

Clinico pathological changes in cattle with theileriosis

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Abstract

The paper reports the clinical and pathological findings in cattle suffering with abomasal ulcers in association with theileriosis. Six cattle with abomasal ulcers in association with theileriosis was identified by presence of intra-erythrocytic piroplasms of *Theileria annulata* in stained blood smears. Abomasal ulcers were identified based on the positive benzidine test. The clinical findings noticed were absence of rumination, anorexia, loss of milk yield, melena, depressed demeanour, emaciation, abdominal guarding, pale mucous membranes, hyperthermia, lymphadenopathy, kyphosis, tachypnea and dyspnea. Reduced serum levels of albumin, calcium, phosphorus, chloride, potassium and increased serum levels of aspartate transaminase, blood urea nitrogen, creatinine were noticed.

Keywords: cattle- theileria- abomasal ulcer

Tropical theileriosis is one of the economically important haemoprotozoan disease affecting bovines and it is caused by *Theileria annulata*. Reports in the cattle with theileriosis associated with abomasal ulcers were very limited. This article reports on the clinical signs and serum-biochemical changes in dairy cattle with abomasal ulcers due to theileriosis.

During the one-year period of study, from January 2022 to December 2022 at Department of Veterinary Medicine, College of Veterinary Science, Proddatur, Andhra Pradesh cattle attending Out-patient unit were screened for theileriosis. Cattle with history of emaciation, frequent fever, chronic illness were selected for collection of peripheral blood and lymph node aspirates for smears preparation. The observed clinical signs were absence of rumination, anorexia, loss of milk yield, melena, depressed demeanour, emaciation, abdominal guarding, pale mucous membranes, hyperthermia, lymphadenopathy, kyphosis, tachypnea, dyspnea, hypothermia and dependent oedema. The serum biochemical parameters were mentioned in the Table 1. A significant decrease ($P<0.01$) in serum albumin, A/G ratio, calcium and significant decrease ($P<0.05$) in phosphorous, sodium, potassium, chloride and significant increase ($P<0.01$) in globulin, AST, bilirubin, BUN, creatinine were noticed in when compared to the apparently healthy cattle. Giemsa's staining was carried out and examined the smears under oil immersion lens at 100x magnification of microscope. Benzidine test was selected to assess the presence of occult blood in dung.

Theileriosis was identified based on the presence of intra-erythrocytic piroplasms of *Theileria annulata* in stained blood smears. Confirmation of the abomasal ulcers was done by positive benzidine test results by development of blue or blue-green colour. Necropsy was carried out on two cattle which died during the study period and the serosal surface of abomasum showed varied degree of congestion, hemorrhages, mucosal surface revealed diffuse hyperaemia, round to oval shaped and linear abomasal ulcers and multifocal necrotic lesions on the abomasal rugae (Fig 1a and 1b). Histopathology revealed mucosal epithelial detachment, necrosis, loss of mucosal lining epithelial cells, infiltration of mononuclear cells in glandular portion of mucosa and submucosal edema. Degeneration, desquamation of glands, goblet cell hyperplasia, and congested blood vessels in the mucosa was noticed (Fig. 2a and 2b).

In the present study confirmation of the theileriosis was done by demonstration of piroplasms and it was in association with the Aktas *et al.* (2006) and Ramazan and Ugur (2006). Durrani *et al.* (2008) and Bhosale *et al.* (2020) stated that high fever, swelling of sub mandibular and sub scapular lymph nodes, increased respiration rate and pulse rate, anorexia, loss of condition, pale conjunctiva and anemia observed in cattle with theileriosis. In the present study positive benzidine test was appreciated in the cattle with abomasal ulcers and it was associated with Hund and Wittek (2018). The histopathological findings in the present study are in agreement with Tharwat and Ahmed (2012) and Tajik *et al.* (2012).

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Fig.1a and 1b. Post mortem examination of abomasum

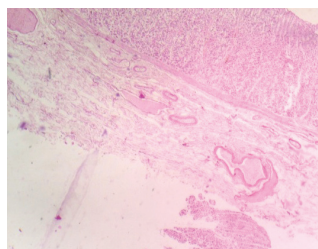


Fig.2a Section of abomasum showing necrosis, loss of mucosal lining epithelial cells, infiltration of mononuclear cells in glandular portion of mucosa and submucosal edema. H&E:40

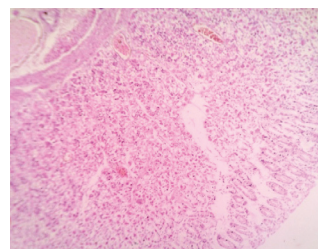


Fig.2b Section of abomasum showing the degeneration, desquamation of glands, goblet cell hyperplasia, and congested blood vessels in the mucosa. H&Ex100

Table 1: Serum biochemical examination in buffaloes with theileriosis associated with abomasal ulcers

S.No.	Parameter	Apparently healthy cattle (6)	Theileriosis associated with abomasal ulcers (6)	P value
1.	Total protein (g/dL)	6.33 ^a ±0.24	6.42 ^a ±0.12	0.065 ^{NS}
2.	Albumin (g/dL)	2.94 ^b ±0.23	1.66 ^a ±0.03	0.002 [*]
3.	Globulin (g/dL)	3.39 ^a ±0.12	4.76 ^b ±0.04	0.003 [*]
4.	AST (IU/L)	58.33 ^a ±4.12	812.5 ^b ±4.08	0.089 [*]
5.	Bilirubin (mg/dL)	1.21 ^a ±0.64	1.66 ^b ±0.09	0.038 [*]
6.	BUN (mg/dL)	26.34 ^a ±1.11	37.31 ^b ±2.09	0.033 [*]
7.	Creatinine (mg/dL)	1.87 ^a ±0.21	2.61 ^b ±0.31	0.021 [*]
8.	Calcium (mg/dL)	9.88 ^b ±0.51	6.68 ^a ±0.33	0.006 [*]
9.	Phosphorous (mg/dL)	5.37 ^b ±0.23	3.47 ^a ±0.07	0.034 [*]
10.	Sodium (mEq/L)	142.39 ^b ±7.06	134.9 ^a ±5.01	0.035 [*]
11.	Potassium (mEq/L)	4.64 ^b ±0.21	4.28 ^a ±0.07	0.038 [*]
12.	Chloride (mEq/L)	102.29 ^b ±3.54	81.09 ^a ±3.08	0.021 [*]

*P<0.05; **P<0.01; ^{NS}P>0.05; Columns bearing different superscripts differ significantly

Acknowledgements

The authors are highly thankful to the Dean, Sri Venkateswara Veterinary University, Tirupati for the facilities provided.

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