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Serologic Prevalence of Brucellosis in Horse Stables in Two Northern States of Nigeria

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*Despite the endemicity of brucellosis in Nigeria, reports on equine brucellosis are rare. The Rose Bengal Plate Test (RBPT) was used to determine the serologic prevalence of *Brucella abortus* antibodies amongst 75 horses from three stables in two States of northern Nigeria. The highest prevalence (22.7%) was recorded in stable C located in Plateau State and the lowest (6.7%) was found in stable B in Kaduna State. The overall prevalence determined was 14.7%. There is need for the inclusion of horses in brucellosis surveillance and control strategies in Nigeria to safeguard people at high risk.*

Key words: brucellosis, horse, nigeria, stables

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Brucellosis is a worldwide bacterial zoonosis. It is recognized as a major cause of significant economic losses in livestock due to its primary effect on the reproductive system in affected animals with concomitant reduction in production, and it also poses a serious threat to human health [1, 22, 23]. Studies on brucellosis in Nigeria have focused on domesticated ruminants such as cattle, sheep and goats, with a small number of investigations carried out on other species like camels, donkeys and dogs to determine their epidemiologic role. Serological surveys of *Brucella* antibodies in Nigeria indicate a prevalence ranging from 0.4–48.8% in cattle [4, 9, 10], 1.4–16.1% in sheep and goats [6, 7, 13, 17], and 4.4–7.5% in dogs [2, 20]. Reports on equine brucellosis are rare [15] despite the endemicity of this disease in Nigeria [12, 14, 21]. The few reports on equine brucellosis have focused on clinical cases [15, 19], and to our knowledge, only one serological study [5] has been conducted in Nigeria. Indigenous horses have been used by the army and police force in Nigeria for ceremonial parades, cross country races, by mounted troops during special

occasions to welcome dignitaries, and to control crowds. They are accorded special attention due to the immense role they play in polo games, cultural festivals and security. The risk of disease transmission posed by these horses to riders, handlers and the general public may be significant and requires investigation. This study was conducted to determine the status of *Brucella abortus* antibodies among horses from army and police stables in two northern states of Nigeria.

Materials and Methods

Description of the horse stables and management

Three horse stables denoted A, B and C located in two states (Kaduna and Plateau) of northern Nigeria, belonging to the army and police force were investigated in this study. Each stable accommodates approximately 30–60 horses under intensive management. The horses are exercised twice daily (morning and evening), and groomed before exercise. They are fed hay and bran twice daily and provided with mineral supplement in the form of salt lick liberally. Often, the horses graze pasture around the stables when they are taken out for exercise. Water is usually

Table 1. *Brucella abortus* antibodies detected by the RBPT in horses from stables in two states of northern Nigeria

| Stable | No of serum tested | Number (% positive) |
|--------|--------------------|---------------------|
| A* | 23 | 4 (17.4) |
| B* | 30 | 2 (6.7) |
| C† | 22 | 5 (22.7) |
| Total | 75 | 11 (14.7) |

*located in Kaduna State, †located in Plateau State.

provided *ad libitum*. Other routine management practices include hoof trimming, de-worming and annual administration of tetanus toxoid. There was no history of any form of prophylactic vaccination. The horses are primarily used for ceremonial activities, but occasionally they are used for controlling crowds by the police.

Sample collection

A total of 75 blood samples were collected from properly restrained horses: 23 samples from stable A, 30 samples from stable B and 22 samples from stable C. Approximately 10 ml of blood was collected from each animal in properly labelled sterile vacutainer tubes and transported to the *Brucella* laboratory, National Veterinary Research Institute, Vom. The blood samples were allowed to clot, and then centrifuged at 3,000 rpm for 5 min. Sera were decanted into properly labelled cryovials, and stored at -20°C until tested. Sera were tested within a week of collection.

Serological test

Sera collected were tested for *B. abortus* antibodies using the Rose Bengal Plate Test (RBPT) as described by Alton *et al.* [3], with *B. abortus* antigen obtained from the Veterinary Laboratories Agency, United Kingdom (UK). Samples that showed signs of agglutination were considered as positive for RBPT.

Results

The results show that 11 (14.7%) of the 75 horses tested were positive for *B. abortus* (Table 1). Stable C located in Plateau State had the highest prevalence (22.7%), while stable B located in Kaduna State had the least (6.7%). Four mares among the 75 horses sampled tested negative (data not shown).

Discussion

The prevalence of brucellosis detected by the RBPT in horse stables in two states of northern Nigeria was 14.7%. The result of the present study is higher than the 4.8% obtained by the serum agglutination test (SAT), reported for northern Nigeria over 20 years ago [5]. The RBPT is a widely used screening test for brucellosis due to its sensitivity, simplicity, low cost and convenience, however, false positive results can appear due to cross-reaction with antibodies of other pathogens [9, 16, 24]. The sensitivity of RBPT compared to SAT may have accounted for the difference in prevalence recorded in this report with that described previously [5]. *Brucella abortus* biotype 1 was previously isolated from a foal [15] in the same state as the horses from stable C which showed the highest prevalence. Although the source of infection could not be ascertained in the present study, there is evidence that cattle are the main source of *B. abortus* infection in horses. In our investigation, it was observed that there is unrestricted cattle movement and cattle often grazed the pasture within the periphery of the stables. Ocholi *et al.* [15] in their study reported serologic evidence of *B. abortus* infection in three horses grazing on the same open paddock as cattle in the same study area. It is probable that the horses in the present study may have been exposed to *B. abortus* through ingestion of infected pasture or by-products around the stables during daily exercise. None of the horses that tested positive showed any apparent clinical signs. This is in agreement with Denny [8] who reported that horses infected with *B. abortus* may remain asymptomatic, however they excrete the organism in milk, urine and purulent discharges, such as fistulus withers and poll evil. *Brucella abortus* infection in horses is of great concern not only as a clinical condition but also as a potential source of infection for man and other animals [8]. Although the brucellosis control program in Nigeria using the *B. abortus* B19 vaccine focuses mainly on cattle, attempts should be made to include brucellosis surveillance strategies for other animals including horses. This is particularly important for minimizing the potential risk of the spread of the disease to humans (horse riders, caretakers, veterinarians) who are in contact with horses on a daily basis. This report adds to our knowledge of the epidemiology of brucellosis in Nigeria, and could therefore stimulate interest for further investigations.

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