

2000 10 54

SUMMARY OF RESULTS FROM AN EXPERIMENT
OF COMPARATIVE PATHOLOGY BETWEEN ZEBU
AND NDAMA CATTLE DURING NATURAL INFECTION
BY PATHOGENIC TRY PANOSOMES

1050

By Saydil M. TOURE (*)

--(11)--

The field experinrent hereafter reported was aimed at comparing Zebu and Ndama cattle during natural Trypanosomiasis as observed in an area of tsetse fly challenge and it lasted 8 months.

Groups of cattle including 29 Ndama (among them 4 cross-breed : 13/ 16 Ndama - 3/ 16 Zebu) and 18 ze bus were maintained in the village of Missira, Sénégal (13°40' North - 16° 30' West) where *Glossina morsitans submorsitans* and *G. palpalis gambiensis* usually occur.

Previous to the experiment, all the animals were apparently in excellent condition but further analyses revealed many cases of parasitism (blood parasites consisting mainly in *Theileria mutans* and microfilariae of *Setaria*; common Helminth parasites). The animals had high values of PCV in despite their parasites. Serological analyses by fluorescent antibody test, using *T. brucei* as antigen, suggested strong evidence that the groups of cattle purchased outside the tsetse belt were free of Trypanosomiasis, with the exception of two Ndama which obviously originated from an endemic area and were even parasitaemic.

During the experimental period the following facts were observed, taking into account that some chronic cases in the ze bus were artificially induced by drug administration.

1. The prepatency period of some of the Ndama did not differ significantly from that of the ze bus. However for other Ndama it was long or even very long.

*, Institut sénégalais de Recherches agricoles - Service de Parasitologie du Laboratoire national de l'Elevage et de Recherches vétérinaires - B.P. 2057, DAKAR (Sénégal)

Communication à la 16^e réunion du Comité scientifique international de la Recherche sur les Trypanosomiasés et leur contrôle, Yaoundé 29 octobre-3nov 79

2. Parasitaemia was always more intensive in the zebus than it was in the Ndama. The infections were predominantly caused by *T.vivax* in both breeds but *T.congolense* occurred in higher percentage in the humpless cattle than in the zebus. Mice inoculation showed only one case of *T.brucei* in a Ndama having a mixed infection..
3. Temperature during parasitaemia was significantly higher in the zebu than it was in the Ndama groups.
4. In all diseased animals anaemia was related to parasitaemia. low PCV was more evident in *T. congolense* infections. Attempts to regenerate the anaemia seemed to be more successful in the Ndama groups in which the haematocrite fluctuated around normal values. Many of the Ndama even had high PCV during the last months of the experiment.
5. Blood cells counting indicated Low number of erythrocytes in diseased animals, either zebu or Ndama. During the first weeks of the infection there was, in percentage, a reduced number of neutrophil white cells and an increasing of eosinophils and Lymphocytes in the Ndama ; on the other hand, in the zebus, the neutrophils were increased and the Lymphocytes reduced. The proportions were somewhat modified before the death : eosinophils decreased in the Ndama. and neutrophils still increased in the zebus.
6. Total globulin level was higher in the Ndama than in the zebu.
7. Trypanosome specific antibodies analysis by indirect immunofluorescence indicated higher titers in the Ndama groups.
8. IgM titers increased slightly in the Ndama but sharply in the treated zebu. There were no precise data on IgG globulins.
9. Clinically the main symptoms were about the same in the two breeds. It appeared that pregnant zebu cows gave premature calves which died later.
10. Acute or chronic disease occurred in the Ndama as well as in the zebu. It was not observed conspicuous differences in organic damages according to the breeds, but only according to the length of the disease :

- a) acute disease was characterized by congestive tissue damages and attempts from the reticulo-endothelial system to regenerate the anaemia and to destroy the parasites ;
- b) in chronic cases, organic hypoplasia by cellular depletion and tissular degeneration were predominant.

In all cases death was suspected to result from a heart failure. Quasinormal values of PCV could not be considered as a criterion of survival probability for the diseased animals.

The results of necropsy and histopathological findings on Zebu and Ndama indicated many types of organ damages, according to the species of Trypanosomes, but there were no evidence that these were pathognomonic.

11. In comparing the groups, it appeared that the sahelian zebus were highly susceptible to Trypanosomiasis caused by *T. vivax* or by *T. congolense* and died when submitted to permanent fly challenge. Even treated, they died as soon as the medical care was stopped. The Ndama cattle which came from outside the tsetse belt also suffered from acute or chronic disease when they were placed into the infested area and death occurred, however some Ndama cattle were highly resistant to the disease and under permanent challenge did not suffer from Trypanosomiasis, without any particular care being taken on them. These exceptional animals ought to be carefully studied in all aspects, mainly genetic and immunologic.