

## Prevalence of Tropical Theileriosis in Khartoum State

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### ملخص البحث

لقد اعتمدت الدراسة على أعراض المرض وفحص مسحات دموية وأخرى من الغدد الليمفاوية لمعرفة مدى حدوث مرض الحمى المدارية بولاية الخرطوم ، وتناقش الورقة علاقة حدوث المرض مع العوامل الصحية والإدارية المؤثرة .

### Summary

Clinical symptoms, blood smears and lymph node biopsies were used to study the prevalence of tropical theileriosis in Khartoum State. The prevalence of the disease in relation to hygienic and managemental factors are discussed.

### Introduction

The presence of *Theileria annulata* in the Sudan was firstly confirmed in 1939. Thereafter it was reported from several districts of the country (Anon, 1914-1939). In due course, the impact of the disease was less than that of the concurrent epidemics of contagious diseases, and was clearly realized only when breed improvement programmes were adopted and exotic breeds of cattle introduced.

### Materials and Methods

A survey was carried out in Soba and Kuku areas of Khartoum. The site of the farm, breed, sex and age of the animals examined were recorded. The status of the farm as a contributing factor to the disease was observed and recorded. Eight farms (107 animal) in Soba and sixteen farms (193 animals) in Kuku were studied.

From each animal, two blood smears and lymph node biopsies were taken, stained with Giemsa and examined microscopically.

### Results

#### *Clinical cases reported during the period of the study:*

Ten animals (9.35%) in Soba and seventeen animals (8.81%) in kuku showed typical clinical signs and parasitaemia, which was detected in their blood films (Tables 1 and 2). These cases were reported from four farms out of eight in Soba that had infection rates of 4.76%, 14.29%, 33.33% and 33.33%. In kuku, clinical cases were

reported from eight farms out of the sixteen examined; they showed infection rates of 7.14%, 8.71%, 9.09%, 10.33%, 10.53%, 13.64%, 28.57% and 50%.

The encountered clinical signs were general weakness, elevated body temperature (39-42°C), lacrimation, diarrhoea and enlargement of the superficial lymph nodes. Pale, congested to icteric mucous membranes were also seen. Typical clinical picture was more commonly observed in calves below six months of age.

***Prevalence of the disease:***

Tables 3 and 4, show that 43% of the animals in Soba and 41.45% in kuku had theileria parasite in their blood. The prevalence within the breeds in Soba was 43.3% 45.1% and 38.5% in local, cross and foreign breeds, respectively. With regard to age, the prevalence was 42.1% in animals less than two years old, 44% in those between two to five years as well as over five years (Table 5).

In Kuku area the prevalence was 54.5% in local and 38.8% in crossbred animals. No foreign breeds were present during the period of study. With regard to age, the prevalence was 37.9%, 65.2% and 38.9% in animal less than two years, two to five years and over five years, respectively (Table, 6).

**Table 1:** Clinical cases of Theileriosis in different breeds and age groups of cattle in Soba area.

Breed	Age	Sex	Piroplasms	Schizont	%positive
Local	5 days	Male	+	+	2/30
	6 days	Female	+	+	(6.67)
Cross	4 months	Male	+	-	
	8 months female	“	+	-	
	8 months	Female	+	+	
	4 years	Female	++	-	7/51
	4 “	“	+	+	(13.73)
	5 “	“	+	-	
Foreign	2weeks	Male	+++	-	1/26 (3.85)

- = Negative, +, ++, +++ = mild, moderate and severe infection, respectively, No/No = No positive/no examined, ( ) = percentage positive

**Table 2:** Clinical cases of Theileriosis in different breeds and age groups of cattle in Kuku area.

Breed	Age	Sex	Piroplasms	Schizont	% positive
Local	1 year	Male	+	-	3/33
	2 "	Female	++	-	(9.09)
	8 "	"	+	-	
Cross	1 months	Female	+++	++	
	1 months	"	++	+	
	2 months	male	++	+	
	2 month	"	++	+	
	2 "	male	+	-	
	2 "	female	+	+	
	3 months	Male	-	+	14/160
	3 "	Female	+	+	(8.75)
	7 "	"	+	+	
	8 month	Male	+	+	
	9 "	Female	+	+	
	1.5 year	Male	+	+	
	4 year	"	+	+	
6 year	female	+	+		
Foreign	-	-"	-	-	-

- = No parasite seen + = mild infection  
 ++ = Moderate infection +++ = high infection

**Table 3:** Farm prevalence of Theileriosis in Soba area as shown by blood smears and lymph node biopsies.

Farm code	Animals investigated		% positive
	Total	No. positive	
Soba 1	14	5	35.7
Soba 2	9	6	66.7
Soba 3	7	5	71.43
Soba 4	15	8	53.4
Soba 5	12	5	41.7
Soba 6	21	10	47.62
Soba 7	18	7	38.9
Soba 8	11	0	0
<b>Total</b>	<b>107</b>	<b>46</b>	<b>43</b>

*Prevalence of Tropical Theileriosis in Khartoum State.*

**Table 4:** Farm prevalence of Theileriosis in Kuku area as shown by blood smears and Lymph node biopsies.

Farm code	Animals investigated		% positive
	Total	No. positive	
Kuku 1	22	10	45.5
Kuku 2	14	11	78.6
Kuku 3	15	9	60
Kuku 4	11	2	18.2
Kuku 5	7	5	71.4
Kuku 6	23	12	52.2
Kuku 7	19	8	42.1
Kuku 8	9	3	33.35
Kuku 9	4	0	0
Kuku 10	8	6	75
Kuku 11	11	1	9.1
Kuku 12	7	2	28.6
Kuku 13	10	4	40
Kuku 14	8	3	37.5
Kuku 15	18	0	0
Kuku 16	7	4	57.1
<b>Total</b>	<b>193</b>	<b>80</b>	<b>41.45</b>

**Table 5:** Prevalence of Theileriosis as shown by blood smears and lymphnodes biopsies in different breeds and age groups of cattle in Soba area.

Breed	Age groups*			Total
	< 2 years	2-5 years	> 5 years	
Local	7/15 (46.7)	2/6 (33.3)	4/9 (44.4)	13/30 (43.3)
Cross	9/26 (34.6)	8/12(66.7)	6/13 (46.2)	23/51 (45.1)
Foreign	8/16 (50)	1/7 (14.3)	1/3 (33.3)	10/26(38.5)
Total	24/57 (42.1)	11/25 (44)	11/25 (44)	64/107 (42.9)

\* No positive/no examined (percentage positive)

**Table 6:** Prevalence of Theileriosis as shown by blood smears and lymphnodes biopsies in different breeds and age groups of cattle in Kuku area.

Breed	Age groups*			Total
	< 2 years	2-5 years	> 5 years	
Local	7/15 (46.7)	5/7 (71.4)	6/11 (54.5)	18/33 (54.5)
Cross	37/101 (36.6)	10/16 (62.5)	15/43 (34.9)	62/160 (38.8)
Total	44/116 (37.9)	15/23 (65.2)	21/54 (38.9)	80/193 (41.5)

\*\* No positive/no examined (percentage positive)

### Discussion

According to Shommein (1976) the incidence of the disease in a single farm was 10.46%. In this study the active clinical cases within farms ranged between 0 and 33.3% in Soba area and 0 and 50%

in kuku, with an over all average of 9.38% and 8.81% in Soba and kuku areas, respectively; indicating a little difference between the two localities.

With regard to breed, in Soba area the rate of clinical cases was high in cross bred animals and low in foreign breeds, while in kuku, the prevalence in local breeds was higher than that of the cross ones. This result does not agree with Sisodia and Mandial (1986) who attributed high incidence in organized farms to greater susceptibility of high yielders that are usually kept in these farms. In this study low incidence among exotic breeds may be related to good management, where foreign breed are well attended to. However, from previous observations and contact with farm owners, it is realized that any break in the tick control regime in such farms causes fatal form of the disease.

The reason, why local breeds were more affected than cross ones in kuku may be due to active exchange and replacement of herd individuals by animals from different parts of the country without being examined or treated. This situation, in addition to the poor management, might have contributed to the prevalence of the disease.

The presence of cross-bred animals with the local breeds in the same farm, is a prelude to the relatively high prevalence in cross bred animals. According to Osman (1989) upgrading of cattle in the way practised now in Sudan, lowers the innate tolerance of herds to ticks and tick-borne diseases.

The presence of low-grade parasitaemia unaccompanied by clinical signs is indicative of a carrier state, though *T. mutans* could not be excluded as it is reported by the FAO (1983). However, these results agree with the findings of Bansal *et al.* (1987) who found that animals of all age groups were carrier showing sub-clinical rather than clinical infection.

Our result demonstrated that in the presence of the vector ticks, the disease occurs irrespective of location, breed or age. The observed variation is mainly a function of farm management. Accordingly, the disease was found to vary from one farm to another within the same area. However, the disease situation needs to be verified further through long-term investigations.

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