

## Clinical manifestation, Haemato-biochemical evaluation and Therapeutic management in dog suffering from Jaundice associated with babesiosis

Vipan Kumar <sup>1\*</sup>, Satinder Pal<sup>2</sup>, Amandeep<sup>2</sup>, Heigo Pal<sup>1</sup>, Parveen Kumar <sup>1</sup> and  
V.M.Wadhawan<sup>1</sup>

<sup>1</sup>Regional Disease Diagnostic Laboratory (North Zone), Jalandhar (India)-144001

<sup>2</sup> Veterinary Polyclinic, Jalandhar (India)-144001

\*Corresponding Author: vipanjolly@gmail.com

### Abstract

A bitch was presented to Veterinary Polyclinic, Jalandhar with history of Jaundice. Hematological and biochemical examination revealed Hyperbilirubinemia and babesiosis. The bitch was treated with berenil at the dose rate of 3.5mg per kilogram body weight and supportive therapy to tone up general metabolism and restoration of normal liver function. After one week of treatment bitch was negative for heamoprotozoa and recovered fully after three week.

Key Words: Hematological, Biochemical, Hyperbilirubinemia, Babesia and Jaundice.

### Introduction

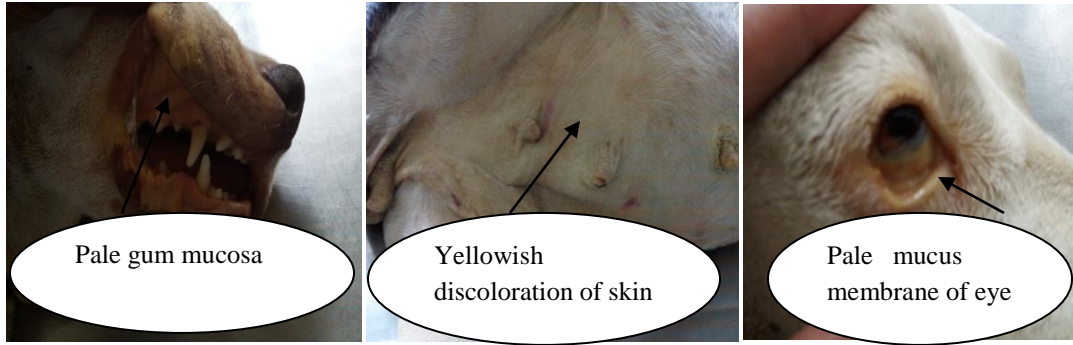
Babesia species are tick-transmitted apicomplexan parasites infesting wild as well as domestic animals and leads to haemolytic anaemia (Kuttler et al. 1988). Babesia canis (large 3.0–5.0 µm) and B. gibsoni (small 1.5–2.5 µm) are recognized as the two species that cause canine babesiosis worldwide and are transmitted by Dermacentor reticulatus in Europe, Rhipicephalus sanguineus in tropical and subtropical regions and Haemaphysalis leachi in South Africa (Uilenberg, 2006).

The disease caused by babesia can be clinically 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) (Jacobson and Clark 1994; WelzlC et al. 2001). Cases of canine babesiosis may present with a wide variation of severity of clinical signs. Lethargy is the most common symptom, followed by anorexia, vomiting, pale mucous membranes (jaundice), haemoglobinuria, weight loss and elevated liver enzymes. Jaundice and haemoglobinuria is associated with destruction of RBC by the hemoprotozoan- the babesia. The present case report demonstrates the clinical manifestation, hematological alternations and therapeutic management of babesiosis in dogs.

#### **Case history and clinical examination**

A bitch was presented to Veterinary Polyclinic, Jalandhar with history of Jaundice. The bitch weighed around 20 kg and had the history of anorexia, letharginess, weight loss, vomiting, constipation, distended abdomen and dribbling urination since last one week. On clinical examination there is heavy tick infestation, yellowish discoloration of all visible mucus membranes including skin, slight dyspnoea, rectal temperature 102.2°F, pulse rate 66/minute and respiratory rate 30/minute.

Journal of Biological Science



**Laboratory examination**

1. Blood smear examination: Immediately blood smear was prepared and stained with Giemsa revealed the presence of *Babesia gibsoni* in the erythrocytes.
2. Faecal sample examination: Carried out by both sedimentation and flotation techniques found negative for any endoparasitic infestation.
3. Ultrasonographic examination: Hypochoic images in liver with enlargement of liver.

**Table 1: Biochemical findings**

Biochemical Parameters		Days after initiation of treatment			
		1 <sup>st</sup> day	7 <sup>th</sup> day	14 <sup>th</sup> day	21 <sup>st</sup> day
Total protein (gm/dl)		4.3	5.50	4.90	4.80
Total bilirubin (mg/dl)		9.01	7.10	3.61	1.70
Directbilirubin (mg/dl)		6.01	4.26	1.30	0.21
Indirectbilirubin(mg/dl)		3.00	2.71	1.80	1.45
SGOT (AST) (IU/L)		80.4	67.3	80.0	57.2
SGPT (ALT) (IU/L)		138.5	51.1	8.0	69.91

Journal of Biological Science

Table 2: Haematological findings

Hematological Parameters		Days after initiation of treatment			
		1 <sup>st</sup> day	7 <sup>th</sup> day	14 <sup>th</sup> day	21 <sup>st</sup> day
Hb (g/dl)		10	8.6	9.4	10.5
PCV (%)		26	25	30	32
TEC (X10 <sup>6</sup> /mm <sup>3</sup> )		4.38	5.14	7.05	6.84
TLC (X10 <sup>3</sup> /mm <sup>3</sup> )		11.75	15.9	6.4	7.2
DL C (%)	N	72	86	81	78
	L	27	11	16	18
	M	1	3	2	3
	E	0	0	1	1

N – Neutrophils, L – Lymphocytes, M – Monocytes, E – Eiosinophils

**Treatment**

The bitch was treated with single shot of Injection Berenil (Diminazine aceturate) @ 3.5 mg/kg body weight (intramuscularly). Injection Oxytetracycline @ 10 mg/kg body weight and dextrose normal saline intravenously along with the injection Tribivet were administered for a week. Antiemetics (Metaclopramide @ 0.5 – 1.0 mg/kg body weight intravenously) and H2 blocker (Ranitidine @ 1.0 mg/kg body weight intramuscularly) were given once a day till vomiting ceased. Adjuvant therapy with Syrup Brotone @ 10 ml bid orally and three shots of Injection Imferon 2 ml intravenously on alternate day to regenerate the liver function and restore the blood haemoglobin level, respectively.

**Result and Discussion**

Blood sample of the animal was collected after one week and found negative for any haemoprotzoan infection and animal gives good response to the above treatment and the condition was improved clinically. After one week the condition of animal was improved and starts taking normal feed. *Babesia gibsoni* is a hemoprotzoan parasite that has clinical significance in dogs. Clinical signs exhibited in the present case were corroborated with the findings of Farwell et al (1982), Conrad et al (1991) and Fabisiak et al (2010). Lobetti (1998) found that the jaundice is one of the most commonly reported complications of canine babesiosis. Anemia is typically due to both intravascular and extravascular haemolysis (Boozer and Macintire, 2005). Laboratory studies may also document thrombocytopenia, hypoalbuminemia, and bilirubinuria Gardiner et al (1988), Taboada (1998) and Birkenheuer et al (1999). Hepatomegaly on ultrasonographic examination was also reported in cases of jaundice by Mathe et al (2010).

#### References:

Birkenheuer AJ, Levy MG, and Savary KC (1999). *Babesia gibsoni* infections in dogs from North Carolina. *J. Am. Anim. Hosp. Assoc.* 35:125 - 128.

Boozer AL and Macintire DK (2003). Canine babesiosis. *Vet. Clin. North Am. Small Anim. Pract.* 33: 885 – 904.

Boozer L and Macintire D (2005). *Babesia gibsoni*: An emerging pathogen in dogs. *Compendium.* 2: 33-42.

Conrad PA, Thomford JW and Yamane I (1991). Hemolytic anemia caused by *Babesia gibsoni* infection in dogs. *J. Am. Vet. Med. Assoc.* 199: 601 – 605.

Fabisiak M, Sapierynski R and Klucinski W (2010). Analysis of haematological abnormalities observed in dogs infected by a large babesia. *Bull. Vet. Inst. Pulawy*. 54: 167-170.

Farwell GE, LeGrand EK and Cobb CC (1982). Clinical observations on *Babesia gibsoni* and *Babesia canis* infections in dogs. *J. Am. Vet. Med. Assoc.* 180: 506 – 511.

Gardiner CH, Fayer R and Dubey JP (1988). An atlas of protozoan parasites in animal tissues. U. S. department of agriculture, Agriculture Handbook No. 651. pp: 70-71.

Jacobson LS and Clark I (1994) *Journal of the South African Veterinary Association*, 65, 134–145.

Kuttler KL, Zaugg JL and Yunker CE (1988). The pathogenicity and immunologic relationship of a virulent and a tissue-culture-adapted *Babesia bovis*, *Veterinary Parasitology*, 27, 239-244

Lobetti RG (1998). Canine babesiosis: Compendium on continuing education for the practicing veterinarian. 20: 418 – 431.

Mathe A, Voros K, Papp L and Reiczigel J (2006). Clinical manifestations of canine babesiosis in Hungary (63 cases). *Acta Veterinaria Hungarica*. 54: 367– 385

Taboada, J (1998). Babesiosis. In: Greene CE (ed), *Infectious Diseases of the Dog and Cat*. WB Saunders, Philadelphia, PA. pp: 473-481.

Uilenberg G (2006). *Babesia*: A historical overview, *Vet. Parasitol.* 138, 3-10

WelzIC, Leisewitz AL, Jacobson LS, Vaughanscott T and Myburgh E (2001) *Journal of the South African Veterinary Association*, 72:158–162.