TROPICAL BOVINE THEILERIOSIS IN CATTLE OF UDAIPUR IN SPECIAL REFERENCE WITH CLINICAL SIGNS

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ABSTRACT

Present study was carried out in 836 calves suffering with tropical theileriosis and clinical signs manifested were investigated. In these calves most common clinical sign recorded were swollen pre scapular lymph nodes and tick infestation in 89.95 per cent, fever in 82.89 per cent cattle, anorexia in 78.70 per cent cases and depression in 69.97 per cent cases. Anaemia was recorded in 60.88 per cent cases. Least common clinical signs recorded associated with tropical theileriosis were constipation (28.94%), dyspnoea (24.76%), conjuctival hemorrhage (20.93%), prefemoral lymph node swelling (9.56%) and haemoglobinuria (1.07%).

Key words: Calves, tropical bovine theileria, udaipur

Introduction

Tick-borne diseases are of great economic importance in livestock. These ticks transmit many pathogens, including bacteria, viruses, rickettsia and protozoa resulting in important infections of both humans and animals. Tick-borne diseases like the protozoa *Theileria* and *Babesia spp*. induce piroplasmosis and the bacterium Anaplasma (genogroup of Ehrlichia) results in anaplasmosis (Camus and Uilenberg, 2010).

In Udaipur, tropical theileriosis is the most prevalent infection in cattle, followed by anaplasmosis and babesiosis. Of these three enzootic diseases, tropical theileriosis remains by far the dominant summer disease. Symptoms of theileriosis is expressed mainly by gluttony followed by anorexia, febrile generalized lymphadenitis and anaemia (Narladkar *et al*., 2005; Ziam *et al*., 2016). Babesiosis is characterized by a haemolytic anaemia, icterus, haemoglobinuria and shock. These diseases induce major economic losses due to weight loss, decreased meat and milk production, the prohibitive cost of treatment, abortions, high morbidity and mortality (Figueroa *et al.,* 2010; Gharbi *et al*., 2011).

Observation of cattle for clinical signs in Theileriosis

Suspected animals for Theileriosis were investigated in and around Udaipur on the basis of visible clinical symptoms and presence of tick infestation. The age, breed, sex, season and month of collection etc. were recorded regularly.

A total of 836 cattle showing clinical signs of piroplasmosis such as hyperthermia, lymph node enlargement, agalactia, haemoglobinuria, icterus and gluttony followed by pronounced anorexia were included in the study. Clinical examination, Giemsa stained blood smears, pathogen identification and treatment of animals were done as described previously (Ziam *et al*., 2017). Briefly, blood smears were made from the ear vein of each suspected sick animal, fixed in methanol, stained with Giemsa and examined under a microscope using an oil-immersion ×100 objective. At least, 100 microscopic fields were carefully examined for blood forms of spp., *Theileria* spp. and *Babesia* spp. An animal was considered positive when showing the presence of one or more of these pathogens. *Theileria annulata* positive animals were treated with buparvaquone (ButalexTM, Schering-Plough) at a dose of 2.5 mg/kg.

In the present study details of clinical signs exhibited by the animals were noted and are presented in Table 1. Infected cattle showed pyrexia (102.5-106°F), enlargement of superficial lymph nodes (parotid, prescapular and prefemoral), nasal and ocular discharges, salivation, anaemia, conjunctival haemorrhages, depression, anorexia, reduction in milk yield and respiratory distress. Constipation followed by diarrhoea was also recorded and in few acute cases of the disease haemoglobinuria was also recorded with heavy parasitemia.

Out of 836 clinically affected animals, 693 (82.89%) animals showed high rise in temperature, 752 (89.95%) animals

Table 1: Clinical manifestations observed in Theileriosis infected animals

S. No.	Symptoms Exhibited by cattle/Suspected for Theileriosis	Total No. of cattle screened	No. of cattle positive for the symptoms	Percentage
1.	Rise in Temperature/Fever	836	693	82.89
2.	Swollen superficial lymph nodes	836		
a.	Parotid		00	00.00
b.	Pre-scapular		752	89.95
c.	Pre- femoral		80	9.56
3.	Discharges	836		
a.	Drooling of Saliva		376	44.97
b.	Lacrimation		275	32.89
4.	Anorexia/off fed	836	658	78.70
5.	Emaciation	836	451	53.94
6.	Conjunctivalhaemorrhages	836	175	20.93
7.	Digestive disturbances	836		
a.	Diarrhoea		585	69.97
b.	Constipation		242	28.94
8.	Reduced milk yield	836	373	44.61
9.	Haemoglobinuria	836	9	1.07
10.	Anaemia	836	509	60.88
11.	Dyspnoea	836	207	24.76
12.	Tick infestation	836	752	89.95
13.	Depression	836	585	69.97

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Fig. 1: Tick infestation in cattle

Fig. 2: Emaciation, diarrhoea and depression in theileriosis

showed swollen superficial pre scapular lymph nodes, whereas, 80 (9.56%) cases showed swollen pre femoral lymph nodes. None of them showed parotid lymph node swelling Salivation in 376 (44.97%) and lacrimation was recorded in 275 (32.89%) animals and 658 (78.70%) animals were found to be anorexic.

Emaciation (Fig. 2) was observed in 451 (53.94%) animals and conjunctival haemorrhages were observed in 175 (20.93%) animals. Diarrhoea (Fig. 2) was recorded in 585 (69.97%) animals and 242 (28.94%) animals showed constipation. Reduction in milk yield was observed in 373 (44.61%) animals. Other non-significant signs like haemoglobinuria, anaemia and respiratory symptoms were observed in 09 (1.07%), 509 (60.88%) and 207 (24.76%) cases, respectively. Out of 836 clinically affected animals, 752 (89.95%) animals were infested with ticks (Fig. 1). Depression (Fig. 2) was encountered in 585 (69.97%) animals.

Results and Discussion

Haemolytic anaemia syndrome is a specific clinical sign of tropical theileriosis, and confirms our results that anaemia (IR = 1, see Table 4) is a specific symptom in young Holstein and Montbeliard cattle with tropical theileriosis (Gharbi *et al*., 2012; Ziam *et al.,* 2016). Icterus (IR = 0.84) and haemoglobinuria (IR = 0.51) have been well observed and are suggestive symptoms of t ropical theileriosis. Icterus was seen in the early stages of tropical theileriosis as confirmed by an IR = 0.84 and haemoglobinuria appears towards the final phase of the disease (IR = 0.51) similar to the results reported by Darghouth *et al.* (2003). This symptom is the result of haemolysis, induced by merozoïtes of *T. annulata*, followed by excretion of haemoglobin in urines (Gharbi *et al*., 2012). The other most frequently reported symptoms were hyperthermia (40.5°C) and lymph node enlargement, which are relatively non-specific, because relapse of tropical theileriosis or reinfection with a new genotype of the parasite induces a transient superficial lymph node enlargement, difficult to assess during palpation, making clinical diagnosis of the disease difficult. For practitioners as well as for farmers, tropical theileriosis is often fatal disease for old dairy cattle showing atypical clinical symptoms. In situations of cows with post-natal stress or animals re-infected with a new parasite strains, an atypical disease course might result with fleeting lymph node enlargement and subclinical parasitaemia, taken misleadingly as babesiosis (Ziam *et al*., 2017). Therefore, inclusion of lymph node smears is a necessary diagnostic tool, but breeders are often reluctant to lymph node puncture

Tropical theileriosis (*T. annulata*) generally resembles East Coast fever, but these parasites also destroy red blood cells, causing anaemia and, in some cases, jaundice or haemoglobinuria. Petechiae are often found on the mucous membranes, and haemorrhagic diarrhoea may be seen in the late stages. Some animals abort. In at least two cases, new borns appeared normal at birth but developed clinical signs within a few days, probably from infections acquired *in utero*. Neurological signs have been documented in some terminally ill water buffalo, but turning sickness does not seem to be a feature of tropical theileriosis in cattle.

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