

CLINICAL MANIFESTATIONS OF BRUCELLOSIS IN CATTLE IN NORTHERN NIGERIA

¹Mai, H. M., ²Thompson, P. N., ²Irons, P. C., ¹Ahmad, A. A., ³Qadeer, M. A. and ¹Kalla, D. J. U.

¹Department of Animal Production, Abubakar Tafawa Balewa University, Bauchi

²Department of Production Animal Studies, Faculty of Veterinary Science, University of Pretoria, South Africa

³Department of Zoology, Modibbo Adama University, Yola

ABSTRACT

This study was conducted to determine the clinical manifestations of brucellosis in cattle under different management systems in northern Nigeria. Using multi-stage sampling, serum samples of 4,745 cattle from 271 herds were tested using the Rose-Bengal plate-agglutination test (RBPT) and positives were confirmed using a competitive enzyme-linked immunosorbent assay (c-ELISA). The results indicated the seroprevalence of 37% with RBPT and 26.3% following confirmation with c-ELISA. The infection level was greater amongst pastoral herds than agro-pastoral herds and in herds with hygromas.

INTRODUCTION

Brucellosis is an infectious and contagious zoonotic disease primarily of livestock that has significant animal health and devastating national and international trade consequences. It is an endemic, emerging and neglected disease in Nigeria.

The disease is caused by a number of host-adapted bacteria species of the genus *Brucella*. The genus consists of small non-motile, non-spore forming, non-encapsulated, intracellular, Gram-negative aerobic cocci, coccobacilli or bacillary organisms of 0.5-0.7 x 0.6-1.5 µm dimension, usually arranged singly, but they may be in pairs or small groups.

Brucella species are poorly staining and are seen mostly as single cells and appearing like “fine sand”. Colonies are smooth, round, small, translucent and pale honey colour. Later they became, larger and browner but remain clear.

Objectives

The study was aimed at determining the clinical manifestations of brucellosis in cattle from different management systems over a wide geographic area of northern Nigeria using accurate tests.

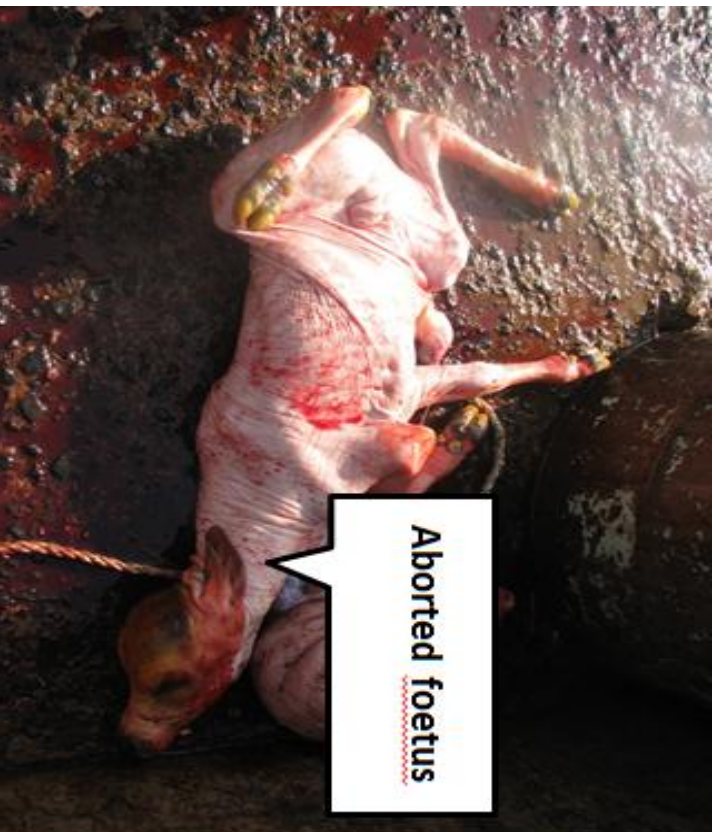
MATERIAL AND METHODS

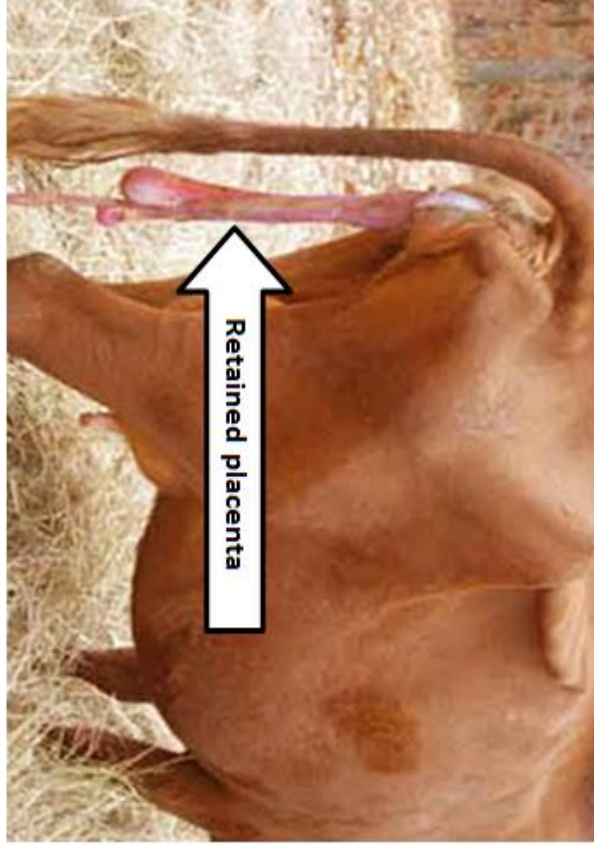
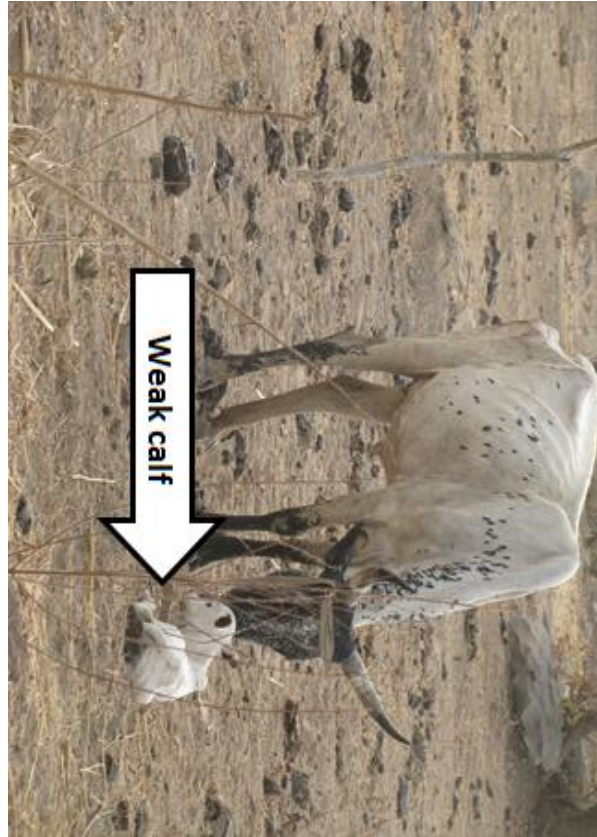
This study was carried in cattle under various management systems in Adamawa, Kaduna and Kano states, northern Nigeria. Using multi-stage sampling, serum samples of 4,745 cattle from 271 herds were tested using the Rose-Bengal plate-agglutination test (RBPT) and positives were confirmed using a competitive enzyme-linked immunosorbent assay (c-ELISA).

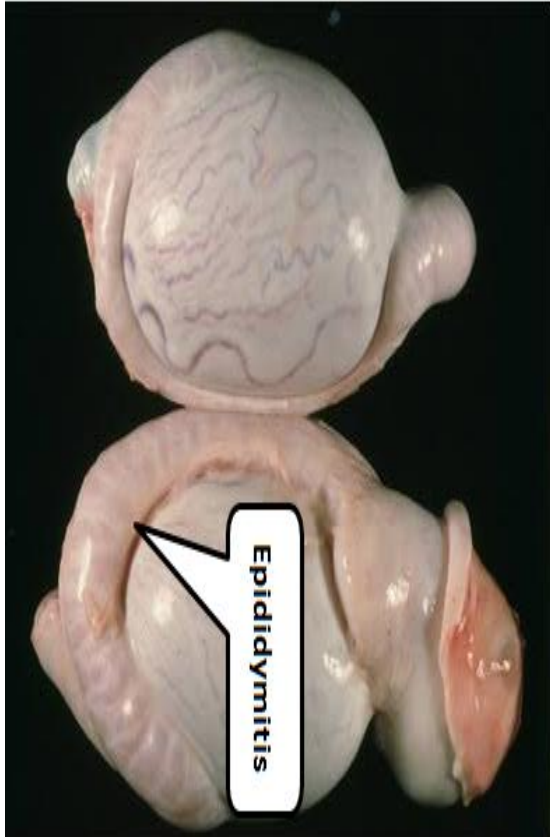
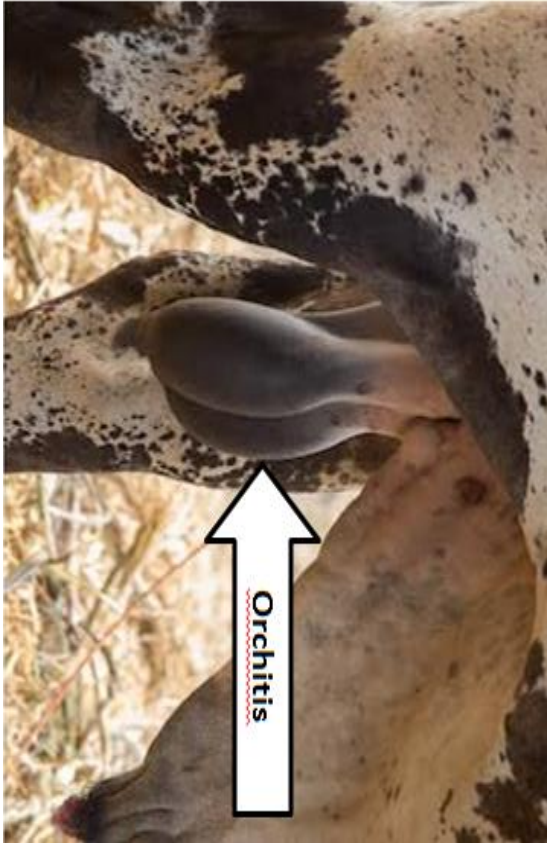
Clinical signs of brucellosis observed in cattle during the study period and laboratory pictures of the two tests results

The signs of brucellosis in cattle included: abortion, still birth, retained placenta, birth of weak calves, hygroma, orchitis and epididymitis. However, other symptoms like mastitis, repeat breeding and joint ill were seen.

I. Effects of brucellosis on reproductive system

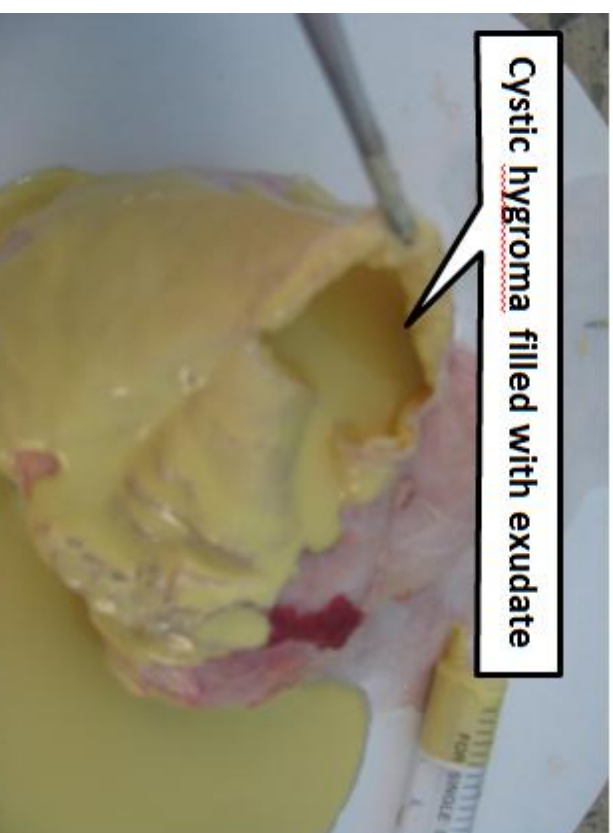




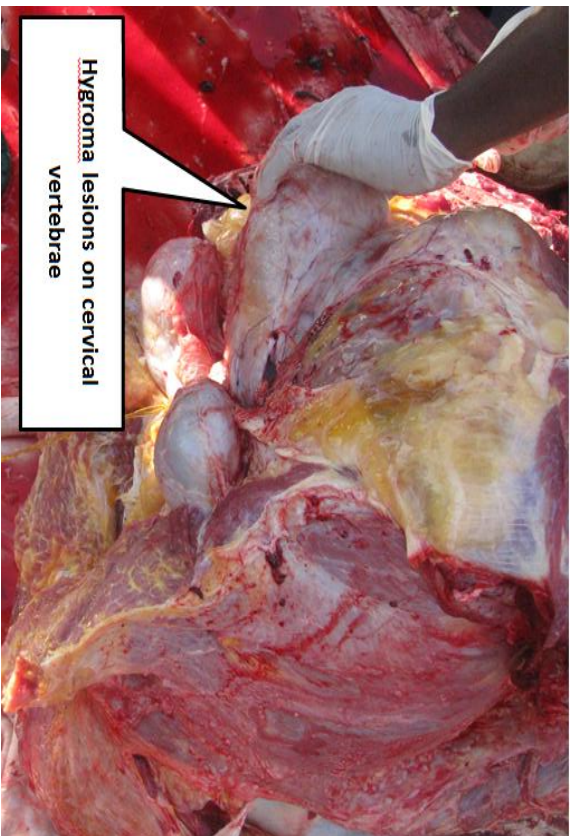


II. Effects of brucellosis on joints/muscles& nature of the fluid









III. Transmission of brucellosis incattle and humansand the traditional practice for treatment of hygroma



Consumption of unpasteurized milk



Consumption of raw milk from dam



Cow eating placenta from aborted dam

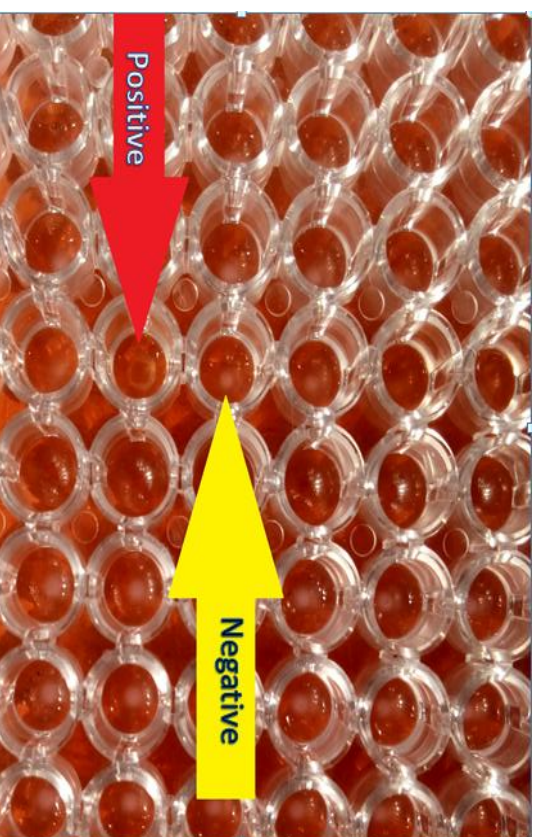


**Traditional method of
hygroma treatment**

IV. Laboratory pictures of the two tests results



Brucellosis positive and negative samples using (RBPT)



Brucellosis positive and negative results on micro plate using c-ELIS

RESULTS AND DISCUSSION

Data from the 4,745 samples from 271 herds used in the study showed 37% of all animals were RBPT positive, and after confirmation with c-ELISA the overall animal-level seroprevalence was 26.3%. Based on herds examined, there were 225 herds (84.9%) with at least one animal testing positive based on RBPT and 210 herds (77.5%) based on c-ELISA. The herd-level seroprevalence of brucellosis in the three states combined, adjusted for the sampling weights, was estimated to be 77.5%. Interstate movement and trade in cattle across the country, as well as the nomadic nature of the pastoral Fulanis may have contributed to the high infection of brucellosis.

Twenty three per cent of all herds sampled and 30% of the infected herds had animals with hygromas. Of the 63 herds in which hygromas were present, 54 (64.3%) were from Adamawa, 7 (13.7%) from Kano and 2 (2.7%) from Kaduna states. Only one herd with cattle with hygromas (1.6%) was negative for brucellosis. Other clinical manifestations of brucellosis on the reproductive system, joints, muscles etc. were also observed with varying nature of fluids and cysts. Furthermore, transmission in cattle and humans were noted.

The odds of brucellosis seropositivity were 3.5 times greater amongst pastoral herds than agro-pastoral herds in this study. The high seroprevalence of brucellosis in a pastoral management system may partly be attributed to long distance movement of cattle in search of pasture and water and co-mingling in communal grazing areas and at watering points, particularly during the dry season having adverse weather conditions and famine. During such times animals become concentrated on scarce pastures and around watering points, which may become contaminated with aborted foetal materials or fluids from infected normal calvings.

CONCLUSIONS

It is evident from this study that brucellosis is endemic in northern Nigeria with high seroprevalence. Various clinical manifestations were observed in cattle in the study areas, affecting different body systems. Increased education and farmer extension, particularly amongst the nomadic Fulani, regarding the zoonotic risk associated with milk consumption and contact with aborted materials, and implementation of appropriate control measures are recommended.

REFERENCES

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