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Therapeutic management of babesiosis in a dog: A case report

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Abstract
A 1.5 years old male Belgian shepherd dog was presented to outpatient ward of Department of Veterinary Medicine at Veterinary Clinical Complex of Bihar Veterinary College, Patna with history of inappetance, weakness and lethargy. On clinical examination rectal temperature of dog was 100.6˚F. The conjunctival mucous membrane was pale and popliteal lymph nodes were swollen. Haematological examination revealed anaemia and thrombocytopenia. Blood smear examination was found positive for *Babesia* spp. The case was diagnosed for babesiosis and treated with triple combination therapy with doxycycline, clindamycin and metronidazole along with haematinics and liver supplement. After two weeks of continuous treatment the dog had an eventful recovery.

Keywords: Anemia, babesia, clindamycin, doxycycline, metronidazole, thrombocytopenia

Introduction
Babesiosis is a parasitic infection caused by hemotropic protozoa of the genus *Babesia*, belonging to the family *Babesiidae*, order *Ixoplasmida*, class *Piroplasmea*, phyllum *Apicomplexa*, subkingdom *Alveolata*, and kingdom *Protozoa* (Cavalier-Smith, 1993) [2]. Canine babesiosis has global distribution, primarily in tropical and subtropical regions, transmitted by Ixodid tick vectors (Karunakaran *et al*., 2011) [5]. Clinically the disease is classified into uncomplicated and complicated forms. Uncomplicated babesiosis has been suggested to be a consequence of haemolysis while complicated canine babesiosis has been suggested to be a consequence of the development of systemic inflammatory response syndrome (SIRS) and Multiple Organ Dysfunction Syndromes (MODS), (Kumar *et al*., 2009) [6]. The degree of parasite proliferation in the host's erythrocytes and subsequent cell lysis determines the severity of babesiosis. 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) [10, 3]. Direct microscopic inspection is a cost-effective diagnostic procedure which is the most widely employed method.

History and diagnosis
A 1.5 years old male Belgian shepherd dog was presented to outpatient ward of Department of Veterinary Medicine at Veterinary Clinical Complex of Bihar Veterinary College, Patna with history of inappetance, weakness and lethargy. On clinical examination rectal temperature of dog was 100.6˚F. The conjunctival mucous membrane was pale and popliteal lymph nodes were swollen. Blood sample was collected for haematological, serum biochemical and blood smear examination. Haematological examination revealed PCV 15.2%, haemoglobin 5.06 g/dl and platelet count 85,000/µl. The biochemical examination revealed elevation of bilirubin level (0.5 mg/dl). The blood smear examination was found positive for small form of *Babesia* spp.

Treatmnet
After final diagnosis, the dog was treated with Doxycycline @ 10 mg/kg IV diluted in normal

saline, Chlindamycin @ 25 mg/kg IV, metronidazole @ 15 mg/kg IV, pantoprazole @ 1 mg/kg IV for 3 days and Feritas 1.5 ml IM was given alternate day for one week. After three days of treatment, the vital signs and appetite was returned to normal. On 4th day onwards the dog was treated with Doxycycline @ 10 mg/kg orally, Chlindamycin @ 25 mg/kg orally twice daily, metronidazole @ 15 mg/kg orally twice daily, pantoprazole @ 1 mg/kg orally once daily for 10 days. The haematinics and liver supplement were given as supportive therapy for 15 days. After 15th day of continuous treatment, hematological and biochemical values were returned to normal and blood smear examination was found negative for *Babesia* spp.

Results and Discussion

Table 1: Hematological and serum biochemical parameters

SL. No.	Parameters	Pre-treatment (0 day)	Post-treatment (15th day)	Reference value (Aiello, 2016) [1]
Haematological				
1.	Hb (g/dL)	7.06	14.2	11.9-18.9
2.	PCV (%)	21.2	41.7	35-57
3.	TEC (x10^6/µL)	3.5	6.2	4.95-7.87
4.	TLC (x10^3/µL)	10,700	7,000	5.0-14.1
	DLC			
5.	N (%)	58	65	58-85
6.	L (%)	33	29	8-21
7.	M (%)	07	04	2-10
8.	B (%)	02	02	0-1
9.	Platelets (x10^3/µL)	85	207	211-621
Serum Biochemical				
10.	ALT (U/L)	32.8	21.0	10-109
11.	AST (U/L)	25.6	15.2	13-15
12.	Total Protein (g/dl)	7.0	7.6	6.0-7.5
13.	Albumin (g/dl)	2.6	3.2	2.3-3.1
14.	Total Bilirubin (mg/dl)	0.5	0.3	0-0.3
15.	BUN (mg/dl)	16.6	15.8	8-28
16.	Creatinine (mg/dl)	0.99	0.76	0.5-1.7

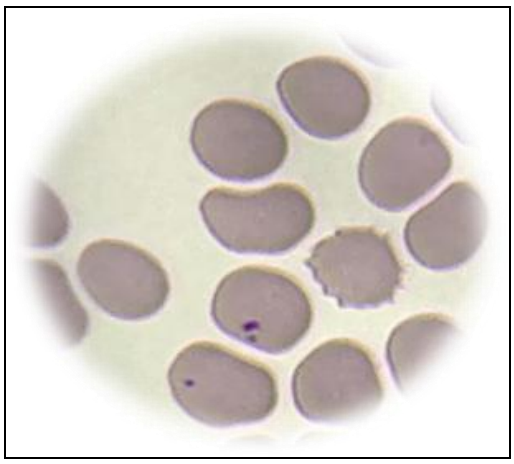

Fig 1: Blood smear: *Babesia* organism inside red blood cell

Hemolytic anemia is the predominant feature of babesiosis and thrombocytopenia is also common in infected dogs. Anemia is attributed to extra and intravascular hemolysis (Lakshmi *et al*., 2024) [7]. Thrombocytopenia can occur in combination with other hematologic abnormalities or as a singular entity, and may be transient or persistent (Taboada and Lobetti, 2006) [8]. Dogs with acute babesiosis typically present with hemolytic anemia, fever, lethargy, anorexia, splenomegaly, lymphadenome galy, thrombocytopenia, and vomiting (Irwin and Hutchinson, 1991) [4]. Clindamycin is a lincomycin-derived antibiotic which stimulates both cellular and humoral immunity by damaging *B. gibsoni* and has been shown to be effective against human babesiosis (Vial and Gorenflot, 2006) [10]. Doxycycline, which is a tetracycline antibiotic, has been reported to have a prophylactic effect against *B. canis* infections (Vercammen *et al*., 1996) [9]. Metronidazole is a antitrichomonal agents, have a therapeutic effect against *B. gibsoni* infections (Wulansari, *et al*., 2003) [11].

Conclusion

Canine babesiosis can be successfully managed with triple combination of clindamycin (25 mg/kg, PO, q12h), metronidazole (15 mg/kg, PO, q12h), and doxycycline (5 mg/kg, PO, q12h) has been suggested for successful therapy.

Conflict of Interest

Not available

Financial Support

Not available

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