

A CASE OF JOHNE'S DISEASE IN A HERD OF BORAN COWS AT THE SOKOINE UNIVERSITY OF AGRICULTURE IN MOROGORO, TANZANIA

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(Accepted on 2nd September 1994)

SUMMARY

An alert six year old Boran cow with a history of longstanding profuse diarrhoea and progressive loss of body condition of unknown cause was euthanized for diagnostic investigation by autopsy. At the autopsy major lesions observed included an excessive thickening of the small intestinal mucosa presenting as multiple foldings of the mucosa into closely packed transverse rugae. Histopathology demonstrated a heavy infiltration by epithelioid and giant cells as well as lymphocytes in the intestinal mucosa and submucosa. In addition aggregates of acid fast bacilli were demonstrated in the same epithelioid and giant cells. These findings are compatible with lesions characteristic of Johne's disease. This is the first report on Johne's disease in Boran cows in Tanzania.

INTRODUCTION

Johne's disease (paratuberculosis), an infectious disease of ruminants has been reported in Tanzania since 1962 (Anon 1962). Thereafter, several other incidences were recorded (Anon 1966, Ilmollelian, 1971). Generally, incidences of the disease in Tanzania have been sporadic and their reports kept unpublished. The disease has mainly been reported in herds comprising of exotic cows recently imported into the country (Nyange, 1981; Batamuzi *et al.*, 1984). These incidences on occurrence have almost always occasioned tests to screen whole herds, exercises which have served well to expose subclinically infected cows (Batamuzi *et al.*, 1984).

However, for some obscure reasons,

continuity of information on the prevalence of the disease seems to have suffered interruptions for almost a decade during the 70's (Batamuzi *et al.*, 1984). This report serves to describe and put on record yet another occurrence of Johne's disease in Tanzanian herds. Whereas past reports concerned the disease occurrence in imported dairy cows, the present is the first report of the disease in a local boran beef cow. It is the first case to be recorded at the Sokoine University of Agriculture farms in Morogoro.

MATERIALS AND METHODS

An extremely emaciated boran cow of six years of age from the farm of the Sokoine University of Agriculture (SUA) with a history of longstanding profuse diarrhoea, progressive loss of body condition, with

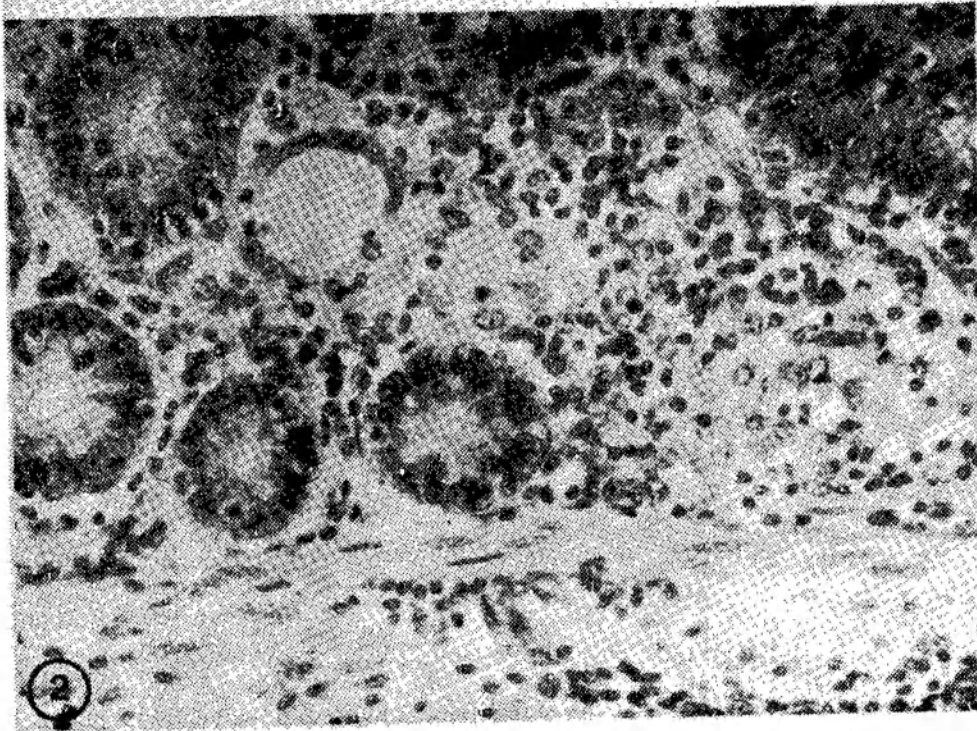
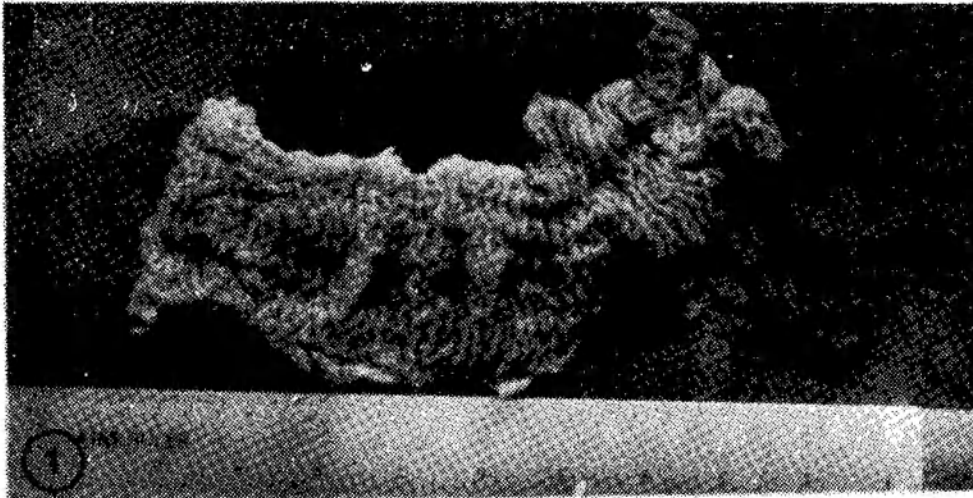


Figure 1: Jejunal segment from the cow featuring the folding of the mucosa into transverse rugae characteristic of Johne's disease.

Figure 2: A section through a jejunal segment. Note the hypercellularity in the lamina propria and submucosa due to a heavy infiltration by epithelioid cells and some lymphocytes. A typical giant cell is also seen. X200

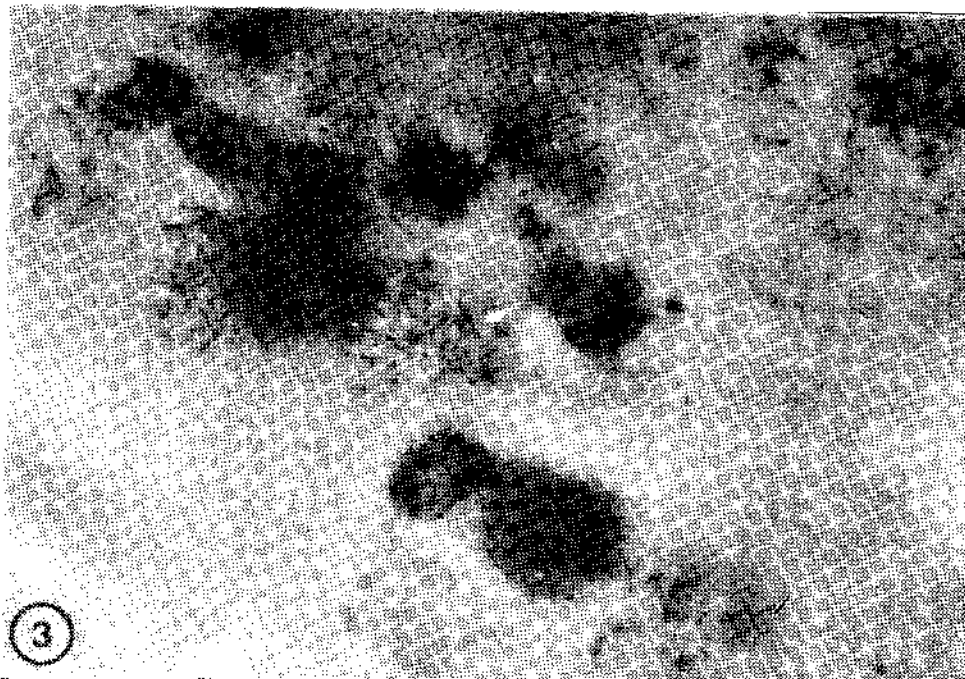


Figure 3: A Ziehl-Neelsen technique stained section of the jejunum showing masses of acid fast bacteria loaded in the epithelioid and giant cells. X1000.

normal temperatures and appetite was brought for euthanasia and subsequent postmortem examination. The animal had been checked for haemoparasites four times but was found to be free of the parasites on all occasions. The cow was part of a batch of boran heifers purchased from Kilimanjaro, in Northern Tanzania, and introduced into the University cattle herd in 1987.

The cow was euthanized by an overdose of an intravenous injection of pentobarbitone sodium and then subjected to a thorough postmortem examination. Organs of the carcase were examined grossly and appropriate intestinal samples were taken and fixed in 10% neutral buffered formalin. Fixed samples were processed

into paraffin sections for histopathological studies using standard procedures (Bancroft and Stevens, 1990). Half of the paraffin sections were stained with hematoxylin and eosin (HE) stains and the other half were stained with Ziehl-Nielsen technique for acid fast bacilli as outlined by Bancroft and Stevens (1990). The sections were examined and photographed onto an ASA 25 Agfapan film under an Olympus BH2 microscope.

RESULTS

The cow was extremely emaciated, dehydrated and heavily soiled in the hindquarters. Autopsy revealed gelatinous atrophy of fat depots and serous effusions into the body cavities. Characteristic

lesions were particularly prominent in the jejunum and ileum where the mucosa was folded into thickened rugae most of which were oriented transversely (Figure 1). The mucosal folds could not be effaced by stretching. No ulcers, necrosis or hemorrhages could be seen on any part of the intestinal mucosa. Lesions in the duodenum and colon were grossly inconspicuous. Other lesions included thickened mesenteric lymph vessels as well as enlargement and oedema of the mesenteric lymph nodes.

Light microscopic examination of paraffin sections stained with hematoxylin and eosin showed blunting and atrophy of the intestinal villi, whereas the crypts were elongated. There was a hypercellularity of the lamina propria and submucosa, which was due to heavy infiltration of epithelioid and giant cells into the lamina propria and submucosa of the small intestine (Figure 2).

There were however, no lesions suggestive of any caseous necrosis, tubercle formation or calcification. Paraffin sections stained by the Ziehl - Nielsen's technique demonstrated masses of acid fast, rod shaped organisms packed in the cytoplasm of the epithelioid and giant cells (Figure 3).

DISCUSSION

The gross and histopathological features in the disease described in here, are compatible with those of Johne's disease as widely described by others (Jubb *et al.*, 1993; Timoney *et al.*, 1988). Johne's disease has never been reported in SUA locality before, this therefore, is the first report on the occurrence of the disease in

the University cattle herd.

The University farm comprises of a herd which has been in existence for over 20 years without any recorded incidence of Johne's disease. It is difficult to pinpoint the source of infection in the University herd, it is most likely that the animal was already infected when it was introduced into the SUA farm herd. This therefore, would indicate that the disease has now been introduced into the farm. These findings suggest a need for a compulsory screening of cattle herds especially when bringing in animals, so that infected animals are culled in an attempt to prevent introduction of infection into disease-free herds. Unfortunately this exercise is rarely done. Of importance however, is the challenge that this report gives us by drawing our attention on to the possibility of existence of this disease in our herds and thus the need to consider it as an entity for differential diagnosis of chronic diarrhoea in cattle.

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