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AN OUTBREAK OF ANIMAL TRYPANOSOMOSIS IN A FULANI HERD AT IDOFIAN IN KWARA STATE, NIGERIA

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Summary

An epizootiological investigation was conducted to establish the cause of an outbreak of a disease which reportedly resulted in fifty cases of abortions and thirty deaths out of a population of 1,200 cattle within one month after its onset. The incident occurred in a Fulani farm settlement located on the outskirts of Idofian via Ilorin, Kwara State, Nigeria. Using parasitological methods, 9 out of the 34 animals sampled from the herd were positive for trypanosomosis, indicating 26.47% prevalence of the disease in the farm. *Trypanosoma vivax* was detected in seven of the samples while *T. congolense* was present in two. This finding coupled with other epizootiological parameters examined established trypanosomosis outbreak in the herd which might have resulted in the reported cases of abortion and death among the cattle.

The finding underscores how the disease can still be a major impediment to the growth of cattle enterprise in some parts of Nigeria.

Introduction

The occurrence of abortions in the form of an epizootic is usually a serious threat to farmers because the ability of the farm animals to produce offsprings on a regular basis is a factor in the profitability of a livestock enterprise. Abortion may be induced in animals by a number of factors, particularly infectious diseases such as brucellosis, campylobacteriosis, listeriosis and toxoplasmosis among others (6).

The role of trypanosomosis, a protozoan disease in the induction of abortion is not well documented in the literature, although

there are few reports incriminating the disease syndrome as being causal to the event (3). In this paper we present the findings of an epizootiological investigation which implicated animal trypanosomosis as the probable cause of abortion storm and mortality among cattle in a herd in the outskirts of Idofian near Ilorin, Kwara State, Nigeria.

Materials and Methods

Case History

On February 2003, a Fulani pastoralist who owned a farm settlement on the outskirts of Idofian, kilometer 35 off Ilorin and Offa road, Kwara State reported an outbreak of a disease of unknown etiology which caused indiscriminate abortions and 30 deaths out of 1200 cattle heads within one month after the onset of the problem. He further claimed that there was also a reduction in milk yield among the lactating cows with the advent of the disease. The unusual signs he observed with some of the animals were "eating" the soil (geophagia), passing blood-stained faeces, salivating, lacriminating and showing oedema of the neck and eyelids. He also stated that some veterinary officers from Ilorin, the State capital had visited the farm since the problem started and offered some treatments which did not improve the conditions of the animals and was therefore seeking further assistance. The farmer stated that this was the first time that such a problem was being experienced on the farm since they settled there for about ten years.

Field Investigation

On 26 February 2002, four days after the outbreak was reported, an epizootiological study was undertaken on the farm to investigate the problem. Based on the preliminary report of the farmer, some intervention tools which included sampling materials, field microscope and drugs such as trypanocides, antibiotics and antihelmintics among others were taken along.

On arrival, preliminary interviews were conducted with the cattle rearers met on the farm to obtain information about the clinical history and events following the outbreak. All possible variables of interest with respect to population characteristics of the affected and unaffected animals were surveyed; data about the management, environment and weather conditions were also recorded.

Thirty four animals gathered by the rearers were examined both physically and clinically. These animals were bled from the jugular vein into heparinised tubes and dry universal bottles for parasitological, haematological and serological laboratory investigations. Wet-mount blood preparations were made and examined instantly for motile protozoan parasites with the field microscope. Thick and thin blood smears were made and fixed with methanol. Faeces for helminthology were also obtained. The biological samples were stored in coolers with ice-packs for transportation to the laboratory. Four conical traps were set overnight to catch tsetse-flies.

Laboratory Investigations

The blood samples were subjected to parasitological examinations and packed cell volume determination (PCV). Wet-mount preparations were first made from the buffy-coat of PCV tubes and examined

under the microscope. Positive blood samples were inoculated into mice for propagation and isolation. The mice were routinely checked for parasitaemia. Blood smears were also made from each sample, fixed with methanol and stained with Giemsa. They were then examined microscopically under oil immersion objective. The serum samples were tested for brucellosis by the Rose Bengal Plate Test (RBPT) and the Serum Agglutination Tube Test (SATT) following the methods of Morgan (7); and Alton, Jones and Pietz (2) respectively. The faecal samples were examined by the egg floatation method.

Results

Cattle Management on the farm

At the onset of the problem, there were a total of 1,200 cattle according to the farm owner which were mainly of White Fulani breed. At the time of the visit it was observed that most of the animals had gone for grazing leaving only 34 that were considered as seriously ill by the herdsmen. It was also learnt that the herdsmen had settled in the area for about 10 years living in four huts, out of which one was used as a contact office.

Clinical Observations

The thirty four sick animals presented for examination comprised of 5 female calves, 2 bull calves, 7 female heifers, 18 adult cows and 2 adult bulls. Among the adult cows, only 3 were pregnant and 2 lactating. The animals were generally observed to be emaciated, dull, weak, depressed, febrile and some in states of lateral recumbency. Bruises with clotted blood were observed on many of them. The animals were diarrheic with reduced appetite.

On close clinical examinations, the following signs were very obvious: pale mucous membrane, ocular discharges which were profuse in some cases; generalised subcutaneous oedema of the neck; and enlarged submandibular and superficial lymph nodes. The heart rate ranged between 90 and 110 per minute and the rectal temperature ranged between 38.3 and 39.8°C. No autopsy was performed since no dead animal was seen in the vicinity at the time of the visit. No cases of recent abortions or new abortions were reported or seen at the time of the visit.

Spot microscopic examination of the wet blood preparations taken from some of the weak and emaciated animals showed fast moving trypanosomes in 5 of the 12 samples tested. Based on preliminary findings, trypanosomosis was tentatively diagnosed, and the animals were then treated with Berenil® (diminazene aceturate, Hoechst) given at a dosage of 3-7mg/kg body weight by deep intramuscular injection and the wounds sprayed with gentian violet.

Both laboratory and field investigations

Laboratory Findings
Examination by wet-mount, thin smears and buffy-coat of the blood samples showed that 9 of the 34 samples including those earlier detected on the field were positive for trypanosomes. The following represent the breakdown of the result of parasitological methods applied in the laboratory investigation: 5 samples were positive by wet-mount examination; 6 samples were positive by stained thin smears (5 *T. vivax* and 1 *T. congolense*); 9 samples were positive by stained thick smears (6 *T. vivax* and 3 *T. congolense*); and 8 samples were positive by the buffy-coat. Out of the 9 mice inoculated with the positive samples, only 2 yielded parasitaemia that were identified as *T. congolense*. The three tsetse-flies caught

were identified as *Glossina tachinoides* which on dissection were found negative for trypanosomes. Serologically all the samples tested were negative by both the RBPT and SATT. The twelve faecal samples obtained were negative for helminth eggs and larva. The range of estimated PCV was from 11 to 20%, indicating that the animals were anaemic.

Follow-up visit

As soon as the laboratory results were ready, showing that trypanosomosis might have caused the problems in the farm, a follow-up visit was arranged one week after the initial visit, for the purpose of checking the conditions of the animals earlier treated with trypanocides and to carry out further treatments. Our findings at this stage showed that the health of the animals had improved and no more abortions and deaths were recorded.

Discussion

Field investigations of disease outbreaks of unknown etiology among farm animals require a holistic approach in view of the multiple interactive factors that may be involved, which epizootiology offers. The epizootiological procedures applied in the investigation of the outbreak reported here yielded findings, usually, associated with trypanosomosis syndrome in cattle (2). The incriminating evidences included the history of the event on the field, its clinical manifestations on the animals, and the detection and identification of trypanosomes in the blood of the affected animals by microscopical examinations. Based on parasitological findings 26.47% prevalent rate of the disease was recorded which is considered significant. The trypanosome species involved were identified to be mainly *T. vivax*, mixed with few *T. congolense*.

The presence of tsetse-fly (*G. tachinoides*), caught on the farm which is the biological vector of African trypanosomiasis although not infected with any trypanosomal species at the time of the field investigation makes the transmission of trypanosomes among the cattle a high risk in the area. It is also important to note that the faecal samples examined were found negative for helminth eggs and larva which might have been as a result of the prevailing dry season when the investigation was undertaken.

All the findings therefore, pointed to trypanosomiasis outbreak with the consequent abortions in the pregnant cows and mortality that were reported. It is also significant to mention that the animals eventually recovered from the disease after treatment with Berenil®, thus providing further evidence of correct diagnosis and treatment. The disease might have acted as a stress factor in the induction of the abortions.

Previous surveys of trypanosomiasis (5, 4) have shown that the disease is enzootic in this zone of the country which is further corroborated by the finding of this study which shows a significantly high prevalent rate. The picture of the disease in the country before now was that, it was no longer a serious threat to animal production in the various ecological zones as reported by some authors over the past three decades (8, 5, 1). This was attributed to such factors as enhanced vehicular transportation of cattle from the Northern to the Southern parts of the country which enabled the animals to avoid direct contacts with the tsetse-flies and the opening of more farmlands and construction of dams leading to destruction of natural habitats of the vector.

Consequently, in the absence of appropriate control measures, isolated cases of outbreaks of trypanosomiasis would continue to occur with its adverse consequences on cattle production in the country as found by our investigation. There is therefore the need to maintain surveillance and initiate certain measures against the disease to ensure profitable and cattle production system in the derived savannah areas of the country.

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