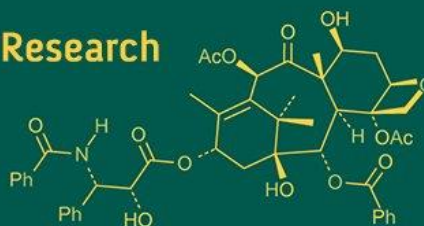
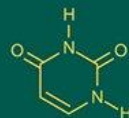


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Fatal *Babesia gibsoni* infection complicated by severe acute kidney injury and uremic syndrome in a Labrador retriever: A case report

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Abstract

A six-year-old male Labrador Retriever was presented with dullness, depression, anorexia for two weeks, pale mucous membranes, and persistent vomiting even after water intake. Hematological examination revealed profound anemia (Hb 2.8 g/dL, TEC $0.98 \times 10^6/\mu\text{L}$, PCV 13%), thrombocytopenia (45,000/ μL), and leukocytosis (24,700/ μL) with neutrophilia. Serum biochemistry showed severe azotemia (BUN 190 mg/dL; creatinine 15.21 mg/dL), mild elevations of ALT and AST, and hyperbilirubinemia. Giemsa-stained blood smears demonstrated small intraerythrocytic piroplasms morphologically consistent with *Babesia gibsoni*. Despite supportive therapy, the animal died due to progressive multisystemic deterioration. This case highlights the potential for *B. gibsoni* infection to progress beyond uncomplicated hemolytic anemia to severe renal failure and uremic syndrome with a fatal outcome.

Keywords: *Babesia gibsoni*, canine babesiosis, acute kidney injury, uremic syndrome, severe anemia

Introduction

Canine babesiosis is an important tick-borne hemoprotozoan disease caused by intraerythrocytic protozoan parasites of the genus *Babesia*. Among the canine *Babesia* species, *Babesia gibsoni* is considered one of the most pathogenic and is responsible for significant morbidity and mortality in dogs worldwide (Irwin, 2009) [1]. Severe cases may develop acute kidney injury, hepatic dysfunction, disseminated intravascular coagulation, and death (Jacobson, 2006) [4]. The present report describes a fatal case of severe *B. gibsoni* infection in a six-year-old male Labrador Retriever with marked hematological and biochemical abnormalities.

Case History and Clinical Examination

A six-year-old male Labrador Retriever was presented with anorexia, dullness, depression, progressive weakness, and persistent vomiting for approximately two weeks. The dog vomited even after water intake. Physical examination revealed marked pallor of the mucous membranes, depression, dehydration, and weakness. Blood samples were collected for hematological, biochemical, and parasitological investigations.

Results

Microscopic examination of Giemsa-stained peripheral blood smears revealed small intraerythrocytic ring-shaped and oval piroplasms morphologically consistent with *Babesia gibsoni*. Hematological examination demonstrated severe anemia (Hb 2.8 g/dL, TEC $0.98 \times 10^6/\mu\text{L}$, PCV 13%), thrombocytopenia (45,000/ μL), and leukocytosis (24,700/ μL). Serum biochemistry revealed severe azotemia (BUN 190 mg/dL, creatinine 15.21 mg/dL), ALT 65.34 U/L, AST 108.23 U/L, and total bilirubin 1.9 mg/dL. Despite supportive treatment, the animal succumbed to the disease.

Discussion

The present case demonstrated severe and fatal babesiosis caused by *B. gibsoni* characterized by profound anemia, thrombocytopenia, renal dysfunction, and hepatic involvement. The severe anemia likely resulted from erythrocyte destruction, immune-mediated hemolysis, and

splenic sequestration (Boozer and Macintire, 2003; Solano-Gallego and Baneth, 2011) [3, 2]. Thrombocytopenia is a common finding in canine babesiosis and may result from immune-mediated platelet destruction and consumption (Jacobson, 2006) [4].

The marked elevations in BUN and creatinine indicated severe acute kidney injury. Persistent vomiting, including vomiting after water intake, was suggestive of uremic syndrome secondary to renal failure. Acute kidney injury in babesiosis may occur due to renal hypoxia resulting from severe anemia, hemoglobin-induced nephrotoxicity, inflammatory cytokines, and microvascular disturbances (Jacobson, 2006; Solano-Gallego and Baneth, 2011) [4, 2].

The concurrence of profound anemia, thrombocytopenia, severe azotemia, and hyperbilirubinemia indicated multisystem involvement and likely contributed to the fatal outcome.

Table 1: Hematological Findings

Parameter	Value
Hemoglobin (g/dL)	2.8
TEC ($\times 10^6/\mu\text{L}$)	0.98
PCV (%)	13
TLC ($/\mu\text{L}$)	24,700
Neutrophils (%)	82
Lymphocytes (%)	8
Monocytes (%)	8
Eosinophils (%)	2
Platelets ($/\mu\text{L}$)	45,000

Table 2: Serum Biochemical Findings

Parameter	Value
BUN (mg/dL)	190
Creatinine (mg/dL)	15.21
ALT (U/L)	65.34
AST (U/L)	108.23
Total Bilirubin (mg/dL)	1.9

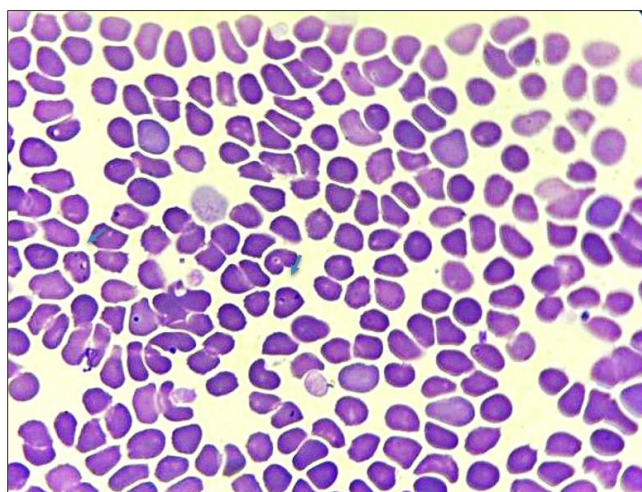


Fig 1: Giemsa-stained peripheral blood smear showing small intraerythrocytic piroplasms morphologically consistent with *Babesia gibsoni* (1000 $\times$ oil immersion).



Fig 2: Clinical photograph showing pale ocular mucous membranes and depressed appearance consistent with severe anemia.

Conclusion

This report describes a fatal case of *Babesia gibsoni* infection in a six-year-old male Labrador Retriever characterized by severe hemolytic anemia, thrombocytopenia, marked azotemia, and hepatic dysfunction. Early diagnosis and aggressive supportive care are essential to improve prognosis in severely affected dogs

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