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Clinical management of babesiosis in dogs through blood transfusion: A case study

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Abstract
Canine Babesiosis was diagnosed in a Lhasa apso dog based on clinical symptoms, haematological examination, rapid Ab detection test and cytological evidence of *Babesia gibsoni* in freshly prepared blood smears. The blood transfusion was performed due to severe anaemia with Packed Cell Volume (PCV) and Haemoglobin (Hb) of 6.8% and 1.6 gm%, respectively. The dog was administered 350 ml of whole blood after compatibility test and haematological values showed marked improvement immediately after transfusion followed by recovery. The dog was simultaneously treated with doxycycline and adjunct therapy.

Keywords: Anaemia, *Babesia gibsoni*, blood transfusion

Introduction
Babesia gibsoni is becoming globally recognized as a cause of anaemic canine tick-borne disease characterized by fever, anaemia, haemoglobinaemia and haemoglobinuria. It has a limited distribution and characteristically causes a chronic disease with progressive severe anaemia that is not readily treated with normal babesiacides (Anju and Vijayakumar, 2021) [1].
Ticks belonging to the genera *Rhipicephalus*, *Dermacentor*, *Hyalomma* and *Haemaphysalis* are the carriers of canine babesiosis. The incubation period, which varies from 5 to 10 days, depends on the species of *Babesia* involved. After infection, intravascular haemolysis and protozoa multiplication take place in peripheral arteries. As previously mentioned, the released proteolytic enzymes from the infected erythrocytes interact with blood components to cause increased erythrolytic fragility, hypotensive shock, and disseminated intravascular coagulation. Additionally, it is hypothesized that coating erythrocyte with a parasite agent neutralizes the typical surface charge, favouring erythrocyte auto agglutination.
Transfusion is indicated in case of canine patients when blood constituents like Packed Cell Volume (PCV) is less than 20% and haemoglobin is less than 5 gm/dL of blood (Barfield, 2012) [3]. The main objectives of a successful therapy are to eradicate parasites, treat life-threatening anaemia with blood transfusions and provide specific therapy.

Case History and Observation
A 1.5-year male Lhasa apso dog presented with the history of fever, weakness, lateral recumbency and inappetence since a week. On the day of presentation, the animal was dull and depressed, pale conjunctival mucous membrane, enlarged pre-scapular and popliteal lymph-node, prolong bounding pulse with CRT > 6 sec. Examination of peripheral blood smear revealed intra erythrocytic piroplasm of *Babesia gibsoni.* Complete blood count examination revealed severe anaemia and thrombocytopaenia.

Fig 1: Babesia Antibody Test Kit

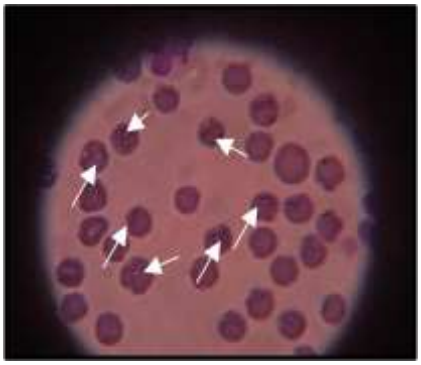

Fig 2: Microscopic blood smear examination of canine Babesiosois (Oval/signet ring form *Babesia gibsoni* in the erythrocyte)

Theraputic Management Along With Blood Transfusion

The dog was treated with injection Vetplasma @ 10 ml/kg intravenous along with Inj. Iron sucrose @ 0.5 mg/kg intravenous (once), Inj. Oxytetracycline @ 10-20 mg/kg intravenous (for five days), Inj. Darbepoetin @ 0.8 µg/kg subcutaneously (once a week), Inj. Imidocarb @ 6.6 mg/kg subcutaneously (once). On the third day of treatment, the donor dog was available for blood transfusion. After assessing compatibility between the donor and recipient dogs by major and minor crossmatching transfusion was done.

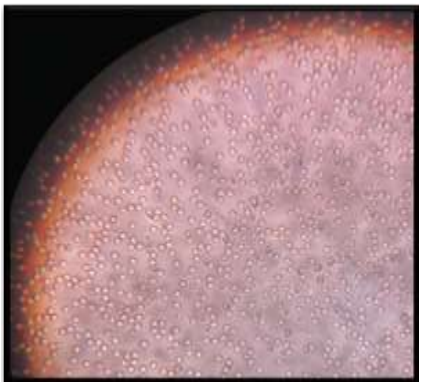

Fig 3: Major Crossmatching (compatible for blood transfusion)

Fig 4: Blood collection

A total of 350 ml of blood was collected from jugular vein of donor dog in blood collecting bag containing citrate–phosphate–dextrose–adenine-1 (CPDA-1) keeping in view that dogs can safely donate 15-20 ml/kg (Aravindh and Ninan, 2021) [2]. After collection, transfusion was started at the rate of 0.25 ml/kg/h for the initial thirty minutes and after that, it was increased to 10 ml/kg/h over the period of four hours. Total 350 ml of whole blood was transfused in four hours with close monitoring of the vital signs of the patient for any transfusion reactions. Marked clinical improvement was noticed on the next day with increased food intake and activity. Negative peripheral blood smear examination was found on the 10th day of post transfusion. Complete blood count evaluation showed positive response with the rise in PCV to 26 percent. Owner was advised to continue oral Doxycycline @ 10 mg/kg BW for 21 days orally with haematinic suspension at 5 ml once in a day orally and advised to report if any adverse clinical signs recurred.

Table 1: Haematological parameter

	BfT.	Day 1 AfT.	Day 2	Day 5	Day 8	Day 15
Hb. (gm%)	1.6	7	7.9	9.8	9.9	11
PCV%	7.5	26	27.5	30.5	36	39.5
TLC Cu/mm	10,500	32,500	27,000	52,000	19,200	11,300
PLT(Lakhs)	1.01	1.3	1.27	2.16	1.80	1.5

(BfT. – Before Transfusion, AfT. – After Transfusion)

Fig 5: Whole blood Administration

Fig 6: Before transfusion

Fig 7: After transfusion

Discussion

The present case was about the diagnosis and treatment of canine *Babesia gibsoni* infection. The typical clinical findings anorexia, pyrexia, lymphadenopathy, pallor of mucous membranes, lethargy, vomiting, dark yellow urine voiding, haemoglobinuria, seizures *etc* which was in accordance to reported by Parvathy *et al.* (2019) [5]. De Gopegui*et et al.* (2007) [4] also stated that the most common clinical sign of an uncomplicated *Babesia gibsoni* infection was pyrexia

followed by lethargy, anorexia, icterus and splenomegaly, which was mostly caused by haemolytic anaemia. The destruction of erythrocytes by autoantibodies, macrophage activity, splenic sequestration of the parasitized RBCs, and a lack of glucose-6-phosphate dehydrogenase enzyme are possible causes of haemolytic anaemia (Rafaj *et al.*, 2013) [6]. Whole blood or packed RBC transfusion is indicated when the PCV falls below 10 percent. The survival rate and clinical outcome of such patients could be improved by this procedure.

Conclusion

The blood transfusion is an essential and lifesaving approach along with conventional treatment in the severe cases of canine babesiosis presented with severe anaemia.

References

1. Anju S, Vijayakumar K. Successful management of *Babesia gibsoni* infection in a dog with Buparvaquone-clindamycin combination along with blood transfusion-a case study. Journal of Indian Veterinary Association Kerala. 2021;19(2):144-149.
2. Aravindh S, Jacob N. Blood transfusion in animals: A review. Journal of Entomology and Zoology Studies. 2021;9(5):357-361.
3. Barfield, D. BSAVA Manual of Canine and Feline Haematology and Transfusion Medicine (2nd ed.); c2012. p. 302.
4. Gopegui DRR, Peñalba B, Goicoa A, Espada Y, Fidalgo LE, Espino L. Clinico-pathological findings and coagulation disorders in 45 cases of canine babesiosis in Spain. The Veterinary Journal. 2007;174(1):129-132.
5. Parvathy EK, Pillai UN, Unny NM, Rajan SK, Tresamol PV. Haematological analysis of Babesia gibsoni infected dogs. The Pharma Innovation J. 2019;8(12):211-214.
6. Rafaj RB, Kules J, Selanec J, Vrkic N, Zovko V, Zupancic M, *et al*. Markers of coagulation activation, endothelial stimulation, and inflammation in dogs with babesiosis. Journal of Veterinary Internal Medicine. 2013;27(5):1172-1178.