PREVALENCE OF BRUCELLOSIS IN SOME SETTLED CATTLE FARMS IN BAUCHI LOCAL GOVERNMENT AREA, BAUCHI STATE, NIGERIA

Ahmad,A. A.,Mai, H. M. and Abdullahi, U. S.
Department of Animal Production,
Faculty of Agriculture and Agricultural Technology,
Abubakar Tafawa Balewa University, Bauchi
***Corresponding Author's Email**:ahmadabare@gmail.com*

ABSTRACT
Serological study was conducted to determine the prevalence of brucellosis in some settled cattle farms in Bauchi Local Government Area, Bauchi State, Nigeria. A total of 500 cattle sera from 6 farms were collected and examined for antibodies against *Brucella* species using Rose Bengal plate test (RBPT). Information about the sex, age, and breeds of cattle were collected using structured questionnaire. Association between prevalence of the disease and age, sex and breeds of cattle were determined using Chi-square test. The results obtained revealed overall prevalence of 35 (7%).The highest prevalence observedin cattle aged between 4-6 years old was 18 (3.6%) while the least prevalence of 1 (0.2%) was recorded in cattle aged above 9 years. Based on sex, the infection was higher in females 22 (4.4%)than males 13 (2.6%). There was a significant association between the prevalence of brucellosis and the sex of cattle at $P \leq 0.05$. However, there is no significant association between prevalence of the disease and the age and breeds of cattle examined.The study confirmed the presence of brucellosis in the study area and infected cattle in the screened farms are likely to transmit the disease to humans and other susceptible animals. It is recommended that allinfected animals should be immediately culled to avoid further spread of the infection, susceptible animals should be vaccinated and public should be enlightened about the zoonotic nature of the disease.
Key words: Brucellosis, Cattle,Prevalence, RBPT

INTRODUCTION

Brucellosis is an infectious and contagious disease primarily of livestock caused by a number of host-adapted species of Gram-negative intracellular bacteria of the genus *Brucella*. The disease is one of the most widespread zoonoses in the world (Munir*et al.*, 2010). It is one of the most devastating trans-boundary animal diseases and also a major trade barrier and economically very important as a major cause of losses in the livestock industry (Gul and Khan, 2007). Brucellosis infection is widespread globally and is endemic in many developing countries including Nigeria and it has been reported in various parts of the country and in various animal species and in humans (Cadmus *et al*., 2006;Mai *et al*., 2012; Kudi*et al*., 2015; Saleh *et al*., 2016;Mai *et al.*, 2018).In a large seroprevalence survey of brucellosis in cattle herds under diverse production systems in northern Nigeria,Mai *et al*. (2012) reported a significantly higher seroprevalence of brucellosis in cattle with overall level of 37% using RBPT and 26.3% after confirmation with c-ELISA. Many cases have been reported in various literatures (Adamu*et al*., 2016; Saleh *etal*., 2016; Agada*et al*., 2017).

The disease is well known for its effects on decreasing productivity of infected livestock by causing abortions, reduced fertility and decreased milk yield, resulting in substantial economic losses (Nicoletti, 1980). Other clinical signs that characterised the disease include; sterility, still birth, retained placenta, orchitis, hygroma and epididymitis (Adams, 2002). However, the rare clinical signs like mastitis, repeat breeding and joint ill were also reported (Chakravarty *et al.*, 2007). There is an occupational risk to veterinarians, abattoir workers and farmers who handle infected animals/carcasses and aborted fetuses or placentas. Brucellosis is also one of the most easily acquired laboratory infections (OIE, 2006).

Yagupsky and Baron (2005) reported that *Brucella* infection is readily transmissible to humans, causing acute febrile illness – undulant fever – which may progress to a more chronic form and can also produce serious complications affecting the musculo–skeletal, cardiovascular, and central nervous systems. Infection is often due to occupational exposure and is essentially acquired by the oral, respiratory, or conjunctival routes, but ingestion of dairy products constitutes the main risk to the general public. The incidence of the disease in human is thus closely tied to the prevalence of the infection in sheep, goat and cattle and to practices that allow exposure to humans, to potentially infected animals or their products (Carrera *et al.*, 2006).

MATERIALS AND METHODS

To have an insight in to the role of cattle in the epidemiology of brucellosis, we conducted a study to determine the prevalence of brucellosis in some settled cattle farms in Bauchi Local Government Area, Bauchi State, Nigeria.A total of 500 serum samples were collected from six settledcattle farms and tested for the presence of *Brucella* antibodies using Rose Bengal Plate Test (RBPT) as described by Alton *et al.* (1975).Information about individual animal and farms were collected using structured questionnaire (Thrusfield, 2005).

RESULTSAND DISCUSSION

The overall prevalence of brucellosis observed in all the six farms combined was 35 (7%). This is in line with the result of the investigation carried out on cattle by Adamu *et al*. (2016) in three senatorial zones of Bauchi State which revealed the prevalence of (5.4%) using RBPT. Similarly, Farouk *et al*. (2011) also reported much lower overall herds' prevalence of (4.04%) using RBPT from Jigawa State.

The prevalence among the age groups showed that cattle aged between 3-6 years had a prevalence of 18 (3.6%) followed by those between the ages of 7-9 years 11 (2.2%), 0-3 years 5 (1%), and those aged above 9 years 1 (0.2%). This supported the result of investigation conducted in Bauchi State by Adamu *et al*. (2016), who reported the seroprevalence of 6.3% in cattle aged 4-5 years, followed by 5.5% in cattle aged<4 years thencattle with the age range of 5-7 years showed the prevalence of 4.6%, whereas cattle aged above 7years showed the least seroprevalence of 4.0%.Our result revealed no statistically significant association at $p \leq 0.05$ among all the age groups tested. This is also in consonance with the report by Adamu *et al*. (2016).

Based on sex, the result revealed the highest prevalence in females than in males with 22 (4.4%) and 13 (2.6%) respectively using RBPT. Statistically, this showed significant association between the sex of the cattle and the prevalence of the disease ($P \leq 0.05$). This is because female cows remain the locale of the infection, which helps to spread the disease from one animal to another, either through lactation or during mating. Pregnancy and lactation were reported to enhance susceptibility to infection. The growth of virulent strains of *Brucella* organism was reported to be stimulated more in females because of the presence of higher volume of D-erythritol normally found in fetal tissue than in testes and seminal vesicles (Bayemi*et al*., 2009). These thoughts provide proofs as to the different extend of prevalence of bovine brucellosis in relation to sex of animals concern.In addition, this finding agreed with earlier reports byJunaidu*et al*. (2011) who stated that the foci of *Brucella* infection remain in females, which spread the infection from one animal to another. Also, Adamu *et al*. (2016) reported similar result of higher prevalence in females (7.6%) than males (5.8%).

Based on the breeds of cattle examined, the highest infection was found in Bunaji with prevalence of 18 (3.6%), followed by Friesian with 8 (1.6%), Cross breeds 5 (1%), Wadara 3 (0.6%), Bokoloji 1 (0.2%) and Red Bororo 0 (0%). There was no statistically significant association between the breeds of cattle examined and prevalence of brucellosis ($p \leq 0.05$). This agrees with the report by Saleh *et al*. (2016) who indicated that brucellosis is more prevalent in Bunaji cattle slaughtered in three municipal abattoirs of Gombe state. Cadmus *et al*. (2006) also reported the highest prevalence of brucellosis in Bunaji cattle over Red Bororo, Bokoloji and Cross breeds.

CONCLUSIONS AND RECOMMENDATIONS

This study showed that brucellosis is found in the study area. Cattle of all ages and both sexes are carrying the disease andinfected cattle in the herds examined are likely to transmit the disease to humans and other susceptible animals. It is recommended thatinfected animals should be isolated and culled immediately to enable the total eradication of the disease. Food products derived from animals should be properly cooked to protect the consumers from *Brucella* infection andintegrating vaccination against brucellosis into the annual vaccination program of livestock are highly recommended.

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