

CLINICO-HEMATOLOGICAL PROFILE AND THERAPEUTIC MANAGEMENT OF THEILERIOSIS IN A HOLSTEIN-FRIESIAN CROSSBRED CALF

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SUMMARY

A two month old Holstein-Friesian crossbred female calf was presented with clinical signs like dullness, anorexia, icteric mucous membrane, frothing from mouth, anaemia, bilateral prescapular lymphadenitis and tick infestation. On Giemsa staining of the peripheral blood film, piroplasms of *Theileria annulata* were found in 60% erythrocytes. The animal was severely anaemic with extremely low levels of Hb (3.2 g/dl), PCV (11%), TEC ($1.4 \times 10^6/\mu\text{l}$) and platelet ($49 \times 10^3/\mu\text{l}$) counts. TLC was $11.65 \times 10^3/\mu\text{l}$ and DLC was 46% lymphocytes, 45% neutrophils, 6% eosinophils and 3% monocytes. The calf was successfully treated with aggressive therapy using buparvaquone, oxytetracycline, and hypertonic glucose plus electrolytes in addition to the fresh whole blood transfusion.

Key words: Blood transfusion, Buparvaquone, Prescapular lymphadenitis, Theileriosis

Theileriosis is a burning veterinary problem of the rural livestock communities. It has a profound effect on haematological values and causes huge morbidity and mortality in cattle population, which reflects economic losses and elevates the poverty level (Naila *et al.*, 2015). Bovine theileriosis of cattle is a major constraint in the improvement of the livestock industry in larger parts of the World (El-Deeb and Younis, 2009). Theileriosis caused by *T. annulata* is a serious hemoprotozoan disease of cattle in tropics and sub-tropics. *T. annulata* is transmitted by ticks of the genus *Hyalomma* (Mirzaei, 2007).

A two month old Holstein-Friesian crossbred female calf was presented in May, 2018 with clinical signs like dullness, anorexia, icteric mucous membrane, frothing from mouth, anaemia, bilateral prescapular lymphadenitis and tick infestation. On clinical examination of the calf, rectal temperature, heart and respiratory rates were 104.7°F, 108/min and 65/min, respectively. Examination of Giemsa stained blood smears under oil immersion revealed intra-erythrocytic piroplasms of *Theileria annulata* (Fig. 1). Mostly, the piroplasms appeared as ring or oval shaped with a little percentage of dots. There was anisocytosis and poikilocytosis observed in erythrocytes structure and infected erythrocytes were appeared as echinocytes. Haemogram revealed extremely low levels of Hb (3.2g/dl), PCV (11%), TEC ($1.4 \times 10^6/\mu\text{l}$) and platelets ($49 \times 10^3/\mu\text{l}$) counts. Erythrocytic indices; MCV, MCH and MCHC were 67.73 fL, 23.84 pg and 34.19 g/dl, respectively. TLC was $11.65 \times 10^3/\mu\text{l}$ and DLC exhibited 46% lymphocytes, 45% neutrophils, 6% eosinophils and 3% monocytes.

The treatment protocol included single injection of buparvaquone @2.5 mg/kg, i/m in the neck muscles; two doses of oxytetracycline @10 mg/kg, i/m at 48 hours intervals; inj. meloxicam @ 0.2 mg/kg, i/m for 3 days and electrolytes-dextrose infusion at 5 ml/kg, i/v daily for 3 days. The calf was transfused 300 ml blood procured from her dam just before transfusion.

Comparison of overall mean values of PCV, Total erythrocyte count and hemoglobin concentration showed that the values greatly reduced in the infected animals as compared to normal values. These observations were in accordance with those of Col and Uslu (2006) and Hasanpour *et al.* (2008). Blood smears revealed abnormal erythrocyte morphology along with presence of *Theileria* schizonts in infected mononuclear cells and erythrocytes in the present study. The infected erythrocytes appeared as

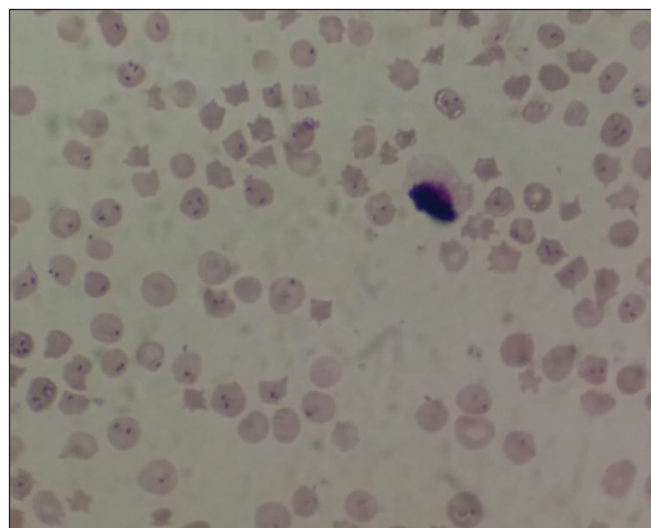


Fig.1: Giemsa stained blood smear showing intra-erythrocytic piroplasms of *Theileria annulata*. (100X)

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echinocytes thorn-like protrusions on the surface. These variations in erythrocytic morphology are mainly due to theileria schizonts, erythrocytic oxidation, intravascular thrombi, and immune-mediated processes (Stockham *et al.*, 2000). The decrease in erythrocyte count, packed cell volume and hemoglobin concentration resulted anemia in infected group.

It has been reported that anemia occurs in lateral stages of theileriosis following parasitaemia (Mbassa *et al.*, 1994). Immune-mediated mechanism like erythrophagocytosis might be responsible for the destruction of erythrocytes infected with theileria schizonts (Uilenberg, 1981). Removal of piroplasm infected erythrocytes by macrophages in the reticuloendothelial system has been suggested as a cause of anemia (Campbell and Spooner, 1999). The decreased erythrocyte counts could be attributed to increased levels of activated complement products (Omer *et al.*, 2002). Moreover, oxidized erythrocytes are destroyed by erythrophagocytosis, oxygen free radicals may also be responsible for anemia (Mbassa *et al.*, 1994). The adopted treatment regimen was found effective in management of Theileriosis and transfusion of blood aid in bringing quick recovery.

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