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## First case report and triumphant treatment of *Theileriosis* in 19 days old crossbred cattle calf in the Jaipur

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**Abstract**

Bovine tropical theileriosis, major threat to dairy sector, is tick borne hemoprotozoan diseases and causes high morbidity and mortality especially in calves. Current study is the first case of bovine tropical theileriosis in 19 days old cross bred calf from Jaipur, Rajasthan. The calf was presented to Teaching Veterinary Clinical Complex (TVCC) with clinical signs of high fever 106.2°F, anorexia, dullness, absence of suckling reflex, recumbent, slightly pale mucus membrane, presence of ticks and enlarged pre-scapular lymph nodes. The peripheral thin blood film and lymph node smear confirmed the presence of piroplasmic stages of organisms and Koch's blue bodies respectively. The animal was treated and recovered successfully with a single dose of buparvaquone (Butalex) deep intra muscular route, at the rate of 2.5 mg/kg body weight, along with supportive therapy.

**Keywords:** Theileriosis, Calf, Butalex, Koch's blue body

**1. Introduction**

*Theileria annulata*, an intracellular obligate blood protozoan, infects a wide range of both domestic and wild animals and causes tropical theileriosis. This economic stunted disease is more prevalent in tropical and subtropical parts of world [1]. Ixodid ticks of the genera *Hyalomma* and *Rhipicephalus* are foremost vectors that are involved in transmission of theileria [2]. *Theileria* have complex life cycles in both vertebrate and invertebrate hosts. Although many *Theileria* species may affect cattle, however, infection of *T. parva* and *T. annulata* in cattle are more frequent [3]. The frequently noticeable symptoms of this disease are high fever, weakness, weight loss, inappropriate appetite, conjunctival petechia, enlarged lymph nodes and anemia. Lateral recumbency, diarrhea and dysentery may also be come out in later stages of infection [4, 5]. The fatal outcome such as turning sickness may also be observed in cattle. Neurological symptoms appear in this disease as theileria infected RBC cells may block capillaries of central nervous system [6].

Prompt diagnosis, tick control, early therapeutic management and vaccination of Raksha vac-T in disease prone area is needed in order to check disease progression. The presence of intra-erythrocytic piroplasm and Koch blue body in Giemsa stained blood smear can be utilized for confirmatory diagnosis of theileriosis and act as gold standard [7, 8]. 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. Exotic breeds of cattle (*Bos taurus*) and their crosses are more susceptible to the disease and its clinical course may prove fatal. However, Indigenous breeds of cattle are relatively resistant and acts as reservoir to susceptible livestock. Transplacental transmission of *T. annulata* (i.e. transmission from dam to fetus) resulted into fatal outcome in neonates especially in the semi arid region like Jaipur of India [9]. Although turning sickness in a cross bred cow aged 3 years naturally infected with *T. annulata* had been reported from Jaipur [10]. However, the literature searched reveals no study on animal below one year of age. The present study documents the first bovine theileriosis in young crossbred calf aged below one month and its effective therapeutic management from Jaipur.

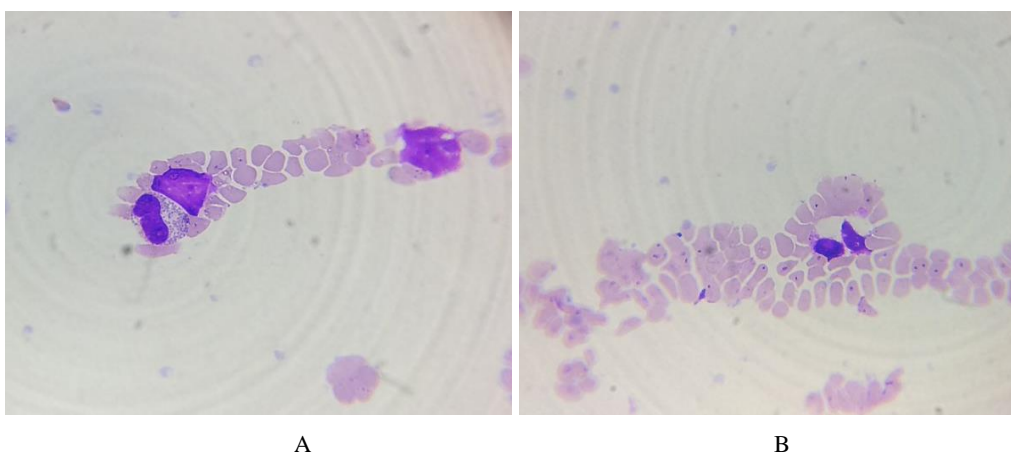
## 2. Case Presentation

Nineteen days old calf was presented at Teaching Veterinary Clinical Complex PGIVER, Jaipur with a history of anorexia, dullness, staggering gait and sternal recumbency without institution of any therapy. High fever (106.2°F), bilateral pre scapular lymphadenitis tick infestation and absence of suckling reflex with slight pale mucus membrane were observed on thoroughly physical examination. This clinical view pointed towards the hemoprotozoan infection which needs to be ruled out. Hence, blood sample was collected from the ear tip of calf and four blood smears were made for ruling out the presence of any piroplasms in red blood cells. Pre-scapular lymph node aspiration was also performed for the presence of Koch's blue bodies for conclusive diagnosis [6]. Thin blood lymph smears were prepared and then fixed in methanol followed by staining with Giemsa stain and examined under oil immersion lens as per method described by Coles [11].

## 3. Therapeutic Management and Discussion

The calf was diagnosed positive for theileria as intra-erythrocytic piroplasm in Giemsa stained thin blood smear and Koch blue bodies (KBB) in pre-scapular lymph node smear examination were observed as per Figure 1 which was in tune

with the finding of Gupta *et al.* [12], who reported theileriosis in 7 days old bovine calf on similar ground basis. According to literature [13-15], young calves are more prone to theileriosis in comparison to old, hence the calves should be given proper immuno-prophylactic measures immediately after birth. After conclusive diagnosis, the calf was treated with Buparvoquone (Butalex) at the dose rate of 2.5 mg/kg body weight injected deep intramuscular in the neck region along with some supportive treatment (Normal saline 150 ml IV, OTC, Melonex 1 ml IM, Avil 1.5 ml IM,). As fever subsided, the calf was instituted with 2ml Tribivet IM in order to check acute phase protein being elevated as administration of Vitamin B complex enhances acute phase protein level. Hence, Vitamin B complex is generally not prescribed at the pyrexia [16]. As the calf appeared healthy after institution of therapy then re-screening of blood sample for erythrocytic-piroplasm and pre-scapular lymph node aspirant for KBB was conducted. The recovery of aforesaid treated calf was in accordance with already documented literature where Buparvoquone along with supportive therapy was successful used for the treatment of theileriosis [17, 18]. In the present case, it was found that a single dose of buparvoquone is effective against cases of theileriosis along with supportive therapy when treated at the earliest.



**Fig 1:** Pre-scapular lymph node smear shows Koch's blue bodies infected lymphocytes (A) and blood smear showing Intra-erythrocytic piroplasms (*Theileria*) (B) (Giemsa, 100X)

## 4. Conclusion

To our knowledge, this report, for the first time, brings out graveness on the theileriosis in Jaipur region of Rajasthan (India). Epidemiological survey of theileriosis in all agro-climatic zones of Rajasthan should be conducted in near future by using classical, serological and molecular tools of investigation, which can be helpful in formulating a comprehensive control and preventive strategy.

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