

SERO-PREVALENCE OF BRUCELLOSIS IN BUFFALOES IN GUJARAT: AN ON-FARM CASE STUDY

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ABSTRACT

The present study was conducted in the month of August, 2011 to determine the sero-prevalence of brucellosis in organized herd of buffaloes with a history of abortions located in North Gujarat. For the purpose, a total of 117 serum samples were collected from buffaloes and were screened for the presence of antibodies against *Brucella* by Rose Bengal plate test. The overall sero-prevalence recorded as 25.64%. Age-wise prevalence indicated that 30.53% animals reacted positive to the test was of above 60 months age. However, in less than 60 months of age groups, only 4.55% animals were positive. Prevalence of brucellosis in aborted animals was 72.00% as compared to 13.04% in animals without history of abortion. The study indicated high-seropositivity of brucellosis in the farm and to prevent economic losses to the farm, it is necessary to develop and adopt various control measures.

Keywords: brucellosis, sero-prevalence, buffaloes, Rose Bengal Test

INTRODUCTION

Bovine brucellosis is caused by *Brucella abortus*, which is responsible for heavy economic losses to the developing countries by causing late term abortions, infertility and reduced milk production. In India, the high sero-prevalence of the disease in buffaloes has been reported as 14.61% to 65.31% by various workers (Sharma and Sani, 1995; Trangadia *et al.*, 2010; Jagapur *et al.*, 2013). Accurate diagnosis, quarantine and proper culling of the infected animals from the herd are required for control and prevention of the disease. Therefore, in the present study, an attempt was made to study the prevalence of brucellosis in organized herd of buffaloes with a history of abortion.

MATERIALS AND METHODS

Sample details

During the month of August 2011, a total of 117 whole blood samples were collected from Mehsani buffaloes reared in a commercial farm located in North Gujarat and the herd had a history of abortion and repeat breeding. Serum was

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separated and stored at -20°C until used.

Rose Bengal Plate Test (RBPT)

RBPT antigen was procured from the Indian Veterinary Research Institute (IVRI), Izatnagar, Uttar Pradesh (UP), India. The test was performed according to procedure described by World Organization for Animal Health (OIE, 2008). The result was recorded after the mixture was rocked gently for 4 minutes at room temperature. Any sign of agglutination was considered as positive.

RESULTS AND DISCUSSION

In the present study, the seroprevalence of brucellosis was recorded as 25.64 percent in buffaloes by RBPT. In agreement to the present study, Mahajan *et al.* (2011) reported a prevalence

of 17.64% in buffaloes by RBPT. Contrary to these findings, Sutariya *et al.* (2005) reported a comparatively low prevalence 7.76% in buffaloes from samples screened from the State of Gujarat. However, a higher sero-prevalence of 52.94% in buffaloes by RBPT was reported from animals reared in organized farms located in various parts of India (Trangadia *et al.*, 2010). Similarly, Chauhan *et al.* (2000) also reported a higher incidence of brucellosis as 44% among buffaloes in Gujarat. Selective sampling of animals with the history of abortion, repeat breeding and retention of placenta may be responsible for the report of higher prevalence in the study (Mahajan *et al.*, 2011).

Age-wise sero-prevalence of brucellosis was shown in Table 1. Out of 95 animals above 60 months age group, 30.53% animals (29) had shown

Table 1. Age-wise sero-prevalence of brucellosis in buffaloes based on RBPT.

Age of animals (months)	Numbers of sera tested	Numbers of positive reactors (%)
13-60	22	1 (4.55)
> 60	95	29 (30.53)
Overall	117	30 (25.64)

Table 2. Prevalence of brucellosis in buffaloes with a previous history of abortion based on RBPT.

Previous abortion history	Numbers of sera tested	Numbers of positive reactors (%)
No	92	12 (13.04)
Yes		
<3 months gestation	4	2 (11.11)
3-6 months gestation	5	2 (11.11)
>6 months gestation	16	14 (77.78)
	25	18 (72.00)
Overall	117	30 (25.64)

positive reaction against brucellosis by RBPT, where as in the below 60 months age groups, only 4.55% (One out of 22 animals) animals reacted positively. Rahman *et al.* (2011) reported a high prevalence (4.92%) in >48 months age group as compared to 13-48 months age group in buffaloes by RBT (2.63%). It is possible that the higher prevalence of brucellosis among older cows may be related to their advanced age, as the organism may remain latent or chronic for an unspecified period before manifesting as clinical disease. Alternatively, aged animal have more chances of exposure to the bacteria and contracting disease. (Nicoletti, 1980).

The sero-prevalence of brucellosis with regards to the history of abortion is depicted in Table 2. The prevalence of brucellosis was recorded 72% (18/25) in aborted animals as compared to 13.04% (12/92) in animals without history of abortion. The prevalence among animals carrying pregnancy of >6 months was 77.78% (14/18) and in each of 3-6 months and <3 months of gestation was 11.11 percent (2/18). However, both the animals aborted before completing the 3 months of gestation had a history of the torsion. Similarly, Ibrahim and Habiballa (1975) reported a prevalence of brucellosis as 14.2 percent in aborted cows. Rahman *et al.* (2011) reported a higher prevalence of brucellosis in animals with the history of abortion as 60% than in animals with no abortion record (1.16%). Contrary to our findings, a high seropositivity was recorded (19%) in animals aborted in the 6th month of their gestations as compared to only 6 percent in the 9th month of their pregnancy (Khan and Soomro, 2013). The host mechanisms responsible for the increased susceptibility to infection in advanced pregnancy are not known, but they may be related to the differential susceptibility of placental trophoblasts

during the middle and late stages of pregnancy (Samartino and Enright, 1992).

The results of the study indicated high sero-positivity of brucellosis among bovines housed in an organized farm. Such situation in the farms warrants immediate attention and preventive measures like restricted movement of animals, proper screening of animals before procurement, quarantine the animals before entry to the main herd etc. should be adopted immediately.

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