

BOVINE TRYPANOSOMOSIS IN SEDENTARY CATTLE AT PREVIOUSLY ASSUMED TRYPANOSOMA-FREE JOS PLATEAU, NIGERIA

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SUMMARY

The occurrence of trypanosomosis was investigated in sedentary Bunaji (*Bos indicus*) cattle grazing at 5 different villages of Barkin Ladi Local Government Area of Plateau State, Nigeria. Two hundred cattle was examined, 76 (38.0%) of which had trypanosome infection. Three species, *Trypanosoma vivax* (78.9%), *T. Congolense* (15.8%), and *T. brucei* (5.3%) were encountered. More males (42.9%) than females (31.8%) were affected while animals of 3-5 years age cohort had the highest infection rate of 46.7%. The existence of trypanosome infections in sedentary cattle populations of the Jos Plateau seem to suggest that the area which was previously assumed to be Trypanosoma-free may have acquired infection status.

KEY WORDS: Trypanosomosis, Bovine, Sedentary, Plateau State, Nigeria.

INTRODUCTION

Trypanosomosis is a major constraint to the development of livestock keeping in tropical and sub-Saharan Africa (W.H.O. 1986). In Nigeria, trypanosomosis is probably one of the most important diseases of cattle. It is estimated that about 75% of the country's pastureland is tsetse infected, with only the far north and parts of Jos and Mambilla Plateaux being free (ILCA, 1984). Majority of Nigeria's cattle are therefore found in the tsetse free zones. The nomadic Fulani pastoralists have exploited the tsetse free environment of the Jos Plateau, for the grazing of their animals for centuries.

Recently however, Agu *et al.* (2001) reported the presence of moderate levels of trypanosomosis in cattle grazing in Plateau State. It is however not clear whether such moderate occurrence of trypanosomosis in sedentary cattle on the Jos Plateau is a

consistent trend reflecting changes in the environmental factors that favour the bionomics of the vector of the disease. It is therefore necessary to understand the extend and magnitude of this phenomenon in all cattle populations grazing at the different sites on the Plateau in order to properly document the current trypanosomosis status of the area.

This present study reports the occurrence of bovine trypanosomosis in Barkin Ladi Local Government Area of Plateau State, Nigeria, previously assumed to be tsetse and trypanosome free.

MATERIALS AND METHODS

Study area

Barkin Ladi Local Government Area of Plateau State lies between longitude 10⁰8' E and 11⁰2' E on latitude 7⁰5'. The vegetation is mainly guinea savannah with two distinct

seasons: the wet and dry seasons occurring. The wet season extends from April to September while the dry season runs through the remaining part of the year. Mean annual rainfall ranges from 152 to 205 cm on the average, while temperature ranges between 20 – 21⁰C, but may rise up to 28⁰C in April. The topography consists of chains of granite hills interrupted by stretches of valleys containing fast flowing streams. The inhabitants practise a mixture of subsistence arable farming and rearing of cattle, sheep goats, chicken and pigs.

Collection and examination of samples

A total of two hundred (200) apparently healthy Bunaji (*Bos indicus*) cattle grazed at five different villages in Barlin Ladi Local Government Area were randomly selected and used for the study. Forty cattle each were sampled at Zadiyen, Riyim and Dajack, while 20 and 60 were examined at Sopp and Bachit, respectively. The study was carried out during the early rainy season (ERS) period of April to June. The selected animals were routinely restrained and blood collected by jugular venipuncture into sterile ethylene diamine tetracetate (EDTA) treated vials for parasitological examination within 3 hours of their collection.

The age of each animal was determined by estimation of dentition (Andrews, 1990), while the sex was also noted. The blood samples were examined by dark ground (DG) buffy coat parasitological method described by Murry *et al.* (1977). Slides, which showed trypanosome

parasites were stained with giemsa. Species identification was based on speed and type of movement as well as morphology of the stained organisms (Shah-Fisher and Say, 1989).

Analysis of data was carried out using simple averages, ratios and percentages to determine trends across sex and age in relation to trypanosomosis.

RESULTS AND DISCUSSION

The trypanosome infection rates in 5 different villages of Barkin Ladi Local Government Area of Plateau State are shown in Table I. The study shows that 38.0% of the animals examined were positive for different species of *Trypanosoma* organism. This figure is higher than the 6.21% and 11.7% returned by Kalejaiye and Omotainse (2000) and Kalejaiye *et al.* (2001) during the dry season for cattle grazing at Riyom and Bikkos Local Government Areas, respectively on the plateau. Season has been shown to play very important role in the prevalence of tropical parasitic diseases (Okoli *et al.*, 2000) and thus may be responsible for the varying data reported by the different studies. The present study was executed during the early rain season (April – June), which usually coincides with greater activity of the glossina vector and thus higher incidence of the disease (Kalu *et al.*, 1991).

TABLE I: Incidence of *Trypanosoma* species in cattle grazing at Berlin Ladi L.G.A. of Plateau State, Nigeria

Villages	No. Examined	No. (%) infected	Species of Trypanosome		
			<i>T. vivax</i>	<i>T. brucei</i>	<i>T. congolense</i>
Zadiyen	40	20 (50.0)	12 (60.0)	4 (20.0)	4 (20.0)
Sopp	20	12 (60.0)	8 (66.7)	0 (0.0)	4 (33.3)
Bachit	60	20 (33.3)	16 (80.0)	0 (0.0)	4 (20.0)
Riyim	40	12 (30.0)	12 (100.0)	0 (0.0)	0 (0.0)
Dajack	40	12 (30.0)	12 (100.0)	0 (0.0)	0 (0.0)
Total	200	76 (38.0)	60 (78.9)	4 (20.0)	12 (15.8)

Three species, *T. vivax* 60 (78.9%), *T. congolense* 12 (15.8%) and *T. brucei* 4 (5.3%) were encountered in the cattle indicating that *T. vivax* occurred more frequently. This agrees with earlier reports that *T. vivax* is the most prevalent pathogenic specie of bovine trypanosomosis in West Africa (Nyindo, 1992). *T. vivax* was sampled at all the sites with highest infection rate (21.1%) occurring at Bachit.

Cattle grazed at Zadiyen village harboured the three *Trypanosoma* species while those at the other four villages did not have *T. brucei*. This is probably because the population of the specific vectors of *T. brucei*, *Glossina morsitans* group might be low at these sites (Nyindo, 1992). Similarly, it is difficult to explain why *T. congolense* was not found in Riyim and Dajack villages, while its presence at the other three villages alone accounted for 15.8% of the total infection. More research is needed to elucidate the reasons for these differences.

Table II shows the influence of sex on the occurrence of bovine trypanosomosis in the study areas. More males 112 (56.0%) than females 88 (44.0%) were examined. This is not in agreement with the reports of Ikede and Taiwo (1985) that more females (57%) than males were being kept by sedentary zebu cattle farmers. Herdsmen at our study

site reasoned that more males are kept at the period of early rains as work bulls on the farms. More males 48 (42.9%) than females 28 (31.8%) were infected with trypanosomosis. This may be due to the stress associated with farm work to which the bulls are extensively employed on the area. The study also showed that young animals (0 – 2 yrs) are less susceptible, which is the general notion.

The moderately high occurrence of trypanosomosis among sedentary cattle grazed in Barkin Ladi Local Government Area indicates that glossina and / or other insect vectors of the disease may have established in the area, contrary to the earlier reports of Ukoli (1990). Recent reports tend to support an emerging trend of moderate occurrence of trypanosomosis among cattle grazing at different locations on the Jos Plateau (Kalejaiye and Omotainse, 2000; Kalejaiye *et al.*, 2001; Agu *et al.*, 2001) indicating that the Plateau may after all be losing its status as a *Trypanosoma* free zone. Similar studies need to be extended to other ruminant species and the abundant wildlife of the area in order to determine the extent of such infections. Similarly, the eco-climate factors and the vectors actually responsible for the observed trypanosomosis emergence on the Plateau need to be studied.

TABLE II: Influence of sex on the incidence of trypanosome infection among cattle grazing at Berlin Ladi LGA of Plateau State, Nigeria.

Villages	No. of cattle	No. (%) males	No. (%) males infected	No. (%) females	No. (%) females infected
Zadiyen	40	25 (62.5)	12 (48.0)	15 (37.5)	8 (53.3)
Sopp	20	8 (40.0)	8 (100.0)	12 (60.0)	8 (66.7)
Bachit	60	34 (56.7)	12 (35.3)	26 (43.3)	4 (15.4)
Riyim	40	21 (52.5)	8 (38.1)	19 (47.5)	4 (21.1)
Dajack	40	24 (60.0)	8 (33.3)	16 (40.0)	4 (25.0)
Total	200	112 (56.0)	48 (42.9)	88 (44.0)	28 (31.8)

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