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Short Communication

# BRUCELLA ABORTUS AGGLUTININS IN DOGS IN ZARIA, NIGERIA

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## SUMMARY

**Serum samples from dogs brought for routine physical examination, vaccination and other complaints at the Veterinary Teaching Hospital (VTH) of Ahmadu Bello University and other parts of Zaria were tested for *Brucella abortus* antibodies. Forty-three (21.5%) of the 200 dogs studied were positive for *B. abortus* agglutinins by the Rose Bengal Plate Test (RBPT) and 15 (7.5%) by the Serum Agglutination Test (SAT). Exotic, local and cross breeds of the dogs, had prevalence rates of 5.3%, 7.6% and 7.9% respectively. Age-specific prevalence rates were 6.3% in dogs older than 5 years compared to 11.4% recorded for dogs of 1-5 years. The difference was statistically significant (df = 2, $\chi^2$ = 7.64, p<0.05). The prevalence rates of antibodies against *B abortus* in staff quarters (13.6) was significantly (df = 2, $\chi^2$ = 6.34, P<0.05) higher than those of VTH 6.5% and Zaria metropolis 2.1% suggesting a higher contact rater between dogs and cattle. There was no statistical difference between the infection rates in the various breeds and sexes of the dogs sampled. This appears to be the first report of *B. abortus* antibodies in dogs from the Northern States of Nigeria. The current finding is suggestive of higher contact rate between canine and bovine species as they share a common environment. Control programmes is forestall brucellosis epidemic in man and animals is recommended.**

**KEYWORDS:** Dogs, serum, *Brucella abortus*

## INTRODUCTION

Recent investigations and reports have shown that brucellosis is endemic in Nigeria (Halle and Ajogi, 1997). Evidence of infection as well as frank outbreaks of the disease have occurred in cattle (Esuruoso, 1974, Nuru and Dennis, 1975 and Ajogi, 1997) human beings (Banarjee and Bhatty, 1970, Alausa, 1984) sheep and goats (Folade *et al.*, 1974, Bale *et al.*, 1982, Brisibe *et al.*, 1993) camels (Oko, 1979 and Adamu and Ajogi 1999).

Initially, there were doubts as to the presence of canine brucellosis in Nigeria when Falade (1977) found no antibodies in dogs. The first confirmed report of brucella in dogs was cultural recovery of *Brucella canis* from a case of abortion in an imported female boxer (Oko, *et al.*, 1978). A more recent report showed a prevalence of 28.6% only for *B. canis* and not for *B. abortus* antibodies in dogs in Zaria (Adesiyun, *et al.*, 1986). Evidence of *B. abortus* antibodies in dogs in Zaria is lacking. This study aims at determining the status of *B abortus* agglutinins in dogs in Zaria.

## MATERIALS AND METHODS

History of dogs brought to Veterinary Teaching Hospital, Ahmadu Bello University, Zaria including the sex, breed

and age were taken. Dogs in staff quarters (SQ) and the nearby University town of Samaru and Zaria metropolis (ZM) were also sampled. In each case, the basic clinical data such as pulse, respiratory rates and temperature were collected. Ten milliliters of blood was taken by venepuncture of the cephalic vein from the dogs. Serum was separated from the clotted blood and stored at -20$^0$C until used. The sera were tested by RBPT as a screening test and SAT as standard test. An agglutination tire of 1/80 and above was regarded as positive by the SAT.

## RESULTS

A total of 200 dogs were sampled. These comprised 99(49.5%) males and 101 (50.5%) females. Of the 200 dogs, 93 (46.5%) were presented to the small animal clinic of the VTH, ABU, Zaria while 59 (29.5%) and 49 (23.5%) were from staff quarters (SQ) and Zaria metropolis (ZM) respectively. Forty-three (21.5%) of the 200 dogs were positive by RBPT while 15 (7.5%) were positive by SAT. Details of serological titres by SAT are shown in Table I. The table shows that 15 (7.5%) dogs had titres of 1/80 and above. Twenty-five other samples had titres between 1/10 and 1/40. No abortion cases were reported from among the dogs tested. The number and percentage reactors are also shown in the Table I.

**TABLE 1: Serological titers to *B. abortus* agglutinins in serum samples of dogs tested by SAT**

| Serological test | Titre* | Number of samples | % of samples |
|---|---|---|---|
| SAT (N = 200) | 1/10 | 5.0 | 2.5 |
| | 1/20 | 12.0 | 6.0 |
| | 1/40 | 8.0 | 4.0 |
| | 1/80 | 14.0 | 7.0 |
| | 1/160 | 1.0 | 0.5 |

N = Number of serum samples tested; * = A titre of ≥ 1/80 is regarded as positive.

The seropositivity of dogs sampled to *B. abortus* by location, age, sex and breed is presented in Table II. Nine (7.5%) of 118 local breeds, 5 (7.9%) of the 19 exotic (Alsatian) breed were seropositive respectively. There were higher 9 (9.1%) reacting male dogs than 6 (5.9%) females. The difference was however not statistically significant. Similarly, there was a significantly (df = 2, $\chi^2$ = 6.34, p<0.05) higher reactors among dogs of 1 – 5 years, 14 (11.4%) compared to those of 5 years, 1 (6.3%). The prevalence rate of *B. abortus* agglutinnis in dogs in staff quarters (SQ) (13.6%) was significantly higher than those of VTH (6.5%) and ZM (2.1%).

**TABLES II: Relationship between breed, age, sex, location and sero-postivity of *B. abortus* agglutinins**

| | Breed | | | Age (years) | | | Sex | | Location | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Exotic** | *Local* | *Cross* | *<1* | *1-5* | *>5* | *M* | *F* | *VTH* | *SQ* | *ZM* |
| No. of dogs sampled | 19 | 118 | 63 | 61 | 123 | 16 | 99 | 101 | 93 | 59 | 48 |
| No. of dogs positive | 1$^+$ (5.3) | 9 (7.6) | 5 (7.9) | 0 (0.0) | 14 (11.4) | 1 (6.3) | 9 (9.1) | 6 (5.9) | 6 (6.5) | 8 (13.6) | 1 (2.1) |

* Consisted 17 Alsatian and 2 Rotweiler; $^+$ Alsatian; ( ) Percentage
VTH-Veterinary Teaching Hospital; SQ = ABU Staff Quarters; ZM = Zaria metropolis

## DISCUSSION

The study reveals an overall prevalence of 21.5% (RBPT) and 7.5% (SAT) of *B. abortus* antibodies in dogs in Zaria, Northern part of Nigeria. The finding is higher than the prevalence of 4.35% of 92 dogs sampled in Ibadan, South western Nigeria (Agunloye *et al.*, 1999). *Brucella abortus* infection in the Nigerian dog population appear to be an emerging zoonotic problem and the incidence may be higher if brucellae are considered possible aetiologic agents in febrile illnesses.

Serologically, antibodies of *B abortus* and *B canis* are known not to cross-react (Corgel *et al.*, 1979). The 15 reactors observed in this study are therefore indicative of true presence of *B abortus* agglutinins. This suggest past exposure to the organism. An apparently healthy dog had a higher titre of 1/160 corroborating the report that many dogs develop active infection but do not manifest clinical signs (Foster and Smith, 1999). It appears dogs of sexually active age group (1– 5years) are more predisposed to brucella infection than other age groups. The higher infection rate observed in dogs in staff quarters, suggest higher contact rate between bovine and canine species in the staff quarters (SQ).

There have been earlier reports of *B abortus* infection in cattle in the present survey area (Ajogi, 1997). Inadequacy or absence of grazing reserves and ranches for the nomadic Fulani herds is a contributory factor to the spread of *B abortus* infection even in residential areas, as the grazing cattle contaminate the pasture possibly with infected faeces and urine. Owners and handlers of these dogs are at the risk of infection.

The current findings are of epidemiological and public health significance and call for culture and isolation studies. The risk posed by *B. abortus* seropositive dogs to susceptible dogs, human beings and the environment is high. Apparently healthy dogs should be routinely clinically examined and adequate precautions be taken by clinicians, animal handlers and veterinary students to avoid infection. A national control program on brucellosis is indicated.

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