



Prevalence of Tropical Theileriosis in Cattle in Chhattisgarh State

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ABSTRACT

The present study was conducted to record the prevalence of Bovine Tropical Theileriosis (BTT) caused by the protozoan parasite, *Theileria annulata* in cattle. Animals were screened on the basis of clinical signs like fever, anorexia, with or without superficial lymph node enlargement, blood smear and lymph node biopsy examination for presence of *Theileria annulata*. Out of 150 cattle screened, 35 (23.33%) were found to be positive for Tropical theileriosis. The prevalence of Tropical theileriosis was higher in female (25.45%) than male (17.5%). The prevalence of Tropical theileriosis in cattle in respect to age showed highest prevalence (24.34%) in adult cattle of above 3 years age, followed by 23.80 % in the age group of 1 to 3 years and 14.28% in 0 to 1 year. The prevalence of Tropical theileriosis in respect to breed was maximum in HF cross (29.85 %) followed by 23.33 % in Jersey cross, 15.38 % in Sahiwal, and 14.81% in Gir.

Keywords: Tropical theileriosis, cattle, prevalence

Among the four major tick borne diseases affecting cattle, Bovine Tropical Theileriosis (BTT) caused by the protozoan parasite, *Theileria annulata* is prevalent in most of the countries of tropical and sub tropical zones across Northern African, West and East Asia including Indian subcontinent as endemic disease (Chen *et al.*, 2000). Tropical Theileriosis is transmitted by tick vector *Hyalomma anatolicum anatolicum*. *Theileria spp* are small round, ovoid, irregular or bacilliform shaped parasites with an apical complex comprised only of rhoptries. *Theileria sp* can be found in both erythrocytes and lymphocytes of their host. The parasite is associated with infections which range from clinically inapparent to rapidly fatal (Darghouth *et al.*, 1996). Losses in terms of vaccination and treatment cost, reduction in live weight of sub-clinical cases, mortality in animals, increase in inter calving interval, reduction in milk yield, delay in the age of maturity of affected female animals have been reported in tropical theileriosis (Gharbi *et al.*, 2006). The mortality rate with *T. annulata* may reach 70% with case fatality rate of 10-20% in calves while due to *T. parva* the mortality rate of 100% has been recorded in exotic cattle (Moorehouse

et al., 2001). The first clinical sign of theileriosis in cattle appears 7 to 15 days after attachment of infected ticks. The rise in temperature is rapid and is usually in excess of 103° F but may reach 106° F (Morrison, 2004). There will be anorexia, anaemia and loss of body condition. Other clinical signs may include lacrymation, corneal opacity, nasal discharge, dyspnea, and diarrhoea. Before death, the animal is usually recumbent, the temperature falls, and there is a severe dyspnea due to pulmonary edema. Diagnosis of clinical *T. annulata* infection in cattle is usually based on the detection of theileria piroplasm in r.b.c and schizont in lymphocyte and macroschizonts in Giemsa's-stained lymph node biopsy smears in live animals and impression smears of lymph node and spleen in dead animals (Aktas *et al.*, 2001). The present study was undertaken to record the prevalence of Tropical theileriosis in crossbred and indigenous cattle in Durg region of Chhattisgarh..

MATERIALS AND METHODS

A total of 150 cattle (cross-bred and indigenous) irrespective of sex and age having symptoms of fever, anorexia, with

or without superficial lymph node enlargement from different private/govt. dairy farms in and around Durg constituted the materials for this study.

Animals were screened for tropical theileriosis on the basis of clinical examination and presence of *Theileria annulata* parasite in the blood smear and/or schizont stage of parasite in lymph node biopsy smear examination. Suspected animals were examined to record the clinical signs pertaining to Tropical theileriosis like fever, anorexia, lymph node (prescapular, prefemoral) enlargement (unilateral or bilateral), pale conjunctival mucous membrane, increased respiratory rate and heart rate, decrease in milk yield, lacrymation, rumen motility, and nervous signs. Blood smears prepared immediately after collection of blood samples were stained with Giemsa's stain and examined under oil immersion for detection of *Theileria* piroplasm in red blood cells and schizont in the lymphocytes. The needle aspiration biopsy of prescapular lymph node was performed following standard technique and slide was prepared from aspirated material. The slide was examined after staining with Giemsa stained for the detection of macro schizont in lymphoblastoid cells. The prevalence of Tropical theileriosis in cattle was carried out in respect to age, sex and breed.

RESULTS AND DISCUSSION

Overall prevalence

Out of 150, 35 cattle were found to be positive for Tropical theileriosis indicating 23.33% overall prevalence (Table 1). The clinical signs recorded in affected animals were high fever, swelling of pre-scapular and pre-femoral lymph nodes, weakness, inappetence, lacrymation, pale conjunctival mucosae, increased respiration and pulse rate. Decreased milk yield and loss of body condition were also found in affected animals.

Sex wise prevalence

The prevalence of Tropical theileriosis in cattle in respect to sex was 25.45% in female and 17.5 % in male cattle indicating higher prevalence of Tropical theileriosis in female than male cattle. The present findings were in agreement with the reports of Song (2003), Atif *et al.* (2012), Durrani (2008) and Rajput *et al.* (2005) who

also recorded higher prevalence of *T. annulata* infection in female animals. The immunosuppression in advanced pregnancy and lactation in high producing animals are the possible reasons for the higher prevalence of Tropical theileriosis in female cattle (Kocan *et al.*, 2010). Moreover, the higher prevalence of Tropical theileriosis in female animals may be due to the fact that contaminated needles are commonly used for injecting drugs for milk let down.

Table 1: Prevalence of Tropical theileriosis in cattle in respect to sex, age and breed

Parameters		No. of animals examined	No. of animals positive	Prevalence %
Sex	Female	110	28	25.45
	Male	40	07	17.50
	Total	150	35	23.33
Age	0 to 1 year	14	02	14.28
	1 to 3 year	21	05	23.80
	Above 3 year	115	28	24.34
	Total	150	35	23.33
Breed	Sahiwal	26	04	15.38
	Gir	27	04	14.81
	Jersey cross	30	07	23.33
	HF cross	67	20	29.85
	Total	150	35	23.33

Age wise prevalence

Study on influence of age on prevalence of Tropical theileriosis in cattle showed that prevalence rate of tropical theileriosis was maximum (24.34%) in adult cattle of above 3 years age followed by 23.80 % in animals of 1 to 3 years and 14.28 % in 0 to 1 years. The present findings were in agreement with the findings of Ruprah (1985) and Roy *et al.* (2004) who reported highest prevalence in animals aged more than 3 years followed by the lowest prevalence in less than one year age group. The lowest prevalence in one year age might due to innate and acquired immunity.

Breed wise prevalence

The breed wise prevalence of Tropical theileriosis in cattle showed 15.38 % prevalence in Sahiwal, 14.81% in Gir, 23.33 % in Jersey cross and 29.85 % in HF cross. The

marked difference in prevalence rate of Tropical theileriosis in respect to breed was found in this study. Khan *et al.* (2004) reported higher prevalence of tick-borne disease in cross bred cattle (19.40%) than indigenous cattle i.e. Red Sindhi (17%) and Dhanni (14%) breeds. The European breeds are more susceptible to TBDs (Tick borne disease) due to higher infestation of ticks (Bock *et al.*, 1997; Glass *et al.*, 2003).

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