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Babesiosis with thrombocytopenia and haemolytic anemia in Dogs: Case study

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Abstract

The dogs brought showed lethargy, primary complaint of paraplegia, fever, inappetence. The dogs were dull, having high rectal temperature (103-104 °F), heart rate and respiration rate were also elevated. The cases were further sent for haematological examination. All the cases revealed thrombocytopenia and haemolytic anemia. The cases of microcytic and hypochromic anemia were also reported. There was leucocytosis, neutrophilia and lymphopenia. The dogs were then treated with Clindamycin, diminazene aceturate and imidocarb dipropionate.

Keywords: Canine babesiosis, *Babesia gibsoni*, clindamycin, thrombocytopenia, Hemolytic anemia

Introduction

Canine babesiosis is a tick-borne protozoal disease which is common worldwide [1]. It is commonly caused by *Babesia gibsoni* (the small piroplasm), *Babesia vogeli* and *Babesia canis* (the large piroplasm) [2]. *Babesia* infection causes a disease with varying clinical manifestations involving different species and strains and with factors determining the response of host to infection such as age, the presence of concurrent infections and individual immune status [3]. The clinical signs and outcome of canine babesiosis depends upon the infecting species, signalmen, and host immunity. A wide variety of clinical sign like anorexia, haemolytic anemia, lethargy, vomiting, icterus and loss of body weight are common [4]. The incubation period is around 10–28 days which means the disease manifests after the vector tick has fed and detached from its host, a process which is usually complete within a week [5]. Hepatopathy is a complication of babesiosis evidenced by bilirubinaemia, pigmenturia, and icterus, a sign seldom seen in dogs with only haemolysis. Hepatopathies commonly occur with other complications, particularly pancreatitis, and are not associated with a poor outcome when they occur as the only complication. Dogs with hepatopathies, however, may have delayed recoveries [6]. Hemolytic anemia and thrombocytopenia are very common in babesiosis [7]. AKI is an uncommon complication of babesiosis and typically presents as anuria or oliguria despite adequate hydration.

Case History

Four different cases in different time intervals were examined and all four exhibited similar histories. The dogs were lethargic, having primary complaint of paraplegia, fever and inappetence. The dogs were dull, with high rectal temperature (103-104 °F), heart rate and respiration rate were also elevated. The dog was sent for haematological examination.

Table 1: Details of the cases at clinic

	Case1	Case2	Case 3	Case 4
Species	Canine	Canine	Canine	Canine
Breed	German shepherd	Pug	Labrador	Dalmatian
Age	3 months	5 months	5 years	1 year
Sex	Female	Male	Male	Male

Laboratory findings

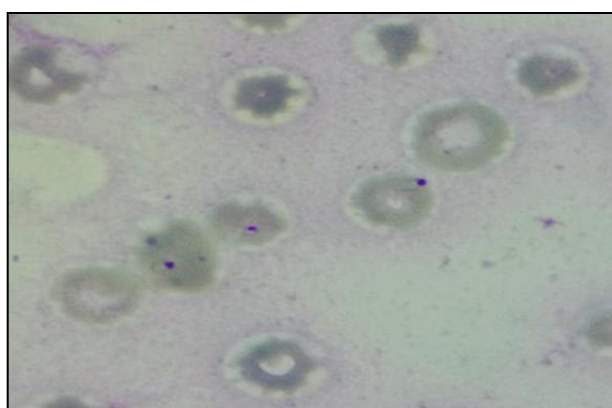
Thrombocytopenia and haemolytic anemia were common findings of all the cases. Anisocytosis was seen in two cases. The dogs also reported microcytic and hypochromic anemia. The blood profile also revealed leucocytosis, lymphopenia and neutrophilia.

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Table 1: Haematological examination of cases

Parameters	Normal value	Interpretation Case1	Interpretation Case2	Interpretation Case3	Interpretation Case4
Haemoglobin (g/dl)	12-18	Anemia (3.5)	Normal (12.2)	Anemia (10)	Normal (14)
TLC (thou/mm ³)	6-17	Normal (9.5)	Normal (15.4)	Leucocytosis (18)	Leucocytosis (18)
DLC – Neutrophils (%)	60-76	Neutrophilia (84)	Normal (75)	Neutrophilia (82)	Neutrophilia (78)
DLC – Lymphocytes (%)	12-30	Lymphopenia (10)	Normal (21)	Lymphopenia (11)	Normal (18)
DLC – Eosinophils (%)	2-10	Normal (4)	Normal (2)	Normal (2)	
DLC – Monocyte (%)	3-10			Normal (5)	Normal (3)
DLC – Basophils (%)	0-1	Normal	Normal (0)	Normal (0)	Normal (0)
RBC (mill/mm ³)	5.5-8.5	Anemia (2.90)	Normal (7.1)	Normal (5.96)	Normal (6.7)
PCV (%)	37-55	Anemia (12.5)	Normal (39.2)	Anemia (28)	Normal (45.6)
MCV (fL)	60-77	Normocytic (64.3)	Microcytic (55.2)	Microcytic (47)	Normocytic (68.2)
MCH (pg)	19.5-24.5	Hypochromic (14.2)	Hypochromic (17.1)	Hypochromic (16.7)	Normal (20.8)
Platelet count (thou/mm ³)	211-621	Thrombocytopenia (50)	Thrombocytopenia (110)	Thrombocytopenia (88)	Thrombocytopenia (90)
Rdw-cv	0.115-0.159	Anisocytosis (0.174)	Anisocytosis (0.177)	Normal (0.134)	Normal (0.129)

**Fig 1:** *Babesia* Piroplasm in dog RBC

Treatment and Discussion

All the cases were treated with similar protocol as follows:

- Clindamycin 30 mg/kg with diminazene aceturate 3.5 mg/kg IM once on the day of treatment start was given;
- Imidocarb dipropionate 6 mg/kg SC once on the day after diminazene is administered.

Canine babesiosis is a worldwide concern in causing haemolytic anemia. The majority of cases reported have shown presence of haemolytic anemia in babesiosis^[8]. The dogs also showed thrombocytopenia in all the cases. Leucocytosis, lymphopenia and neutrophilia were also the common findings^[9]. Imidocarb dipropionate and diminazene aceturate are considered ineffective for the treatment of *B. gibsoni* infections and treatment with the combination of atovaquone and azithromycin is the current treatment of choice for this infection, although suppressing parasite replication by this combination may not be associated with parasite clearance.

Conclusion

This particular study was conducted to diagnose the cases of Babesiosis revealing thrombocytopenia and haemolytic anemia and diagnose the major causes and symptoms of the disease and also notice the treatment showing improvement in the affected dog. Majority of the cases revealed microcytic and hypochromic anemia. The blood profile also revealed leucocytosis, lymphopenia and neutrophilia. Treatment relieves the symptoms but, in many cases, it does not fully clear the parasite from the body. Dogs may remain infected at a low level and *Babesia* can flare up again in times of stress

or reduced immune function. Preventing exposure to the ticks that carry *Babesia* is the best means of preventing babesiosis. Products that prevent ticks such as monthly parasite preventatives or tick collars can be used

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