Nigerian Veterinary Journal 27(3) : 95 - 98

ON FARM TRANSPLACENTAL TRANSMISSION OF *Trypanosoma vivax* IN A BUNAJI CALF IN ZARIA, NORTHERN NIGERIA

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SUMMARY

An on farm study of haemoparasites of third pregnant and puerperal cows was undertaken in settled herds in Zaria (latitude 11° 08'N), Northern Nigeria. *Trypanosoma vivax* infection was found in prepartum cows in two (22.2%) of the herds. An affected dam in one of the herds was delivered of a calf that was infected with *T. vivax* within the first three days of life, indicating transplacental transmission of the infection. However, the calf did not show any clinical signs of the disease. This is probably the first on farm transplacental transmission of this economically significant protozoan haemoparasite in the area. The finding further underscores the need for ore efforts directed at the control of the disease in Nigeria.

KEYWORDS: Farm, Transplacental, *Trypanosoma vivax*, Calf

INTRODUCTION

Animal trypanosomosis is an economically devastating disease and a major constraint to livestock production in tropical Africa (Esievo and Saror, 1991). *Trypanosoma vivax*, the most common cause of bovine trypanosomosis in Nigeria, is associated with anaemia, failure to gain weight, loss of weight, abortions, reduced growth rate and foetal mummifications in ruminants (Ogwu and Njoku, 1987; Elhassan, 1987; Lawani, 1989; Bawa *et al.*, 1990; Bawa *et al.*, 2005). Other important species causing the disease include *T. congolense, T. brucei*, and *T. simiae*. The disease transmitted by tsetse fly (*Glossina* sp. vectors of the disease) is enzootic in many parts of tropical Africa where these vectors are in abundance (Esievo and Saror, 1991). The disease bothering on epidemiology, chemotherapy, pathogenesis, transmission control and economic impact has been extensively studied by researchers in Nigeria. Experimental studies have shown transplacental transmission of the infection (Nuru, 1974; Ogwu *et al.*, 1986). However, to the best of the knowledge of the authors, on farm transplacental transmission of the disease has not been reported in the area. This report therefore, is considered as probably the first on farm transplacental transmission of *T. vivax* infection in cattle.

MATERIALS AND METHODS

A survey of haemoparasites in third trimester - pregnant and pospartum cows and their calves in nine (9) settled cattle herds (selected on the basis of owners consent) in the Zaria (latitude 11° 08'N), Northern Nigeria, was carried out from 2001 to 2005. The herds comprised of Bunaji and Bunaji x Friesian breeds. They were raised semi intensively as the animals were grazed during most periods of the day, and supplemented with concentrates when they were returned to their housing. Water was provided *ad libitum* in most of the herds. Blood samples (5 ml) were collected (twice) from the study animals through jugular venipuncture using 5 ml syringe mounted on an 18G needle, during the prepartum and puerperal periods respectively. The samples were put into EDTA containing tubes (1 mg of anticoagulant per 5 ml of blood), kept in improvised cool containers and transported to the laboratory for parasitological analysis. A micro quantity of blood was taken into heparinised capillary tubes and centrifuged at 1000 revolutions per minute (rpm). The buffy coat (junction of red blood cells and plasma) area was then examined for parasites identification. Thin blood smears were made, stained with Giemsa stain and examined under the light microscope for haemoparasite infection using standard technique (Adam *et al.*, 1971).

RESULTS AND DISCUSSION

The prevalence of the trypanosome parasites of prepartum and postpartum cows in settled cattle herds is shown in Table 1. *Trypanosoma vivax* was found in only two out of the nine herds (herds 2 and 9) studied and screened for haemoparasites. One of the infected cows with *T. vivax* during the third trimester of pregnancy in herd 2 calved and the calf was found to be infected with the parasite during the first week of life, though the dam became cleared of the parasite following instituted chemotherapy with diminazene aceturate (Table 1). There was no chemotherapy employed in herd 9 hence the cows in this herd remained infected. The isolation of *T. vivax* in a Bunaji calf has confirmed the transplacental transfer of the parasite from the dam to the foetus already reported under experimental conditions (Ogwu *et al.*, 1986). To the best of the knowledge of the authors, only experimental conditions have been associated with the transplacental transfer of this parasite in calves in the area of study (Nuru, 1974; Ogwu *et al.*, 1986); and the affected live calves were reported to tolerate the infection by not showing clinical signs except swollen lymph nodes (Ogwu *et al.*, 1986).

TABLE I: The prevalence of *Trypanosoma vivax* in prepartum and postpartum cows and their calves in nine settled cattle herds in Zaria

Herd	No. of cows	No. of prepartum cows infected with *T.* vivax	Prevalence (%) of *T. vivax* in prepartum cows	No. of postpartum cows infected with *T.* vivax	Prevalence (%)of *T. vivax* in postpartum cows	No. of calves born in herd	No. of calves infected with *T. vivax*	Prevalence (%) of *T. vivax* in calves
1	81	0	0	0	0	81	0	0
2	41	2	4.9	0	0	41	1	4.5
3	14	0	0	0	0	14	0	0
4	8	0	0	0	0	8	0	0
5	5	0	0	0	0	5	0	0
6	8	0	0	0	0	8	0	0
7	5	0	0	0	0	5	0	0
8	8	0	0	0	0	8	0	0
9	6	4	66.7	4	66.7	6	0	0
Total	**176**	**6**	**3.4**	**4**	**2.3**	**176**	**1**	**0.6**

The calf involved in this study also did not show obvious clinical signs of the disease. However, it may be safe to assume that such infection could become important especially if there are other concurrent infections (haemo- and gastrointestinal) or stressors, and the calf may manifest clinical disease. Chemotherapy with diminazene aceturate in herd 2 rid the affected cows of the parasites, hence the absence of *T. vivax* in postpartum cows in this herd. But that one of the calves showed this parasite means that once transplacental transfer of the infection has taken place, chemotherapy is unlikely to clear the parasite from the foetus. The absence of transplacental transmission of the parasite to calves from infected dams in herd 9 where the owner failed to institute chemotherapy when the cows were found to be infected with the parasite during the third trimester of pregnancy and the dams remained infected during the postpartum period cannot be readily explained. It may suggest that transplacental transmission is not a common occurrence; probably it does occur under the influence of other factors besides the presence of the infection. This needs to be further investigated.

CONCLUSION

This finding underscores the need to further investigate the role of the parasite in calves during the puerperal period on a larger scale to study the effect it will have on the performance of calves in the field. It is important also to study the factors that favour the transplacental transmission of the parasite.

ACKNOWLEDGEMENTS

The authors are thankful to the herd owners for allowing access to their herds for the study; Professor K. A. N. Esievo, of the department of Veterinary Pathology and Microbiology, Ahmadu Bello University for his encouragement to document this report, the technical staff for the identification of the parasite, and Ahmadu Bello University for sponsoring the study.

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