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Clinical Article

BABESIOSIS IN A SUCKLING CROSSBRED JERSEY CALF - A CASE REPORT

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SUMMARY

Fifteen days old Jersey crossbred cattle calf was presented to Teaching Veterinary Clinical Complex, Veterinary College and Research Institute, Tirunelveli with the signs of lymphadenopathy and epistaxis. Examination of peripheral blood smear revealed pear shaped *Babesia bigemina* in pairs at acute angle. Haematological analysis revealed reduction in red blood cells, haemoglobin and packed cell volume. Serum biochemistry analysis revealed elevated levels of blood urea nitrogen, globulin and glucose, and reduction in albumin, potassium and chloride levels. The case was successfully treated with diminazene aceturate with supportive therapy.

Keywords: Suckling calf**,** *B. bigemina*, epistaxis, Diminazene aceturate

Bovine babesiosis is one of the important haemoparasitic diseases causing significant morbidity and mortality in cattle (Sharma *et al*., 2016) and the disease accounts to an economic loss of 57.2 million US dollars per year to the livestock industry (Bock *et al*., 2004)

Bovine babesiosis caused by *Babesia bigemina* is transmitted by *Rhipicephalus microplus* and highly pathogenic resulting in fever, icterus, haemolytic anaemia and haemoglobinuria (red water) with a fatal outcome (Constable *et al*., 2017). Generally, young calves possess a strong innate immunity against babesiosis which lasts for approximately 6 months (Zintl *et al*., 2005). This paper presents occurrence of babesiosis in a suckling calf and its haemato-biochemical alteration and management.

Fifteen days old crossbred Jersey female calf was brought to the Veterinary Clinical Complex, Veterinary College and Research Institute, Tirunelveli with the history of anorexia and recumbency for three days. Clinical examination revealed rise in body temperature, pale conjunctival and vaginal mucous membrane, great enlargement of prescapular and precrural lymphnodes (Fig. 1), respiratory distress, bilateral serous nasal discharge, epistaxis (Fig. 2), mildly sunken eyeball, tachycardia and ticks infestation. Peripheral blood smear examination was performed to identify haemoprotozoan infections and whole blood and serum samples were collected for haemato-biochemical analysis by auto-analyzer.

Microscopic examination of the Giemsa stained peripheral blood smears revealed pear shaped piroplasms (merozoites) in pairs of large Babesia, *B. bigemina* at acute angle in number of RBCs (Fig 3). In this report, clinical babesiosis was observed in a suckling calf of 15 days old though it has been very rare in calves due to inverse age resistance associated with maternal immunity as well as innate immunity (Zintl *et al*., 2005). Similarly, Venu *et al.* (2015) also recorded a severe *B. bigemina* infection in a 14-day old Jersey crossbred female calf. Karunakaran *et al.* (2011), Vairamuthu *et al*. (2012), and Kumar and Kala (2018) also reported babesiosis in young calves. The clinical signs observed were in consistent with that reported by Tufani *et al.* (2015), and Kumar and Kala (2018). Epistaxis could be associated with vascular endothelial damage and the respiratory distress with vasculitis and anaemic anoxia (Constable *et al.,* 2017).

Haematological examination revealed anisocytosis and poikilocytosis with reduction in red blood cells (3.85 million/cmm), haemoglobin (5 g/dl), packed cell volume (13.7%), however, white blood cells (5100/cmm) including neutrophils (33%), lymphocytes (62%), monocytes (1%) and eosinophils (2%), and platelets (1.57 lakh) counts were within normal range. Reduction in haematological values might be associated with anaemia due to direct haemolysis and immune mediated haemolytic anaemia by the parasites (Tufani *et al*., 2015).

Serum biochemical analysis showed elevated levels of blood urea nitrogen (186 mg/dl) which could be associated with damage of tubular epithelium or immune mediated glomerular nephritis in babesiosis (Gungi *et al*., 2016), elevated globulin level (4.9 g/dl) attributed to the immune response against *Babesia* (Enbiyale *et al*., 2018), elevated glucose level (122 mg/dl) and reduction in albumin (1.7 g/dl) associated with harmful effects of toxic metabolites of *Babesia* on hepatic cells. Reduction in potassium (2.18 7 mg/dl) and chloride (93.0 mEq/dl) observed could be associated with malnutrition and

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Fig. 1. Prescapular lymphnode enlargement in the affected Jersey calf

Fig. 2. Epistaxis in Jersey calf affected with *B. bigemina*

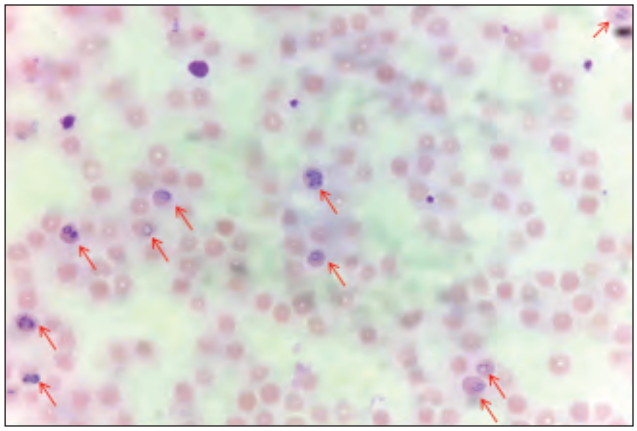

Fig. 3. Piroplasms (Merozoites) of *B. bigemina* in the Giemsa stained peripheral blood smear (×100) on day 1

dehydration. Whereas, the creatinine (1.3 mg/dl), SGOT (83.0 Units/L), SGPT (9.0 Units/L), alkaline phosphatase (223.0 Units/L), calcium (8.7 mg/dl), sodium (146.25 mg/dl) and phosphorus levels (6.7 mg/dl) were within normal limit. In contrast, Sharma *et al.* (2016) reported an increase in the SGOT, SGPT, ALP and creatinine in dairy animals affected with *B. bigemina*.

The case was treated with oxytetracycline long acting @ 10 mg/kg BW, I/M (Tufani *et al*., 2015) and diminazene aceturate @3.5 mg/ kg BW, deep I/M as a single dose (Bal *et.al*., 2016). Supportive therapy included parentral ivermectin as ectoparasiticide, parentral administration of fluids, antihistaminics (chlorpeniramine maleate), antipyretics (flunixin meglumine) and oral haematinics. The peripheral blood smear examination after day 1 post treatment revealed significant reduction of the parasitic load and on day 4 post treatment, no blood parasite could be detected. The animal was able to stand up on day 2 post treatment and showed complete clinical recovery after 4 days of treatment.

In conclusion, although inverse and innate age resistance for babesiosis is observed in young calves, the clinical disease has been reported in a suckling calf which can be even fatal without specific treatment. Periodical monitoring of herd for ticks infestation, screening of the cattle at risk by conventional microscopy and institution of early and specific treatment would help in the control of babesiosis.

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