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Case Report

ABORTION IN JERSEY COWS AND KANO BROWN GOATS DUE TO SUSPECTED CASES OF BRUCELLA ABORTUS INFECTION IN GABASAWA, KANO STATE, NIGERIA: A CASE REPORT

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ABSTRACT

This case report details an outbreak of abortion in a herd of Jersey cows and flock of Kano Brown goats, mixed in a farm in Gabasawa, Kano State, Nigeria, probably caused by *Brucella abortus* infection. Three Jersey cows aborted late-term foetuses characterized by thickened amnion and necrotic chorionic cotyledons following the introduction of a breeding bull 10 months prior. Additionally, five goats in the same farm exhibited similar clinical signs. Serological testing using the Rose Bengal Plate Test (RBPT) indicated the presence of *Brucella abortus* antibodies in all tested animals. The newly introduced bull is suspected to be the source of infection. Recommendations for the farmer included culling infected animals and implementing stringent biosecurity measures. This case underscores the necessity for enhanced disease surveillance, laboratory diagnostic capacity, and public health awareness to mitigate zoonotic risks.

Keywords: Abortion, Brown goats, *Brucella abortus*, Cows, Jersey, Kano

INTRODUCTION

Brucellosis is a significant zoonotic disease caused by the genus Brucella, with *Brucella abortus* being the primary agent responsible for reproductive losses in cattle and other livestock. The disease is characterized by abortions, stillbirths, and infertility, leading to substantial economic losses in the global agricultural sector. In humans, brucellosis can cause a debilitating illness, often referred to as undulant fever, and is primarily transmitted through direct contact with infected animals or consumption of contaminated animal products (Neta *et al*., 2010; Jamil *et al*., 2017).

The epidemiology of *Brucella abortus* varies geographically, with certain regions experiencing higher prevalence due to factors such as wildlife reservoirs and farming practices. For instance, in North America, *Brucella abortus* has been the most common cause of brucellosis, while in Europe and Asia, its presence remains a significant public health concern (Cross *et al*., 2013; Shevtsov *et al*., 2023). Furthermore, the Prevalence rates of bovine brucellosis range from 8.5% to 22.5% in states like Sokoto and Kebbi (Bello *et al*., 2018; Junaidu *et al*., 2011). Studies in Plateau State reported seroprevalence rates between 7% and 14% (Adesokan *et al*., 2013). In South-eastern Nigeria, sparse data are available, but smallholder farms and wet markets have reported seroprevalence in goats and cattle between 1–5% (Chukwu *et al*., 2021). Introduction of infected animals into previously unexposed herds poses a serious risk for outbreaks, as evidenced by studies showing that newly introduced livestock can serve as vectors for disease transmission (Shevtsov *et al*., 2023).

This case report documents an outbreak of brucellosis in a mixed herd of Jersey cows and Kano Brown goats in Gabasawa, Kano State, Nigeria. The clinical presentation and diagnostic challenges faced during this outbreak

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highlight the need for effective surveillance and control measures in regions where brucellosis remains endemic.

CASE PRESENTATION

The outbreak occurred on a semi-intensive farm in Gabasawa, Kano State, Nigeria. Gabasawa is one of the 44 LGAs of Kano State. It lies northeast of the state capital (Kano City), approximately 47 km away. It lies on **Latitude**: 12.1452° N and **Longitude**: 8.8622° E. The farm housed 3 Jersey cows and a Jersey bull as well as 6 Kano Brown goats (1 buck and 5 does) managed under a semi-intensive system, with animals grazing on brachairia pasture supplemented with maize bran and cereal by-products. A breeding bull was introduced 10 months before the reported abortions.

CLINICAL HISTORY

Three Jersey cows aborted late-term fetuses at gestational ages of 7, 7.5, and 8 months. The aborted foetuses exhibited thickened amnion and yellowish necrotic lesions on the chorionic cotyledons as shown on Figures I and II. Five Kano Brown does also aborted with similar clinical manifestations. Notably, no previous abortion cases were reported on the farm prior to the introduction of the breeding bull.

Figure I: Aborted foetus with necrotic chorionic cotyledons on the thick amnion (shown by the arrow)

CLINICAL EXAMINATIONS

Retained placenta with foul-smelling uterine discharge, and vaginal discharge. The herd had no history of vaccination. Blood samples were collected from all three cows, the breeding bull, and all the goats. Briefly, 30 µL (0.03 mL) of the test serum was added on a clean white tile mix with 30 µL of Rose Bengal antigen next to the serum drop stirred with glass stirrer using a circular motion (about 1–2 cm diameter) and observe for agglutination for 4 minutes at room temperature. The Rose Bengal Plate Test (RBPT) yielded positive results for *Brucella abortus* antibodies across 8 of the 10 samples. Due to limited laboratory resources, no confirmatory tests were conducted.

Table I: Results of Rose Bengal Plate Test

Animal ID	Age (yrs)	Sex	Agglutination Reaction	RBPT Interpretation
C001	5	Female	Distinct clumping	+
C002	4.5	Female	Distinct clumping	+
C003	3	Male	No reaction	-
C004	6	Female	Distinct clumping	+
C005	3.5	Female	Weak clumping	+
C006	4	Female	Distinct clumping	+
C007	2.5	Male	Distinct clumping	+
C008	5.5	Female	Distinct clumping	+
C009	3	Female	Distinct clumping	+
C010	4	Female	No visible reaction	-

DIFFERENTIAL DIAGNOSES

Leptospirosis, Campylobacteriosis, Listeriosis, IBR (Infectious Bovine Rhinotracheitis), Salmonellosis.

MANAGEMENT AND RECOMMENDATIONS

The farmer was advised to cull all infected animals using humane euthanasia methods and ensure proper carcass disposal. Thorough cleaning and disinfection of animal housing and equipment using 2% sodium hypochlorite solution was also carried out.

It was recommended that the client should delay restocking for at least six months and introduce only brucellosis-free animals and should implement strict biosecurity measures, including quarantining new animals for at least 30 days and conducting routine serological testing.

We also recommended that the farm workers should be trained bio risk management such as the use of personal protective equipment (PPE) to minimize zoonotic risks and proper handling of biohazard materials such as aborted foetuses and foetal membranes, and decontamination of farm facilities as described by Dadar *et al*. (2021).

DISCUSSION

The outbreak reported in Gabasawa aligns with existing literature that emphasizes the role of *B. abortus* as a significant cause of reproductive failure in cattle. The clinical signs observed in the affected Jersey cows - late-term abortions accompanied by thickened foetal membranes and necrotic cotyledons - are consistent with those documented

in previous reports on brucellosis outbreaks globally (Neta *et al*., 2010; Jamil *et al*., 2017).

Moreover, the serological result of *B. abortus* antibodies through the Rose Bengal Plate Test (RBPT) corroborates findings from other studies that advocate for serological testing as a critical component of brucellosis diagnosis in livestock (Garofolo *et al*., 2017; Shevtsov *et al*., 2023). The lack of confirmatory testing due to limited laboratory resources reflects a common challenge faced in resource-limited settings, underscoring the need for improved diagnostic capabilities to facilitate accurate disease identification and management strategies. Furthermore, the limitations of Rose Bengal plate test include: false positive if animal was vaccinated as vaccines trigger production of antibodies similar to antibodies due to natural infection; false positive due to other bacterial infections that mimic Brucella antibodies; false negative if test was done in early infection with low antibody titre or during disease incubation.

In this case, the breeding bull was identified as the likely source of infection since it had been introduced from another farm without prior brucellosis testing. The grazing system may have facilitated disease transmission among animals. The epidemiological link to the introduced bull aligns with existing literature emphasizing the importance of pre-testing animals before herd integration. Awais *et al*. (2024) reported that herds with newly introduced animals had higher rates of infection, highlighting the necessity of implementing pre-testing protocols for animals before they are integrated into existing herds. This approach is essential for controlling brucellosis and protecting both animal and public health.

This case reinforces the critical role of biosecurity practices in preventing disease outbreaks. Farmworkers who had direct contact with the animals were recognized as being at risk for zoonotic transmission. The absence of confirmatory testing emphasizes the urgent need for improved laboratory services to support accurate diagnosis and effective disease control strategies. Furthermore, the potential zoonotic risk to farmworkers necessitates enhanced awareness and preventive measures. This case further illustrates the importance of implementing stringent biosecurity measures on farms to prevent similar occurrences in the future.

CONCLUSION

This case report not only provides insights into a specific outbreak but also serves as a reminder of the broader implications of brucellosis management in livestock. The introduction of an infected breeding bull likely precipitated this brucellosis outbreak, resulting in significant reproductive losses within the herd. Immediate culling of infected animals coupled with stringent biosecurity measures is essential for controlling the disease and minimizing public health risks. Strengthening disease surveillance systems and enhancing laboratory diagnostic capacity are essential steps toward controlling brucellosis and minimizing its impact on public health and agricultural productivity.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

ETHICAL CONSIDERATIONS

Consent was obtained from the farmer for utilizing farm data in this report.

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