POPCINE CEREBRAL TRYPANOSOMA BRUCEI BRUCEI TRYPANOSOMIASIS

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SUMMARY

This paper describes the investigation of a disease outbreak among 10 adult pigs in Nsukka, Anambra State, Nigeria. Prior to the investigation one sow died of the disease. Trypanosomes were later detected in the blood of two of the nine pigs subsequently investigated. All the pigs were then treated with deep intramuscular injection of 8 mg/kg diminazene aceturate (Berenil). Thirty six days after treatment a boar and a sow relapsed with signs similar to the ones shown previously. Further examination of their blood and faeces revealed nothing of parasitological significance. Following deteriorating condition and development of nervous signs the boar was salvaged while the sow died of the infection. Brain impression smears taken from both animals during post-mortem examination revealed numerous trypanosome parasites identified by morphology and blood incubation infectivity test (BHT) as Trypanosoma brucei brucei. The clinical and economic significance of the outbreak are discussed.

INTRODUCTION

Serious and fatal clinical porcine trypanosomiasis is usually caused by Trypanosoma simiae (Bruce, Harvey, Hamerton and Bruce, 1913; Hoare, 1936; Unsworth, 1952; Stephen and Gray, 1960; Stephen, 1966; Isoun, 1968). T. brucei however, although a common parasite of domestic pigs, is considered as non-pathogenic or at worst a cause of mild chronic disease (Bradford and Plimmer, 1902; Curasson, 1937; Stewart, 1947; Ilemobade and Balogun, 1981). Nevertheless serious natural outbreaks of fatal porcine trypanosomiasis caused by T. b. brucei have been reported (Aldige, 1920; Agu and Bajeh, 1986, 1987). This paper corroborates the latter observation and describes an uncomplicated serious natural outbreak of fatal T. b. brucei trypanosomiasis with brain involvement in domestic pigs.

MATERIALS AND METHODS

The disease outbreak occurred on a small pig farm in Nsukka, Anambra State, Nigeria and involved eight breeding sows and two boars. The disease was characterised by pyrexia, anorexia, severe emaciation, weight loss and anaemia. Upon receiving reports of the outbreak the farm was visited on four occasions at which all the animals were examined using routine clinical diagnostic methods. On each occasion, 2 ml of blood collected in glass bijou bottles with Ca-EDTA as anti-coagulant was drawn from the ear vein of each of the pigs and taken to the laboratory for haematology and parasitology. During the last visit however blood was taken from only two of the pigs which showed clinical disease.

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Detection of trypanosomes in blood

The blood samples were examined for blood parasites using four methods. These were microscopic examination of wet blood films, Giemsa stained thin films, haematocrit centrifugation technique (HCT) (Woo, 1970) and rat inoculation (Godfrey and Killick-Kendrick, 1961).

Haematology

The haemoglobin (Hb) concentration of each blood sample was determined using the cyanmethaemoglobin method at 540 μm absorbance (Hainline, 1958). The packed cell volumes (PCV) were determined from microcapillary tube preparations used for the HCT detection of parasites.

Detection of trypanosomes in brain

Whole brains were taken from pigs 6 and 24 at post-mortem examination and impression smears made from the cerebellar area for direct examination. The samples were then divided into two. One half was placed in formalin and later sections for histopathological examination were prepared. The other half was immersed in physiological saline and packed in ice for transfer to the laboratory where 5 g of this sample were homogenised, suspended in 20 ml of phosphate buffered saline glucose (PSG) pH 8.4 and filtered. The filtrate was collected in a glass conical flask and 2.5 ml injected intraperitoneally into each of two adult Wistar rats. Blood from the tail vein of these rats was examined daily until they became heavily parasitaemic.

Identification of the trypanosome isolate

The trypanosomes isolated in the sub-inoculated Wistar rats were identified as T. brucei by examination of the morphological features in Giemsa stained thin blood films and motility in wet film preparations. The parasite was then subjected to blood incubation infectivity test (BIIT) as described by Rickman and Robson (1970) using 10 adult Wistar rats.

Helminthological examination

Freshly passed faeces from each of the nine pigs was collected and examined for helminth ova during the visits. Each sample was examined by direct faecal smear and the McMaster egg counting technique (Soulsby, 1982).

Treatment

All the pigs were treated for trypanosomiasis with deep intramuscular injection of 8 mg/kg diminazene aceturate (Berenil, Hoechst, FRG) and for helminthosis by oral administration of 5 mg/kg fenbendazole (Panacur, Hoechst, FRG). Both treatments were repeated after two weeks.

RESULTS

Clinical and haematological findings

Clinical observations made during the course of the investigation are shown in Tables I and II. Pallor of the mucous membranes, low PCV and Hb concentration values were indicative of anaemia in all the pigs. These parameters returned to normal values in all the pigs 14 days following Berenil treatment. However by day 36 post-treatment pigs 6 and 24 had relapsed and clinically