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Peritoneal effusion due to Babesiosis and its therapeutic management in dog - a rare case report

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Abstract

Babesiosis in dogs is an important, fatal, tick borne haemoprotozoan disease caused by the intraerthrocytic parasite belonging to genus *Babesia*. A 2 year old male Labrador was presented in TVCC, BASU, Patna with chief complaint of distended abdomen and fever. Radiographic and ultrasonographic examination revealed ground glass appearance and anechoic texture in abdomen. Blood smear examination revealed that the dog was positive for *Babesia gibsoni*. Anemia, hypoproteinemia, hypoalbuminemia and elevated TLC were haematobiochemical changes. SGPT, SGOT, BUN and creatinine were within normal range. Treatment with doxycycline (10mg/kg), Imidocarb dipropionate (6.6 mg/kg), furosemide (2mg/kg) and supportive therapy with hematinics and liver supplement eventually leads to complete recovery.

Key words: Babesia, Peritoneal effusion, Anechoic, Imidocarb, Doxycycline

Babesiosis in dog is an important fatal tick borne disease in canines caused by intraerythrocytic protozoan parasite of the genus *Babesia* and manifested by anorexia, dehydration, temperature, dullness, depression, emaciation, weight loss, diarrhoea or constipation, pale mucosa, vomition, yellow coloured urine, distended abdomen, ascites etc. Ascites is a pathological accumulation of free fluids within the peritoneal cavity and is a reflection of one, or a combination of different, pathophysiological mechanisms (Hall 2005). Reduced oncotic pressure due to hypoalbuminemia occurring as a result of protein loosing enteropathy (PLE), protein loosing nephropathy (PLN), liver failure (chronic hepatitis/cirrhosis) and increased hydrostatic pressure due to portal hypertension, hepatic vein occlusion, congestive heart failure can cause fluid accumulation in the abdomen (Vijayakumar *et al.*, 2013).

The present case describes the haemato-biochemical, radiographic and ultrasonographic observations in a very rare case of peritoneal effusion due to *Babesia* and its successful therapeutic management in dog.

Case History and Observations

A 2 year old male Labrador weighing 36 kg was presented in TVCC, BASU, Patna with chief complaint of distended abdomen, poor body condition and fever. Clinical examination revealed pale mucous membrane, dryness of muzzle, fluid thrill on tactile percussion of abdomen, tachycardia and normal respiration. The dog was subjected to haemato-biochemical analysis, radiography and ultrasonography. Radiography of abdomen revealed ground glass appearance and that of thorax showed normal vertebral heart score (VHS-9). Anechoic texture was observed in ultrasonography, suggestive of fluid in abdomen. Electrocardiography showed normal heart rate, P wave duration and amplitude, R wave amplitude, QRS duration and T wave amplitude. Blood smear revealed positive for *Babesia gibsoni.* Haematological study showed a low haemoglobin concentration, low total erythrocyte count, low packed cell volume, high total leucocyte count, hypoalbuminemia and hypoproteinaemia.

The dog was treated with amino acid infusion (75ml), Doxycycline (10mg/kg), imidocarb dipropionate (6.6mg/kg), combination of frusemide and spironolactone (2mg/kg) and supportive therapy with hematinics (aRBC pet), amino acid supplement (Amino pet) and liver supplement (Rasiliv). The owner was advised to provide egg white and restrict salt in diet. Proper rest should be given to dog. After 25 days of treatment, there was complete recovery and disappearance of peritoneal effusion.The blood smear examined for presence of Babesia was negative.

Discussion

Babesia forms small agglutinates in the capillaries of the organs leading to blocking of the capillaries reported by Schefters (2019), which leads to increase pressure and

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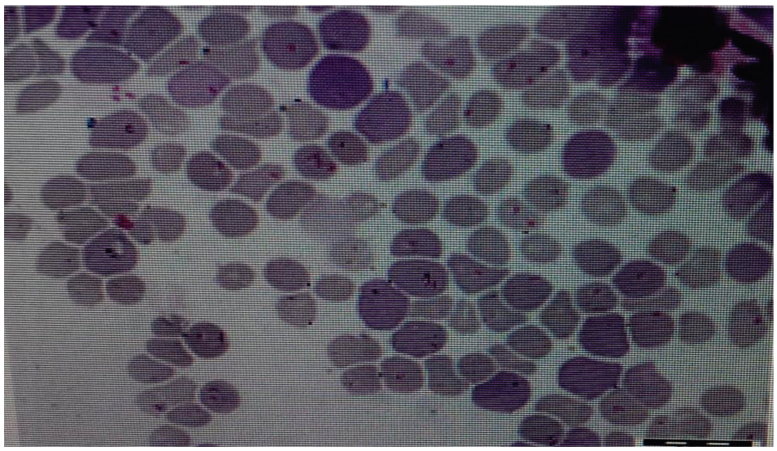

Fig. 1: Photomicrograph of Giemsa-stained thin blood smear of the dog showing regenerative anemia and small circular shaped trophozoites of *Babesia gibsoni* in erythrocytes X 100.

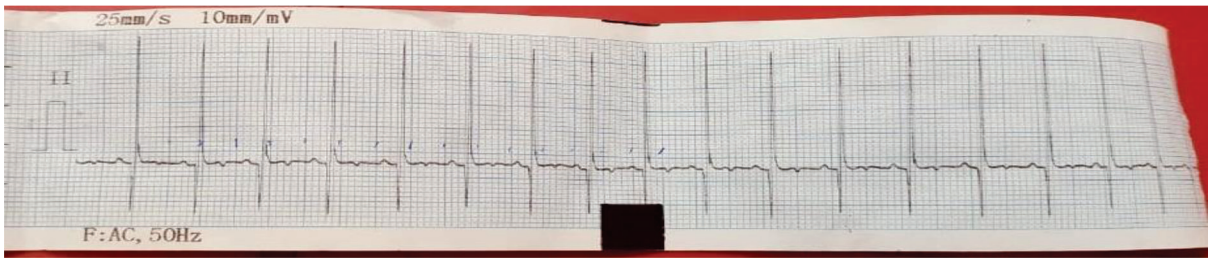

Fig. 2: ECG of dog showing normal rhythm in lead II

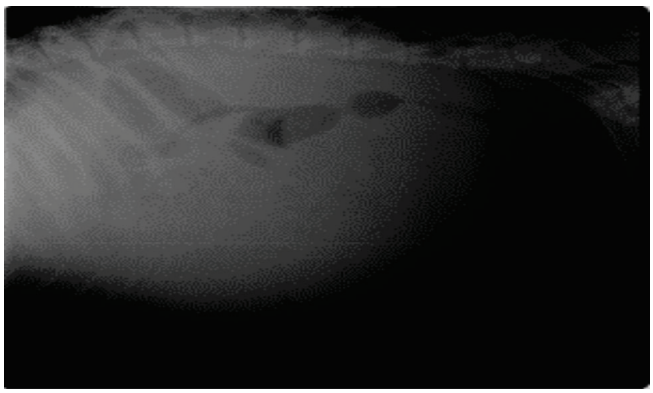

Fig. 3: X-ray of abdomen showing ground glass appearance indicating free fluid in abdominal cavity.

Fig. 4: USG of abdomen showing anechoic area indicating free flowing fluid in abdomen.

thereby perfusion of fluid leading to peritoneal effusion. Low haemoglobin and PCV may be due to haemolytic anaemia caused by *Babesia*. Haemolysis may occur due to proteases produced by the invading parasite, an immune reaction to parasitized cells, and/or oxidative damage to erythrocytes (Ghosh *et al.,* 2020). Regarding treatment of babesia infection, imidocarb dipropionate remains the first-choice treatment against babesia infection (Checa *et al*., 2017). Proper rest serves to increase kidney perfusion and helps to eliminate electrolyte and water in the urine. Spironolactone being a diuretic of moderate efficacy, it should be combined with potent loop diuretic frusemide (Brater, 1998). Egg was given as a source of protein with high biological value. Liquid supplement was given as a source of nutrition to improve RBC production and to maintain proper health.

Conclusions

Peritoneal effusion in dog due to babesiosis can be diagnosed by microscopic examination in

combination with ultrasonography, radiography and haemato-biochemical observations. Any delay in the treatment and management of the disease may lead to further complication and death of dog.

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