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Suspected Brucellosis in Two Sokoto Gudali Bulls

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ABSTRACT

In the process of daily routine operation at the Funtua abattoir, Katsina State, two adult Sokoto Gudali bulls were presented for slaughter. Close investigation during ante mortem examination revealed the bulls with swellings on their carpal joints. Further enquiry revealed long standing history of abortion and retained placenta in their herds. A decision to delay slaughter of the bulls was made till after the day's activities. A decision was also made to collect blood without EDTA and hygroma fluid from the affected joints for screening of brucellosis at the Bacterial Zoonoses Laboratory of the Department of Veterinary Public Health and Preventive Medicine, Ahmadu Bello University, Zaria. The results from the serological test indicated that the two bulls have evidence *Brucella* antibodies. Slaughter of the bulls was carried out and the knees of the bulls condemned. The State Veterinary Services was then alerted for necessary action. Presence of hygroma may be considered as evidence of brucellosis in the herd. The owners were advised not to breed such animals in future.

Key words: Abattoir; Brucellosis; Sokoto Gudali

INTRODUCTION

Brucellosis is a neglected global zoonosis caused by a bacterium of the genus *Brucella* (Saidu *et al.*, 2018). The disease has been reported in Nigeria in various animal species by several authors that include Adesiyun and Abdu (1984), Adamu and Ajogi (1997), Kaltungo (2013), Buhari (2014), and Baba (2016) among others. Most reports of the disease in Nigeria were on seroprevalence of the disease without presenting clinical forms of the disease. Human infection could be as a result of consumption of unpasteurized dairy products, undercooked meat, or inhalation of contaminated aerosols (Mubiana *et al.*, 2024).

Clinical signs in animals usually seen in the course of the disease include fever, infertility, with abortion commonly taking place during the third trimester of pregnancy (Saidu *et al.*, 2018). Epidemiological factors of the disease include females being more affected with prevalence of 2.4% to 15.0% seroprevalence and males having prevalence of 0.4% to 5.0% (Kaltungo, 2013; Buhari, 2014). Similarly, prevalence increases by age with young ones having prevalence of 0.4% to 0.8% and adults having prevalence of 1.6% to 3.0% (Kaltungo, 2013; Buhari, 2014). Public health risks include humans acquiring infections through contaminated milk and meat of infected animals with infections being highest among people who interact with these animal products (Saidu *et al.*, 2018). *Brucella* organisms have also been reported to penetrate intact skin. This report presents a case of two Sokoto Gudali bulls

presented for slaughter at the Funtua abattoir, Katsina State, Nigeria.

CASE REPORT**History and Signalment**

Two adult Sokoto Gudali bulls were presented at the Funtua abattoir, Katsina State for slaughter on 15th October, 2024. As a routine, the abattoir Meat Inspectors (MIs) conducted ante mortem inspection on them like for all other animals brought to the abattoir for slaughter. On close examination of the first bull a swelling was observed on the right carpal joint along with a mild oedema on the dew lap (Figure 1A). Apart from these signs, there was no other abnormality observed. For the second bull, a swelling on the left hock joint was also observed (Figure 1B). Further enquiry indicated that they were not from the same herd but from the same area. The owners also reported to have a long-standing history of abortions, still births and birth of weak offsprings in their herds.

Diagnostic Plan

The MIs decided to defer slaughter of the two bulls till after all presented animals were slaughtered, processed and the carcasses evacuated from the abattoir. The owners of the two bulls reported purchasing them from herds with filthy environment. The MIs therefore considered differentials to include non-infectious arthritis, arthritis due to *Staphylococcus* infection due to the reported filthy environment, brucellosis and arthritis due to other

infectious agents. A tentative diagnosis of brucellosis was made due to the history gathered and also reports of regular presentation of such animals to the abattoir for slaughter.



Figure 1: Swollen right (A) and left (B) knee of Sokoto Gudali bulls suspected with brucellosis

Samples Collection and Processing

After wearing of protective clothing, 5mls of blood samples for serum was aseptically collected through a jugular venipuncture and transferred into plain blood sample bottles. Also, 5mls of the hygroma fluid samples was aseptically aspirated from each of the two bulls for confirmation of brucellosis at the Bacterial Zoonoses Laboratory, Department of Veterinary Public Health and Preventive Medicine, Ahmadu Bello University, Zaria.

The blood samples were centrifuged at $8,000 \times g$ for 10 min and serum harvested afterwards for laboratory test. Similarly, the hygroma fluid was centrifuged at $10,000 \times g$ for 10 min and to remove particulate matter or debris. The supernatant was carefully collected for serological tests.

Laboratory Investigation and Results

Rose Bengal Plate Test (positive), Serum Agglutination Test with EDTA (positive at 1:160 and 1:320 IU) and 2-Mercaptoethanol test (positive for chronic infection).

Management

A decision to organize slaughter with strict zoo-sanitary and biosecurity measures was carried out on the two bulls. The knees of the two bulls were condemned and put in the incinerator to ensure none spread of the bacteria. The abattoir floor was thereafter washed with 2% sodium hypochlorite solution and official report to the State Veterinary Services, Katsina State Ministry of Agriculture and Livestock Development, for further necessary action was made.

DISCUSSION

Brucellosis is known for causing reproductive issues such as abortions and infertility, significantly impacting livestock productivity and economic viability for farmers (Alamian *et al.*, 2023). The serological tests performed on the bulls—Rose Bengal Plate Test (RBPT), Serum Agglutination Test (SAT), and 2-Mercaptoethanol test—yielded positive results for *Brucella* antibodies. These findings indicate chronic infection, which is consistent with the hygroma observed during the ante mortem examination (Khurana, *et al.* 2021; Tulu, 2022). The positive results from these tests not only confirm the presence of *Brucella* antibodies but also underline the

importance of continuous monitoring and testing in herds with a history of reproductive failures.

Similar cases have been documented in Katsina State and other northwestern states in Nigeria. Salisu *et al.* (2017) conducted a study on the seroprevalence of *Brucella* antibodies in camels in Katsina reported a seroprevalence of 11.2% using the Rose Bengal Plate Test (RBPT) and 10.5% with the Serum Agglutination Test (SAT). These findings align with the outcomes of the current study, where the bulls tested positive for *Brucella* antibodies, indicating a concerning presence of the pathogen within livestock populations in this state.

Furthermore, a systemic review covering human and animal brucellosis across Nigeria reported a national seroprevalence of 13.3% for animal brucellosis, with northern Nigeria recording an even higher prevalence of 15.8% (Akinyemi *et al.*, 2022). This suggests that brucellosis is endemic in northern states, including Katsina, where management practices may contribute to the disease's persistence.

In comparison to other studies, such as Kaltungo *et al.*, (2018a), who reported a seroprevalence of 13.5% for *Brucella melitensis* in both Katsina and Sokoto States. The findings from the current study in bulls at Funtua suggest a similar trend in infection rates among livestock. The chronic nature of infections indicated by positive results from tests like 2-Mercaptoethanol further emphasizes the need for ongoing surveillance and management strategies to address brucellosis effectively.

Finding brucellosis in two bulls at the Funtua Abattoir has raised fears on the existence and public health threats of the disease in the area and possibly distant locations as other animals in the herds from which these two bulls came might also be infected. The fact that the pastoralists also keep dogs, there is the fear that the dogs could be infected as Osinobi *et al.* (2004) reported *Brucella* agglutinins in dogs. Based on diagnosis of brucellosis, it is clear that the residents of the area where the bulls came from may be exposed, especially with the habit of the farmers drinking milk directly from the teat of their cows. There is also a possibility of other in-contact animals may be infected, as brucellosis has been reported in various animal species in Nigeria (Kaltungo, 2013; 2018a; 2018b; Madaki, 2021).

The owners of the two bulls were advised not to sell any animal with obvious physical lesions for slaughter as this could lead to total or partial condemnation of the animal/carcass. They were also requested to inform the owners from where they purchased the bulls to seek for further advice from the State Veterinary Services officials closest to them.

Conclusion

Brucellosis is strongly suspected in the two bulls presented for slaughter at the Funtua abattoir based on clinical signs and laboratory tests using RBPT and SAT. There is therefore the need for the State Veterinary Services of Katsina State to have a close look at these herds and possibly others due to the confirmation of brucellosis which has both economic and public health risks as the disease have been reported sheep and goats and even camels in the State.

Conflict of Interest

The authors have no conflict of interest to declare.

Author's Contribution

Field work, sample collection and processing; JS, SY and AAM. Result interpretation and manuscript draft writing: KBY, SSNA and BM.

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