

# Prevalence of Bovine Tropical Theileriosis in Cattle in Quetta Balochistan-Pakistan

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## Abstract

The purpose of this study was to determine the prevalence of Bovine Tropical Theileriosis (BTT) in cattle, which is caused by the protozoan parasite *Theileria annulata*. Clinical symptoms such as fever, anorexia, with or without superficial lymph node enlargement, blood smear, and lymph node biopsy investigation were used to test the animals for the presence of *Theileria annulata*. Tropical theileriosis was discovered in 73 (24.33%) of the n=300 cattle that were examined. Females had a higher prevalence of Tropical Theileriosis 27.37% than males 19.09%. Tropical theileriosis prevalence in cattle was highest 28.33% in adult cattle older than 3 years, followed by 21.33% in the 1-to-3-year age group, and 13.33% in the 0-1 year age group. Tropical theileriosis was most common in the Holstein Friesian cross 30.53%, followed by 25.33 % in the Jersey cross, 23.33 % in the Sahiwal, and 15.71 % in the Red Sindhi.

**Keywords:** Tropical theileriosis; Cattle; Prevalence; Quetta

## Introduction

Bovine Tropical Theileriosis (BTT), caused by the protozoan parasite *Theileria annulata*, is an endemic disease in most tropical and subtropical nations across Northern Africa, West and East Asia, and the Indian subcontinent [1]. The tick vector *Hyalomma anatolicum* transmits tropical theileriosis. *Theileria* spp. are little round, ovoid, irregular, or bacilliform parasites with a rhoptries only apical complex. *Theileria* sp can be detected in their host's erythrocytes and lymphocytes. Infections caused by the parasite range from clinically inapparent to swiftly deadly [2]. In tropical theileriosis, losses in terms of immunization and treatment costs, reduction in live weight of sub-clinical cases, animal mortality, increase in inter-calving interval, milk output, and delay in the age of maturity of affected female animals have all been documented

[3]. *T. annulata* has a death rate of 70 % in calves, with a case fatality rate of 10-20 %, whereas *T. parva* has a mortality rate of 100% in exotic cattle [4]. Theileriosis in cattle manifests themselves clinically 7 to 15 days after infected ticks are attached. The temperature rises quickly, generally exceeding 103 °F but occasionally reaching 106 °F [5]. Anorexia, anemia, and a loss of body condition will occur. Lacrimation, ocular opacity, nasal discharge, dyspnea, and diarrhea are some of the other symptoms. The animal is normally recumbent before death, its temperature drops, and pulmonary edema causes severe dyspnea. *Theileria* piroplasm in RBC and schizont in lymphocyte and macroschizonts in Giemsa-stained lymph node biopsy smears in live animals and impression smears of lymph node and spleen in dead animals are commonly used to diagnose

clinical *T. annulata* infection in cattle [6]. The purpose of this study was to determine the frequency of Tropical theileriosis in crossbred and native cattle in the Quetta- Baluchistan.

## Materials and Methods

The materials for this study were n = 300 cattle (cross-bred and indigenous) of all sexes and ages exhibiting signs of fever, anorexia, with or without superficial lymph node enlargement from various dairy farms in and around Quetta, Balochistan. Clinical examination and detection of *Theileria annulata* parasite in blood smear and/or schizont stage of parasite in lymph node biopsy smear examination were used to screen animals for tropical theileriosis. Fever, anorexia, lymph node (prescapular, prefemoral) enlargement (unilateral or bilateral), pale conjunctival mucous membrane, increased respiration rate and heart rate, decreased milk supply, lacrimation, rumen motility, and nervous symptoms were all recorded in suspected animals. Blood smears were stained with Giemsa's stain and analyzed under oil immersion for *Theileria* piroplasm in red blood cells and schizont in lymphocytes shortly after blood samples were collected. The needle aspiration biopsy of the prescapular

lymph node was conducted according to standard procedure, and the aspirated material was used to make a slide. After staining with Giemsa, the slide was evaluated for the presence of macro schizont in lymphoblastoid cells. The frequency of Tropical theileriosis in cattle was investigated using age, sex, and breed as criteria.

## Results and Discussion

Prevalence in general Out of n = 300 cattle tested positive for Tropical Theileriosis, showing a frequency of 24.33%. High fever, enlargement of the pre-scapular and pre-femoral lymph nodes, weakness, in appetite, lacrimation, pale conjunctival mucosae, increased respiration, and pulse rate were all observed in the affected animals. Affected animals also had lower milk yields and a decrease of body condition.

### Prevalence by gender

The prevalence of Tropical theileriosis in cattle was 27.37 % in female cattle and 19.09 % in male cattle, showing that female cattle have a greater prevalence of Tropical theileriosis than male cattle (Table 1).

**Table 1:** Prevalence of Tropical Theileriosis in cattle in respect to gender.

Sex	Total Sample	No of Positive	Prevalence (%)
Female	190	52	27.37
Male	110	21	19.09
Total	300	73	24.33

The current findings were consistent with those of [7-10], who all found that female animals had a greater prevalence of *T. annulata* infection. The greater prevalence of Tropical theileriosis in female cattle could be due to immunosuppression during

advanced pregnancy and lactation in high-producing animals [11]. Furthermore, the higher prevalence of Tropical theileriosis in female animals could be related to the widespread use of contaminated needles for injecting milk let down medications.

### Prevalence by age

**Table 2:** Prevalence of Tropical Theileriosis in cattle in respect to Age.

Age	Category	Total Sample	No of Positive	Prevalence (%)
	0-1 year	45	6	13.33
	1-3 years	75	16	21.33
	3 and above	180	51	28.33

The prevalence of tropical theileriosis in cattle was found to be highest 28.33% in adult cattle over 3 years old, followed by 21.33% in animals 1 to 3 years old, and 13.33% in animals 0 to 1 year old in a study on the influence of age on the prevalence of tropical theileriosis in cattle (Table 2). The current findings were consistent

with those of [12,13] who found the highest incidence in animals older than 3 years and the lowest prevalence in animals younger than one year. Innate and acquired immunity may be to blame for the lowest occurrence among one-year-olds.

### Prevalence by breed

**Table 3:** Prevalence of Tropical Theileriosis in cattle in respect to Breeds.

Breed	Category	Total Sample	No of Positive	Prevalence (%)
	Red Sindhi	70	11	15.71
	Sahiwal	60	14	23.33
	Jersey	75	19	25.33
	Holstein Friesian	95	29	30.53

Tropical theileriosis in cattle was found to be prevalent in 15.71% in Red Sindhi, 23.33% in Sahiwal, 25.33% in Jersey cross, and 30.53% in Holstein Friesian cross cattle's (Table 3). This study discovered a significant difference in the prevalence rate of Tropical theileriosis by breed. According to [14], crossbred cattle have a greater prevalence 19.40% of tick-borne disease than indigenous cattle, such as Red Sindhi 17% and Dhanni 14% breeds. Due to a higher tick infestation, European breeds are more prone to Tick-borne diseases [15-17].

### Conflict of interests

The authors declare no conflict of interest for this research work.

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