10^6/\mu$ l, Hb-3.8g/dl, HCT-11.8%) and thrombocytopenia (PLT- 36000/ μ l). Serum biochemical parameters were ALT-157.2IU/L, ALP-1339.4IU/L, creatinine-0.3mg/dl, total bilirubin- 5.686mg/l and direct bilirubin- 4.8mg/l. Based on the clinical signs, blood smear and hemato biochemical findings the case was diagnosed as babesiosis.

Treatment and Discussion

The clinical signs and low haematocrit indicated blood transfusion and packed RBC transfusion was performed to correct the anemia (Fig. 2). One unit of whole blood was collected from a healthy donor in a Sodium citrate-Phosphate-Dextrose-Adenine (CPDA) blood bag and spun in refrigerated blood bank centrifuge at 4°C at a speed of 3000rpm. The centrifuged whole blood was placed in a plasma expessor to collect the supernatant plasma into satellite bag. A nutrient rich solution Saline-Adenine-Glucose-Mannitol (SAGM) was added to suspend the RBCs. The volume of packed RBC was

calculated as 80ml of blood based on standard formula: $90 \times \text{bwt} \times (\text{Required PCV} - \text{Recipient PCV}) \div 60$ and administered over a period of three hours. Treatment was initiated with Doxycycline @ 10mg/kg bw intravenously, Clindamycin @ 11mg/kg bw intravenously,

Metronidazole @15mg/kg bw intravenously, Prednisolone @1mg/kg bw intramuscularly and Pantoprazole @1mg/kg bw intravenously along with oral hematinics and liver supportives.

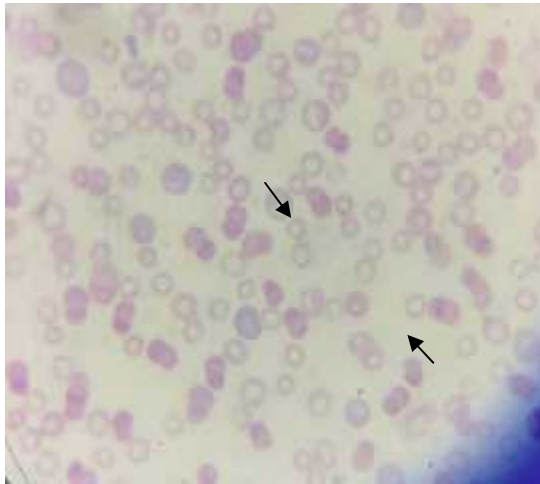


Fig.1 Blood smear showing *B. gibsoni* in RBC



Fig. 2: pRBC transfusion

After five days dog showed good clinical and hematological improvement (Hb-7.4g/dl, HCT-25.4%, PLT-1, 40000/ μ L) and the treatment was continued with Doxycycline @10mg/kg bwt, Clindamycin @ 11mg/kg bwt, Metronidazole @ 15m/kg bwt orally for two weeks along with supportive drugs. Peripheral blood smear was found to be negative for *B. gibsoni* after two weeks of treatment. The owner was advised to continue the oral haematinics for one month.

Effective management of dogs with babesiosis involves both specific and supportive strategies. Supportive treatment is aimed at restoring adequate tissue oxygenation by correction of anemia in severe conditions and correction of dehydration and electrolyte disturbances as also mentioned by Bhojne *et al.*, 2013.

The triple therapy with three antibiotics Clindamycin @ 25mg/kg PO q 12h, Metronidazole @ 15mg/kg PO q 12h and Doxycycline @ 5mg/kg PO q 12h is an efficacious treatment strategy for *B. gibsoni* infection with no reported adverse effects as also reported by Swamy *et al.*, 2019. Triple antibiotic protocol showed 87% of success rate in clearance of organism in dogs that

remained positive on PCR after atovaquone and azithromycin therapy as also recommended by Almendros *et al.*, 2020. Diminazene aceturate is also a relatively effective treatment. Although doses of 3.5 to 5 mg/kg are often effective in *B. canis* infections, doses of 7.5 to 10 mg/kg are recommended in treating *B. gibsoni* infections. Buparvaquone @ 5 mg/kg IM twice 48h apart, in combination with azithromycin at 10mg/kg PO once daily for 10 days is also a good treatment method for canine babesiosis. Packed RBC transfusion is used for symptomatic treatment of haemolytic crisis associated with babesiosis.

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