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Bovine theileriosis in a crossbred jersey cattle: A case report

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Abstract

Bovine theileriosis is a fatal tick borne haemoprotozoan disease of cattle caused by an apicomplexan parasite *Theileria spp.* In India *Theileria annulata* is an important species that infects cattle and causes severe economic loss. The present case elucidates the successful management of bovine theileriosis in the cattle at field level. A four year old female Jersey crossbred cattle was presented with anamnesis of not taking feed, fever and tick infestation. On clinical examination the animal was found to be dull and depressed, had pyrexia (106 °F), pale mucous membrane, petechial haemorrhage on the vaginal mucous membrane, enlarged pre-scapular lymph nodes and severe tick infestation. Examination of peripheral blood smear revealed the presence of intra-erythrocytic piroplasms of *Theileria* organism. The animal was treated with Buparvaquone (Bupamax) deep IM, @ 2.5 mg/kg BW, accompanied with supportive therapy (iron supplement).

Keywords: Theileriosis, buparvaquone, cattle, ticks

1. Introduction

Bovine theileriosis is one of the important tick-borne haemoprotozoan diseases of cattle caused by several *Theileria* species and among them, *Theileria annulata* and *Theileria parva* are the most pathogenic and economically important with a worldwide distribution (Gul *et al.*, 2015) [5]. Bovine tropical theileriosis (BTT), also known as Mediterranean coast fever, causes heavy economic losses in terms of mortality and morbidity in India (Singh *et al.*, 1993; Kumar *et al.*, 2019) [7, 11]. BTT is caused by *Theileria annulata* transmitted by Ixodid ticks of the genus *Hyalomma*. The temperature of Tamil Nadu is favourable for ticks and responsible for the transmission of theileriosis in cattle. Though all breeds of cattle are susceptible to theileriosis, exotic and crossbred cattle are at a higher risk (Sharma and Gautam, 1977; Grewal, 1992; Gharbi *et al.*, 2017) [3, 4, 10].

The present study documented the bovine theileriosis in a crossbred Jersey cattle aged above four years and its therapeutic management.

2. History and Observation

A crossbred Jersey cattle aged above four years was brought with a history of anorexia, high body temperature, loss of milk production, dullness, staggering gait and severe tick infestation. Clinical examination revealed dullness, rough hair coat, high fever (106 °F), laboured breathing with nasal discharge, anaemia, petechial haemorrhages in vaginal mucous membrane (Fig. 1), pale conjunctival mucous membrane, tick infestation, cutaneous eruptions (Fig. 2), bi-lateral pre-scapular lymphadenitis, reduced rumination and excessive drooling of saliva.

3. Diagnosis and therapeutic management

The case was tentatively diagnosed as haemoprotozoan disease. So, a thin blood smear was made from peripheral ear vein and stained with Giemsa stain. Microscopic examination under 100X revealed the presence of intra-erythrocytic piroplasms of *Theileria* organism (Fig. 3). Based on clinical signs and blood smear examination the case was diagnosed as Theileriosis. The animal was treated with Buparvaquone (Bupamax) at the dose rate of 2.5 mg/kg BW injected deep intramuscular in the neck region, Iron (Feritas) injection 10 mL IM, Meloxicam paracetamol 0.5 mg/kg BW IM, chlorpheniramine maleate 15 mL IM, and B-complex (Tribimix-B) 20 mL IM. The cattle recovered with a single dose of buparvaquone accompanied with liver tonic (Liv-bloom) as a supportive therapy.

4. Discussion

The life cycle of *Theileria* begins when an infected tick injects sporozoites to cattle by bite.

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The sporozoites enter into terminal lymphocytes. The replication of the organism in lymphocytes and the systemic spread leads to high fever. In this stage, lymph node swelling becomes pronounced and generalized. The sporozoites invade the lymphoid cells and schizonts are detected in 10-13 days (Mahmmod *et al.*, 2011) [8]. This is the prepatent period of the disease. The schizonts parasitize lymphocytes, multiply, invade, and destroy the lymphoid system, causing skin, liver, and spleen lesions. Multinuclear schizonts (called Koch blue bodies) can be observed in fine needle aspiration smears of lymph nodes at this stage. Next is the piroplasm stage in which the piroplasm enters the erythrocytes, causing their destruction and a drop in the erythrocyte count and haemoglobin level. This leads to anaemia and petechial haemorrhages in the mucous membranes (Gupta *et al.*, 2004; Radostits *et al.*, 2007) [6, 9]. Anorexia sets in, and the animal begins to lose the condition; lacrimation and nasal discharge may occur. Dyspnea is more common in the terminal stage. The present case also showed most of the symptoms mentioned in the literature. The blood smears are used as supplementary methods for the laboratory diagnosis of the presence of any piroplasms in the RBCs (Aktas *et al.*, 2002; Gupta *et al.*, 2004) [1, 6].

Buparvaquone, is a promising drug for the treatment and prevention of all forms of theileriosis; the addition of antioxidants to anti-theilerial drugs can save animals from fatal theileriosis. Theileria-infected cattle will be carriers and serve as a source of infection to other cattle in the herd. The control of vectors is highly important to reduce the risk of theileriosis in the livestock population. To prevent BTT, Indian immunologicals limited, Hyderabad has developed an in-vitro attenuated schizont infected lymphocyte (SIL) cell culture vaccine known as "Rakshavac-T". It is recommended for prophylactic vaccination against Theileriosis in India. Cattle vaccinated with Rakshavac-T can withstand the infection from *Theileria spp.* for a period of one year (Ganga *et al.*, 2010; Naik *et al.*, 2010) [2].



Fig 1: Animal showing cutaneous eruptions



Fig 2: Pale vaginal mucous membrane with petechial haemorrhage

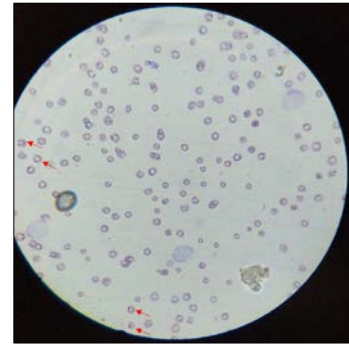


Fig 3: Giemsa stained blood smear showing intra-erythrocytic piroplasms (*Theileria spp.*)

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