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## Therapeutic management of tropical theileriosis in a cross bred dairy cow

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#### Abstract

Tropical theileriosis of bovines, caused by the haemoprotozoan parasite *Theileria annulata*, is characterized by high fever, inappetence, leukopenia, petechial haemorrhages in mucosa, and enlarged peripheral lymph nodes. The disease is mainly transmitted to cattle through *Hyalomma anatomicum* bite. This occurs frequently in cross-bred animals and exotic breeds, particularly in young calves. The present case report deals with therapeutic management of tropical theileriosis in crossbred dairy cow. Clinical examination of affected animals revealed high fever (104.5°F), petechial haemorrhages in vaginal mucous membrane and pallor conjunctival mucous membrane, weakness and thin watery blood. The blood smears examination has revealed the presence of typical *Theileria annulata* organisms. The case was successfully managed with buparvaquone along with supportive therapy.

**Keywords:** Tropical theileriosis, buparvaquone, *Theileria annulata*, dairy cow

#### Introduction

Bovine tropical theileriosis, caused by the protozoan parasite *Theileria annulata*, is characterized by fever, inappetence, leukopenia, petechial haemorrhages in mucous membranes, and enlarged peripheral lymph nodes. The disease is transmitted to cattle through *Hyalomma anatomicum* bite. This occurs frequently in cross-bred animals and exotic breeds, particularly in young calves [1, 2, 3]. Tropical theileriosis, however, affects indigenous cattle (*Bos indicus*) less often than the crossbred cattle. This resulted in decreased milk yield, weight loss, blood loss, damage to hides, stress and discomfort and compromised immune function [4, 5]. Once the animals have been infected, they remain lifelong carrier because the organisms hide in macrophage and lymphoid tissue. Tropical theileriosis causes significant economic losses in terms of high mortality, morbidity and decreased productivity in recovered animals. The present case report deals with successful therapeutic management of bovine tropical theileriosis with two doses of Buparvaquone @ 2.5mg/kg IM q48 hrs along with supportive therapy in a crossbred dairy cow.

#### History and Clinical Examination

A 4 years old HF cross bred dairy was presented to Referral Veterinary Polyclinic, Indian Veterinary Research Institute with the history of inappetence, fever, weakness and depression for the past 3 days. The animal had treatment but without any improvement of clinical condition was noticed. Clinical examination had revealed pale conjunctival mucous membrane (Figure 1), petechial hemorrhages in vaginal mucous membrane (Figure 2), elevated rectal temperature (104.5°F), tachycardia (112 per minute) and respiratory distress. Enlargement of pre scapular and parotid lymph node were also observed.

Blood sample in EDTA vial and peripheral blood smear were collected for Complete Blood Count (CBC) and haemoprotozoan identification respectively. Lymph node aspiration smear was collected by injecting about 4 ml of normal saline into the enlarged lymph node and the content was used making smears. Lymph node aspiration stained with Leishman stain had showed Koch Blue Bodies and peripheral blood smear stained with Leishman stain had showed *Theileria annulata*. CBC analysis showed anaemia, neutrophilia, lymphocytopenia and eosinophilia.

#### Treatment and Discussion

Based on anamnesis, clinical findings and clinical laboratory examination the present case was confirmed as a bovine tropical Theileriosis.

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The animal was treated with two doses buparvaquone (Butalex® 5% w/v, MSD animal health) @ 2.5mg/kg body weight deep IM q48hrs interval along with supportive therapy. The supportive therapy consists of meloxicam (Melonex® injection, 0.5% w/v, Intas pharmaceuticals) @ 0.5 mg/kg body weight, pheniramine maleate (Avilin® VET injection, 2.2%, w/v, MSD animal health) @ 1 mg/kg body weight, Frusemide (Ridema® injection, 5%w/v, Vetoquinol India Animal Health)@1mg/kg body weight, Belamyl® injection (B complex vitamins with liver extract), Sarabhai Zydus animal health Ltd. @ 0.05 ml/kg body weight IM for five days. Marked improvement of the animal condition was noticed after 24 hrs of treatment and complete recovery was observed after 48hrs of treatment.

Tick-borne, hemoprotozoan diseases are major constraints to the dairy sector and causes huge economic losses to the livestock industry. About US\$ 800 million annual loss to India was reported due to bovine tropical theileriosis [6]. The hot and humid climatic condition of India is highly favouring the tick survival. The first visible symptom found in the present report was an increase in body temperature (104.5°F), with palpable enlargement of the prescapular and parotid lymph nodes. Because the ticks were found attached to the ear region and lymph node enlargement could be linked to parasite development stages [7]. Tropical theileriosis is among the most prevalent of all cattle disease caused by *T. annulata* [8] and is transmitted through ticks belongs to genus *Hyalomma*. The parasite initially invades the cells of Lymphatic system in which they develop into the schizont and then the merozoite stage develops and enter into peripheral blood as intraerythrocytic forms in RBCs which eventually leads to the establishment of bovine tropical theileriosis. The Pale conjunctival mucous membrane and pallor vaginal mucous membrane with numerous petechial hemorrhages in our case report was similar to the findings of Kaleibar *et al.* [9]. In our current study the cross bred dairy cow was treated effectively with Buparvaquone and supportive therapy. Our findings are similar to the findings of Gupta *et al.* [10] who had reported remarkable recovery with buparvaquone and supportive medications. In conclusion, bovine tropical theileriosis can be successfully managed with two doses of Buparvaquone @ 2.5 mg/kg IM q 48hrs and along with supportive therapy.



**Fig 1:** Pale conjunctival mucous membrane



**Fig 2:** Pale vaginal mucous membrane with numerous petechial hemorrhages (arrow)

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