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Efficacy of buparvaquone in bovine theileriosis in Haryana

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Abstract
Theileriosis is caused by protozoan parasites of the genus Theileria which infects lymphocytes and erythrocytes of ruminants. The diagnosis of theileriosis is usually based on clinical signs and the demonstration of piroplasms and schizonts in blood and lymph node biopsy smears respectively. A 23 days old female Holstein calf was presented to Teaching Veterinary Clinical Complex, IIVER, Rohtak, Haryana with a history of high fever (104.7 ˚F), anorexia, dullness, staggering gait, absence of suckling reflex, slight pale mucus membrane and presence of enlarged pre-scapular lymph nodes. Complete blood count (CBC) revealed low red blood cell counts (TEC), haemoglobin (Hb), packed cell volume (PCV) and mean corpuscular haemoglobin concentration (MCHC) values indicating moderate degree of anaemia caused by *Theileria* spp. The peripheral blood and lymph node biopsy smears exhibited the presence of piroplasms and Koch's blue bodies respectively. The animal was treated successfully with a single dose of buparvaquone @ 2.5 mg/kg BW by deep intramuscular route along with supportive therapy.

Keywords: Theileriosis, piroplasm, Koch's blue bodies, buparvaquone

1. Introduction
Parasites of the genus Theileria includes a number of species affecting 80% of the total cattle population of world and causes huge economic losses due to high morbidity and mortality [1, 2]. The *Theileria* spp. is transmitted by Ixodid ticks of the genus *Amblyomma*, *Haemaphysalis*, *Hyalomma* and *Rhipicephalus* infecting a wide range of domestic and wild animals [3]. Globally, the most common cause of bovine theileriosis is *T. annulata* and *T. parva* [4, 5]. Tropical theileriosis is caused by *T. annulata* and is characterized by high fever, weakness, weight loss, inappetence, enlarged lymph nodes, anemia and diarrhoea followed by lateral recumbency in later stages [6]. Although, all breeds of cattle are equally affected but the young indigenous calves are highly susceptible to the infection [7]. In this study, a clinical case of bovine theileriosis along with its therapeutic management has been described.

2. Case History
A female Holstein calf of age 23 days was presented to Teaching Veterinary Clinical Complex, IIVER, Rohtak, Haryana with a history of fever (104.7 ˚F), anorexia, bilateral pre scapular lymphadenitis, dullness, staggering gait and absence of suckling reflex with slight pale mucus membranes (Fig. 1). On physical examination, the calf was found dull but the vital signs were found normal.

Fig 1: A female Holstein calf showing enlarged (white arrow) pre-scapular lymph node.

3. Materials and Methods

On the basis of clinical signs and symptoms the calf was suspected for hemoprotozoan disease. The blood sample was collected from the jugular and ear vein by venipuncture for confirmation of the parasite. Furthermore, the collected blood sample was subjected to complete blood count by using fully auto hematology analyser. Pre-scapular lymph node aspirations were also performed for the presence of Koch's blue bodies, which is a characteristics feature of *Theileria* spp. infection. Thin blood and lymph node aspiration smears were prepared and stained with Giemsa's stain. Stained smears were examined for the presence of *Theileria* spp. in red blood cells and Koch's blue bodies in lymphocytes under microscope. On confirmatory diagnosis, the animal was treated with a single dose of buparvaquone @ 2.5 mg/kg BW body weight by deep intramuscular route along with supportive therapy.

4. Results and Discussion

Blood smear of the calf was found positive for the *Theileria* spp. with high level of parasitaemia. Intraerythrocytic piroplasms were found on microscopic examination of blood smears. Koch's blue bodies were observed in the infected lymphocytes on microscopic examination (Fig. 2). Complete blood count (CBC) revealed low red blood cell counts (TEC), haemoglobin (Hb), packed cell volume (PCV) and mean corpuscular haemoglobin concentration (MCHC) values as compare to normal reference values which can be correlated with moderate degree of anaemia caused by *Theileria* spp. On treatment with a single dose of buparvoquone (Butalex), the calf recovered and returns to its normal behaviour within a week. Our observations indicate towards strong positive effects of buparvoquone in the treatment of theileriosis. The prognosis of this case was found good as it was diagnosed early, treated on time and the animal responded well towards the treatment. Our findings are in accordance with Gupta *et al.* (2004) [8] and Naik *et al.* (2010) [9], who used single dose of buparvaquone along with supportive therapy for the successful treatment of the theileriosis in a calf. According to Mudgal (1993) [10], young calves are highly susceptible for theileriosis hence the calves should be properly immunized immediately after birth.

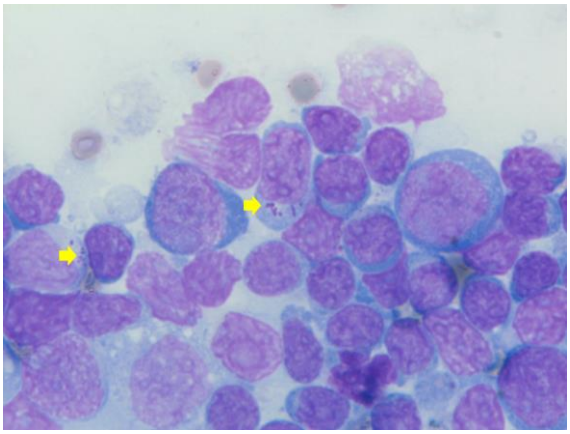

Fig 2: Lymph node biopsy smear showing Koch's blue bodies (yellow arrows) in infected lymphocytes.

5. Conclusion

Theileriosis is one of the most important arthropod-borne blood protozoan diseases, leading to morbidity and mortality especially in calves, which are commonly affected during the perinatal period. The blood and lymph node smears are used as a supplementary method for the laboratory diagnosis of the presence of any intra-erythrocytic piroplasms and Koch's blue bodies respectively. In the present case, it was found that a single dose of buparvaquone is effective against cases of theileriosis along with supportive therapy when treated at the earliest.

6. References

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