Studies of Canine Babesiosis in Two Casaes of Dogs

Ngamgkham James Singh[1], Ajit Singh[2] and Gaurav Jain[1]
Department of Animal Husbandry and Dairying SHUATS- Prayagraj-211007[1]
Veterinary medical officer, District Prayagraj[2]

Corresponding author : ngjamessingh@gmail.com

INTRODUCTION

Babesia species are tick-transmitted apicomplexan parasites infesting a wide range of wild and domestic animal hosts (Kuttler, 1988). Canine piroplasms belong to two distinct species, the large (4–5 ìm) *Babesia canis* and the small (1–2.5 ìm) *Babesia gibsoni*. Differences in geographical distribution, vector specificity and antigenic properties subdivided the former species into three subspecies, namely *Babesia canis* transmitted by *Dermacentor reticulatus* in Europe, *B. canis vogeli* transmitted by *Rhipicephalus sanguineus* in tropical and subtropical regions and *B. canis rossi* transmitted by *Haemaphysalis leachi* in South Africa (Uilenberg *et al*., 1989). *B. gibsoni* occurs in Asia, North America, Northern and Eastern Africa, Australia and Europe (Birkenheuer *et al*., 1999; Muhlnickel *et al*., 2002; Criado-Fornelio *et al*., 2003). The purpose of the present study was to find out the disease pattern of canine babesiosis in relation to various parameters (age, sex, and breed of the dogs and season of the year) for future prophylaxis and to identify responsible vector species.

Case History and Observations:

Case-1: A 12 months old, male Pomeranian dog was Veterinary Clinical Complex chilla Prayagraj with history of Anorexia and dullness. Clinical examination of the dog revealed rise in body temperature (104.4ºF), increased heart rate (122/min), congested mucus membranes, dullness. Peripheral blood, whole blood with EDTA was collected for laboratory examination. Peripheral blood smear examination revealed

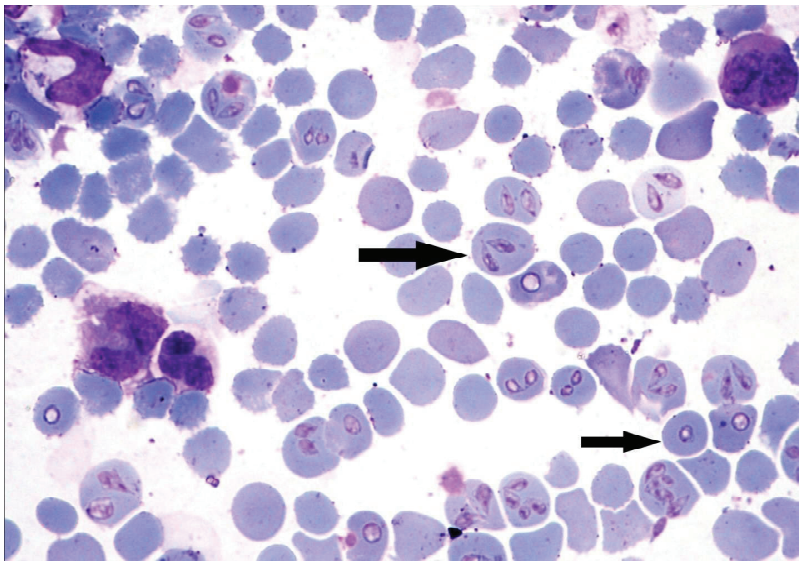

Figure-1: Presence of *Babesia* organisms in peripheral blood smears *(100X with 4x camera magnification)*

presence of piroplasmic organisms in the RBC (figure - 1). Haemotology revealed leucocytosis (9600/cumm) with neutrophilia (6912/cumm), Lymphocytosis (2496/cumm) and Eosinophilia (192/cumm). Decreased haemoglobin (8.8 g/dl), TEC (4.9 x 106/cumm) was noticed.

Case-2: A 5 years old, female Pomeranian dog was presented to Teaching Veterinary Clinical Complex chilla Prayagraj with a history of Hyperexia, in appetence, passing of yellowish urine and occasional vomitions from the past one week. Dog was under treatment at local dispensaries with antibiotics from the past 5 days, but no recovery was noticed. Dog was regularly dewormed and vaccinated against rabies and Canine Distemper, Canine Adenovirus 2, Canine Parainfluenza, Parvo Virus Infection, Leptospirosis (Canicola, icterohaemorrhagiae). Clinical examination of the dog revealed rise in body temperature (103.8ºF), slight yellowish pale mucus membranes, yellowish discolorations of lower side foot (figure - 2), increased heart rate (132/min) and respiratory rate (56/min) along with distress, bilateral enlarged lymph nodes. Dog had tensed and slight yellowish discoloration of abdomen. Dog had decreased urine output, with passage of reddish colour urine along with constipation, vomitions. Peripheral blood, whole blood with EDTA was collected for laboratory examination. Peripheral blood smear examination revealed presence of piroplasmic organisms in the RBC (Figure-3). Haemotology revealed decreased haemoglobin (6.3 g/dl), TEC (3.8 x 106/cumm). Haemotology revealed leucocytosis (10640/cumm), Neutrophils (7236/cumm), Lymphocytes (3192/cumm) and Eosinophils (212/cumm) and decreased platelet count of (82,000/il). Serum biochemical parameters revealed decreased total protein (6.0 g/dL), serum albumin (2.2g/dL). Increased BUN (28 mg/dL), creatinine (1.8 mg/dL), SGPT (224 IU/L) levels and urine analysis revealed positive hays test and presence of RBC in the sediment of urine.

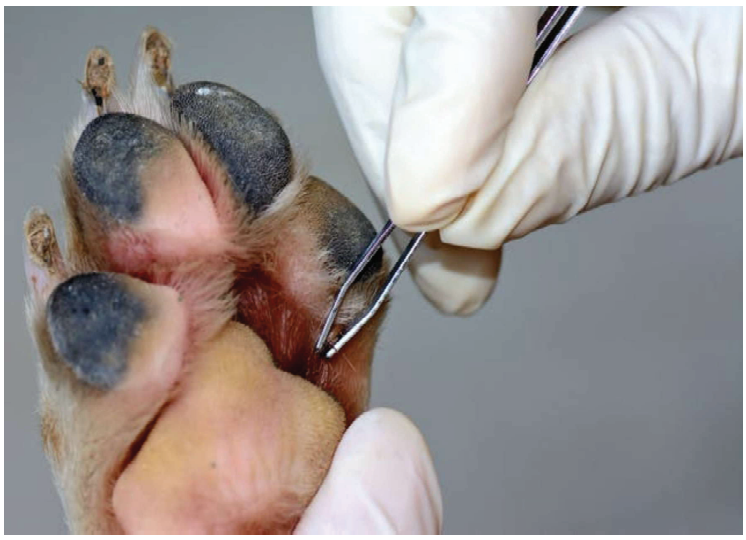

Figure-2: Yellowish discoloration of the foot lession

Based on the clinical signs, and laboratory examination, the condition was diagnosed as babesiosis in both the dogs. Initially treatment was given with inj.Nurobion forte @ 2 ml, inj. Meloxicam @ 0.5 mg/kg body weight, on the day of presentation. After confirmation of the condition inj. diminazine aceturate @ 5 mg/kg body, IM, body weight was given to both the dogs. For case-1supportive therapy was given with inj.Nurobion forte @ 2 ml, inj. Meloxicam @ 0.5 mg/kg body weight for three days and advised parentral administration of four doses of iron dextron @ 2ml/ animal at weekly twice, daily supplementation of sharkoferol pet syrup @ 5 ml per day as a general

supplementation. After completion of two weeks of therapy Case-1 was responded well and attains its normal activities. For cae-2 inj. ondansetron @ 2ml/dog, 5%DNS @ 5 ml /kg body weight along with above therapy and Liv-52 was oral daily 5 ml was advised. But case was not responded to the therapy and died on the 3rd day of therapy. Dogs with uncomplicated babesiosis (case-1) showed the signs of fever, anorexia, depression, and these findings in accordance with the Taboada and Merchant (Taboadaj *et al*., 1998). In complicated form of babesiosis clinical manifestations depend up on the type of particular complication that develops. Clinical signs observed in the present cases include depression, tachy cardia, tachypnoea, anorexia, weakness and fever. It is thought that the clinical signs are the result of tissue hypoxia following the anemia and a concomitant systemic inflammatory response syndrome caused by marked cytokine release (Lobetti *et al*., 2006). In the severe form of the disease (case-2) can observe marked hemolytic anemia, severe acidbase abnormalities with frequent secondary multiple organ failure and complications such as acute renal failure (ARF), hepatopathy with marked icterus, hypoglycemia (Keller *et al*., 2004). Dogs with haemoconcentrated babesiosis and cases developing acute renal failure, acute respiratory distress syndrome or cerebral babesiosis have the worst prognosis and mortality can be greater than 50 % in some cases approaching 100 %, despite intensive, technically advanced interventions (Welz *et al*., 2001). Oliguria is an ominous sign in dogs affected with renal impairment due to babesiosis presently observed in the case-2 (Lobetti *et al*., 2001). Present observed clinical signs were in agreement with the previous reports (Reddy *et al*., 2014) and observed haematological and serum biochemical values differ from the local apparently healthy dogs values (Reddy *et al*., 2014). Diagnosis of Babesia was done based on the peripheral blood smear examination and same procedure was used for diagnosis of *T.evansi* in different animals previously (Sivajothi *et al*., 2013). Dogs with babesiosis treated with a single intramuscular injection of Diminazene aceturate at a dose of 5 mg/kg (Taboadaj *et al*., 1998). In dogs affected with babesiosis early diagnosis and treatment, the prognosis is good, but severely affected or untreated animals may die. Current chemotherapeutic agents used to treat canine babesiosis would be incapable of completely eliminating the disease at the recommended dose; they only are capable of limiting mortality and the severity of clinical signs (Birkenheuer *et al*., 1999). The most common abnormality in the investigated parameters was thrombocytopenia.

Conclusion

The mechanisms of the thrombocytopenia are not yet fully understood in babesiosis (Boozer *et al*., 2003). Babesia initiates a mechanism of antibody-mediated cytotoxic destruction of circulating erythrocytes. Auto-antibodies are directed against components of the membranes of infected and uninfected erythrocytes. This causes intravascular and extravascular haemolysis, which leads to anemia. Furlanello et al recorded the anaemia in 74% of dogs with babesiosis and in all the cases the anemia was normocytic and normochromic (Furlanelo *et al*., 2005). Current treatment strategies for babesiosis often ameliorate the clinical signs of infection, but these hemoparasites are seldom completely eliminated, and when immunocompromised, recrudescence may occur (Irwin, 2010). So, advised the owners Regular control of the ticks was done by regular spraying of cypermethrin preparations to prevent recurrence and spreading of infection in case-1.

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