

Diagnosis and Management of Pseudo-Pericarditis due to Theileriosis in Cattle

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Ind J Vet Sci and Biotech (2025): 10.48165/ijvsbt.21.2.27

Theileriosis is one of the common economic concerns in cattle, and normally hyalomma ticks transmit it. The estimated economic loss due to tropical theileriosis in India is INR 8,426.7 crore (Narladkar, 2018). Cattle have been thought to be susceptible animals in older days; however, the disease is also prevalent in buffalo, sheep and goats. Pale mucus membrane, enlarged lymph nodes, progressive weight loss and high fever are the routinely observed clinical signs in cattle (Patel *et al.*, 2022). Blood smear examination and molecular confirmation are widely adopted for diagnosis. In large ruminants, various unusual clinical signs, including exophthalmos and pseudo-pericarditis, have been reported for a long time (Prajapati *et al.*, 2019). Pseudo-pericarditis refers to jugular engorgement and edema of the brisket and ventral abdominal wall resulting from pressure at the cranial and caudal vena cava, which return blood to the heart (Radostits *et al.*, 2000). The reported condition must be differentiated from true pericarditis for proper therapeutic management. In this case, the diagnosis of pseudopericarditis has been described along with management in cattle

CASE HISTORY AND OBSERVATION

An eight-year-old crossbred cow with a history of brisket edema for the last 3 months, laboured breathing, enlarged pre-scapular lymph node and blackish bloody diarrhoea was brought for treatment at Veterinary Clinical Complex, Deesa, Gujarat India (Fig. 1A). Primary examination revealed a pale conjunctival mucus membrane and 103°F rectal temperature. Ferroscopy carried out to rule out the presence of a foreign body was found to be negative. A small amount of faeces was collected to evaluate the parasitic load in the body, and no ova of any parasites were found. 2 mL of blood was collected for further investigation. The complete blood count revealed white blood cells $20.34 \times 10^3/\mu\text{L}$, red blood cells $1.71 \times 10^6/\mu\text{L}$, haemoglobin 2.2 g/dL, packed cell volume 7.05 %, platelets $360 \times 10^3/\mu\text{L}$, lymphocyte 27%, monocyte 1 % and neutrophils 72 %. The field-stained blood smear examination revealed Koch's blue bodies in lymphocytes (Fig. 1B). Meanwhile, an ultrasonographic evaluation of the thorax was carried out using a 2-5 MHz convex probe, and an accumulation of fluid around the heart was recorded (Fig. 1C). Further, PCR done for molecular confirmation of *T. annulata* infection using forward primer CCAGGACCACCTCAAGTTC and reverse

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How to cite this article: Prajapati, A. S., & Chauhan, P. M. (2025). Diagnosis and Management of Pseudo-Pericarditis due to Theileriosis in Cattle. *Ind J Vet Sci and Biotech*, 21(2), 125-127.

Source of support: Nil

Conflict of interest: None.

Submitted 14/10/2024 **Accepted** 22/11/2024 **Published** 10/03/2025

primer GCATCTAGTTCCTTGGCGGA (Fig. 1D). confirmed it as a case of pseudo-pericarditis due to *T. annulata* infection.

TREATMENT AND DISCUSSION

The cow was treated with oxytetracycline @ 22 mg/kg, meloxicam @ 0.2 mg/kg body weight and supportive treatment, viz., hematinics and liver tonic for five days. An uneventful recovery was observed in the case.

Theileriosis is the most commonly reported tick-borne condition from tropical countries, with economic losses to livestock farmers. It has been reported from almost all states of India. Many usual clinical signs, viz., pale mucus membrane, enlarged lymph nodes and high temperature, are very familiar to veterinarians working in the field. Due to the newer adaptation and involvement of different organs, various new clinical signs have been seen in cattle affected by theileriosis. However, a couple of new clinical signs, i.e., exophthalmos and pseudopericarditis, were observed by the clinician in cattle and buffalo (Vikrant *et al.*, 2012; Prajapati *et al.*, 2019).

Pseudo-pericarditis is one of the rare clinical signs of theileriosis in ruminants and has been documented by Keles *et al.* (2012) and Sudhakara and Sivajothi (2017). Pericarditis is observed due to continuous damage to the pericardium, whereas in the present condition, mediastinal lymph nodes around the caudal and cranial vena cava were affected, become swollen and exhibited brisket edema. The infective

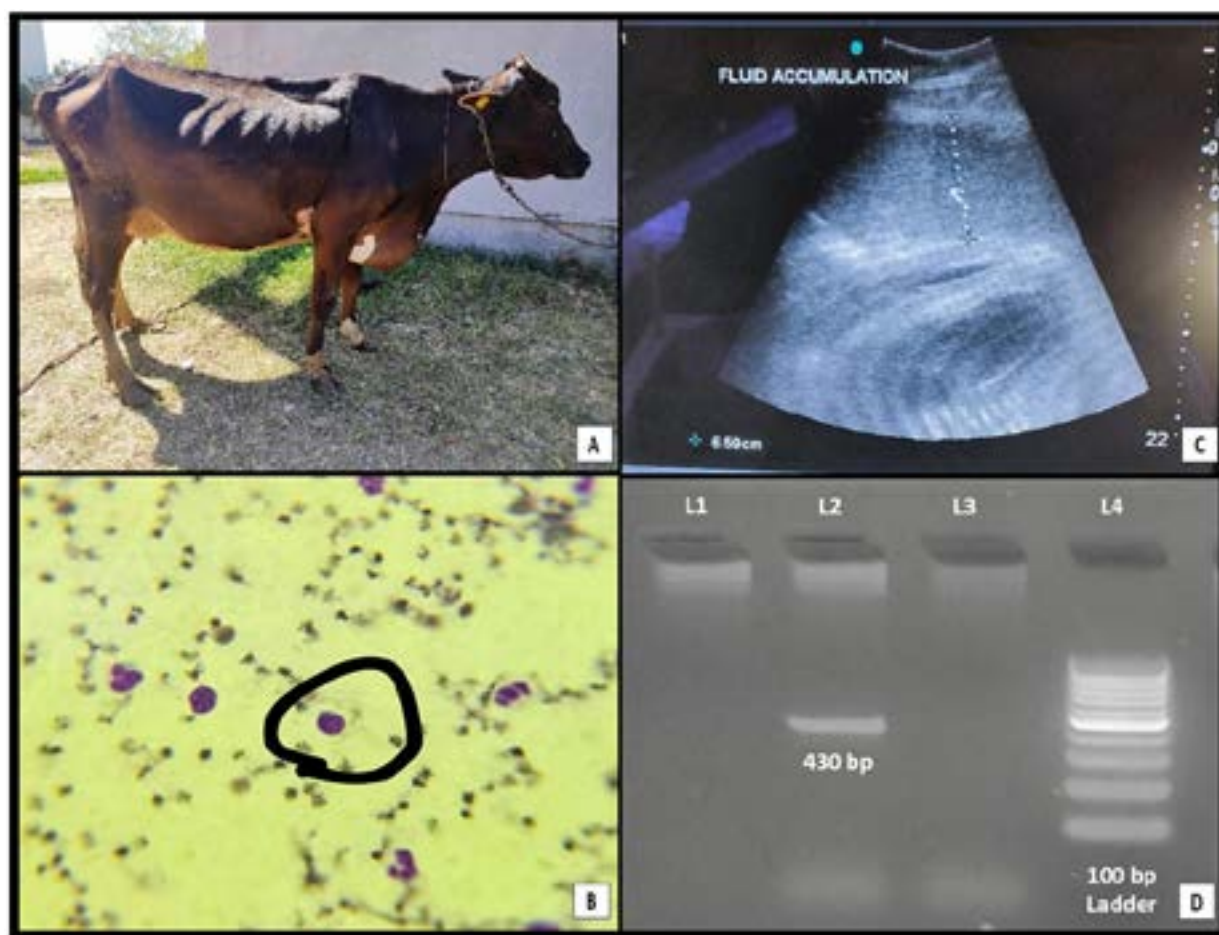


Fig. 1: A) Briskeet edema in cow; B) Koch's blue body in lymphocytes; C) Ultrasonographic image showing accumulation of fluid around the heart; D) Molecular confirmation of *Theileria annulata* by PCR (L1: Negative, L2: Positive, L3: Negative, L4: 100 bp ladder)

organisms are transmitted in healthy hosts by ticks. The organisms reproduce in the nearby lymph nodes around the blood sucking region. The blood, after that, carries them to the other lymphoid organs. The organism's schizonts emerge from the sporozoites during the schizogony stage. These schizonts may have contributed to the leucocytosis and enlarged prescapular lymph nodes in the current instance. They also cause swelling and leucocytosis in lymphoid tissues and cells.

Metal detection, faecal examination, and auscultation of the heart area in suspected animals play a vital role in the diagnosis and differentiation of true pericarditis and pseudo-pericarditis. Ferroscopy gives positive results in foreign body cases, whereas it is negative in the case of pseudopericarditis. However, briskeet edema may be noted in both conditions. Auscultation of the heart area produces almost similar kinds of sound in pericarditis and pseudopericarditis. However, it should be routine practice to diagnose various conditions in cattle. It must be differentiated from fascioliasis because of the development of similar kinds of edema in dependent parts. Nowadays, changes are made in therapeutic options

against theileriosis by adding furosemide in combination with buparvaquone to manage briskeet edema. Pharmaceutical companies also address the same signs by modifying their products. In conclusion, pseudopericarditis, a circulatory disorder, can be considered in the differential diagnosis of theileriosis in bovine.

ACKNOWLEDGEMENT

The authors acknowledge the Principal, Veterinary College, Kamdhenu University, Sardarkrushinagar, for providing the necessary facilities.

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