

**STUDIES ON THE INCIDENCE OF TRYPANOSOMOSIS IN  
SEDENTARY CATTLE AT  
UMBENEIN & ABU NAAMA AREAS  
(SINGA AREA, SINNAR STATE, SUDAN)**

By

**MOHAMMED ABDELSALAM ABDALLA,<sup>1</sup> AND KHITMA  
HASSAN ELMALIK<sup>2</sup>**

**ABSTRACT:**

Trypanosomes were diagnosed using the microhaematocrit centrifugation technique. *Trypanosoma vivax* was diagnosed in cattle throughout the year, the infection rates were highest in October and November. In this study the incidence rates were variable ranged between 00.00% and 2.05 at Abu Naama and ranged between 00.00% and 1.00% at Umbenein.

الملخص:

نوع المتقيبات التي تم الكشف عليها بوساطة الاختبار الترسيبي بالأنايبب الشعرية كانت من نوع *Trypanosoma vivax*. وقد تم الكشف عن هذا النوع طوال العام. تراوحت نسبة الإصابة أثناء الدراسة بين صفر% و 2,05% في أبونعامة بينما في ام بنين تراوحت بين صفر% و 51%.

**INTRODUCTION:**

Animal trypanosomosis is of economic importance in the Sudan. It does not only affect the distribution of cattle, but also the distribution and even habits of the principal tribes (1). In Bahar ElGazal and Equatoria states, the disease is so sever that cattle are not kept in tsetse areas. However, it is in the central region outside the tsetse fly belt, animal trypanosomosis main incidence, usually in the cattle of the nomadic tribes of the central Sudan (The Baggara in Kordofan

<sup>1</sup>College of Veterinary Medicine and Animal Production . SUST

<sup>2</sup>Faculty of Veterinary Science, University of Khartoum

and Darfur states, Kennana, Rufaa, Seliem of the Blue and White Nile states. These nomads trek their animals from the tsetse free open grass plains into the fly-infested Savannah woodland for dry season grazing where their cattle become infected with trypanosomes.

Were natural infection of trypanosomosis in humans appears strictly associated with tsetse, animal trypanosomes: *T. vivax*, *T. congolense* and *T. brucei* are transmitted mechanically by blood-sucking flies. This occurs during the rains when cattle have returned for the wet season grazing in central Sudan. Thus a wide zone of disease transmission, reaching as far north as Khartoum, was established.

Among the infection of cattle, the types of distribution noted by various authors also obtained in the Sudan. In cattle recently exposed to direct infection in the tsetse belt *T. congolense*, is predominant, but as distance from tsetse area increases so does the proportion of infections due to *T. vivax* (2). This presumably is an effect of mechanical transmission acting with much ease on *T. vivax* than on *T. congolense*.

In this paper incidence of trypanosomosis is reported sedentary cattle at Singa area (Umbenein and Abu Naama, Sennar State, Sudan).

#### **MATERIALS AND METHODS:**

The study was conducted from April to May at Umbenein and Abu Naama about 12 to 50 km South of Singa, the capital town of Sennar state, central Sudan. The geography, climate and vegetation off the area of the study were described by Abdellah (3).

#### **EXPERIMENTAL ANIMALS:**

About 200 and 300 head of cattle were used at UmBenein and Abu Naama, respectively. The majority of cattle were of the Kenana breed, but a few were crosses of Butana X Kenana and Kenana x Friesian breeds. These mixed breeds constituted about 2% of the total animals examined. In both stations most cattle were milking cows with a few heifers, bulls and calves. No attempt was made to classify these animals into different breeds, age groups or sex.

**TRYPANOSOMES INFECTION:**

Blood from the peripheral ear vein of each animal was collected monthly into heparanized microhaematocrit centrifuge capillary tube. After centrifugation the buffy coat examined for trypanosomes under a phase-contrast microscope as described by Hall, et al (4). To confirm the buffy coat diagnosis a blood film from the same animal was stained with Giemsa and examined.

**RESULTS:**

Examination of blood samples from the two study sites indicated that cattle were infected with *Trypanosome vivax* only, albeit at a very low rate, ranged between 0 - 2% with a highest records in October and November. Table (1-2).

**Table (1) Monthly Incidence rates of Trypanosomosis at Um Benein**

Months	No. of animals examine	No. of positive	Incidence Rate (%)
May	200	00.0	00.0
June	200	00.0	00.0
July	200	1	0.5
August	199	1	1
September	198	00.0	00.0
October	196	2	0.5
November	194	2	1
December	192	1	0.5
January	191	1	0.5
February	190	1	0.5
March	189	1	0.5
April	188	1	0.5
Mean incidence	per annum	x±SE 1.2±0.44	x±SO 0.6±0.22

**Table (2) Monthly Incidence rates of Trypanosomosis at Abu Naama**

Months	No. of animals examine	No. of positive	Incidence Rate (%)
May	300	00.0	00.0
June	300	1	0.3
July	299	1	0.3
August	298	1	0.3
September	297	1	0.3
October	296	4	1.35
November	292	6	2.05
December	286	2	0.69
January	284	3	1
February	281	1	0.3
March	280	2	0.3
April	279	1	0.3
Mean incidence	per annum	x±SE 2.09±1.64	x±SO 0.65±0.59

#### DISCUSSION

Trypanosomosis is continuously reported from most parts of the Sudan (5,6,7,4,8,9,10,11). In this study the incidence rates were variable ranged between 00.00% and 2.05% at Abu Naama and ranged between 00.00% and 01.00% at UmBenein. This agrees with Hall *et al* (1983).

Possible source for trypanosomosis infection within the herds are sheep and goats (12) It was observed that sheep and goats may act as a reservoir of *T.congolense* and *T.vivax*. Sheep and goats share common pasture with herds under investigation in the study area.

The description of the trypanosomosis in the area of the study appears to offer a logical explanation of the findings and observations, but it is suitable to consider alternative sources of infection, namely, the presence of low tsetse fly population density. (13) Stated that " On the African continent there is no clear evidence of nagana trypanosomosis in absence of influence of tsetse" (4)

undermined the role of tabanids as mechanical transmitters of trypanosomosis.

Evidence indicates that the study area is far away from the tsetse area. (14). The intensification of land use and animal husbandry practice in the study area destroyed the biotopes suitable for tsetse and improved conditions for tabanids.

For control of trypanosomosis in the study area, it is suggested using of trypanocidal drugs seasonally at the beginning of the rainy season (Rushash) and also occasionally to treat positive cases, since frequent application leads to selection of drug resistant Trypanosome spp

#### REFERENCES

- (1) Lewis, D.J., (1949). Sudan notes and records. 12, 35-47.
- (2) Leeflang, P. (1975). The predominance of *Trypanosoma vivax* infection of cattle at a distance from Savannah tsetse concentration. Trop. Anim. Hlth. Prod. 7, 201-204.
- (3) Abdalla, M.A. (1997). Study on Incidence of trypanosomiasis in sedentary cattle and seasonality of biting flies at Signa area, Sennar State, Sudan. Thesis University of Khartoum.
- (4) Hall, M.J.R., Kheir, S.M., Rahman, A.H. and Noga, S., (1983) Trop. Anim. Helth. Prod. 15:191-206.
- (5) Lewis, D.J., (1953). Bull. Entomo. Res. 44:179-211.
- (6) Elkarib, A.E. (1961). Animal Trypanosomiasis in Sudan J. Vet. Sci. Anim. Husb 2:39-46.
- (7) Yagi, A.I. and AbdelRazig, M.T., (1972). Bull. Epi. Dis. Afri. 20: 289-290
- (8) Rahman, A.h., Abdoon, A.M., Elkhider, M.F. and Hall, M.J.R., (1990-1991) A tsetse and trypanosomiasis survey of south Kordofan province Sudan. I. Bovine Trypanosomiasis. Sud. J. Vet. Res. 10, 1-20.
- (9) Homeida, T.A. (1993) Some epidemiological studies on animal trypanosomiasis at Sennar, Kosti and Eldueim district (Central state Sudan) M.V. Sc. Thesis U. of K, Sudan.

- (10) **Mohamoud, M.M; Ismail, A.A; Elmalik, K.H; Musa, M.M. and Rhman, A.H.A. (1993)** Animal trypanosomiasis: The Sudan situation. In: OUA?STRC. 1993 p.87.
- (11) **Kheir, S.M., Abdella, H.S. and Rahman A.H. (1995).** A study on tsetse and Tabanidae flies in southern-Eastern Sudan. Sud.J.Vet.Sc.AnimHusb.34 (1&2) p.22-28
- (12) **Khitma, H. Elmalik, H. and Mohamoud, M.M. (1978)** Properties an pathogenesis of *T.cogolense*, *T. vivax* and *T.evansi* Sud.J.Ve.Sci.Anim.Husb19(1):1-7.
- (13) **Wells, F.A.** The importance of mechanical transmission in epidemiology of nagana: A review Trop. Anim. Hilth. Prod. 4:74-88.
- (14) **Mohammed-Ahmed, M.M.(1989).** Distribution of Tsetse in Kurmuk Distric, Blue Nile Province-Sudan. Sud.J.Vet.Sci Anim.Husb.28(1).