STUDIES ON INFERTILITY IN CATTLE AND BUFFALOES CAUSED BY BRUCELLA ABORTUS

K. Sukumar, P. Tamilselvan and N. Dorairajan
Department of Veterinary Microbiology, Veterinary College and Research Institute,
Namakkal- 637 002, Tamil Nadu, India

ABSTRACT

Aim of the present investigation was to assess the prevalence of antibodies to Brucella abortus infection in infertile Cattle and Buffaloes and also to study the incidence of brucellosis in humans those who come in contact with infected animals. Out of the total 146 sera samples, (136 were obtained from cattle and 10 from buffaloes), with a history of abortion and infertility, 32 sera (23.52%) from cattle were positive and no buffalo sera were positive by Rose bengal plate test (RBPT). The 32 sera samples which were positive by RBPT were subjected to standard tube agglutination test (STAT), 13 samples which showed RBPT+ reaction were negative by STAT; out of the 9 samples showed RBPT++ reaction, 2 were found positive by STAT and out of the 10 samples showed RBPT+++ 8 were found positive by STAT. Totally 10 samples of the 32 samples from the cattle were positive for the brucellosis by STAT. Ten human sera were collected from the persons who have close contact with the cattle, which were positive for Brucellosis, were subjected to STAT, and it was found that all sera were negative for brucellosis.

Key words: Bovine infertility, Brucella abortus, Standard tube agglutination test, Rose Bengal plate test

Brucellosis is one of the important emerging bacterial zoonotic diseases that occurs in variety of animals and humans, is primarily a reproductive disease characterized by abortion, retained placenta and impaired fertility in the principal animal host. Brucella abortus mainly infects cattle and is the main cause of contagious abortion in cattle (Manthei and Carter, 1950). Humans usually acquire brucellosis by consumption of raw milk or milk products. Brucellosis is also recognized as an occupational hazard for farmers, veterinarians, and workers in the meat industry where the area is enzootic for B. abortus. India is an agricultural country and exposure of the human to animals is quite high. Inspite of this, very few studies on brucellosis have been undertaken in an occupationally exposed group. Hence, the present study was formulated to assess the prevalence of antibodies to B. abortus infection in infertile Cattle and Buffaloes and also to study the incidence of brucellosis in humans those who come in contact with infected animals.

A total number of 146 sera samples were collected from cattle (136) and Buffaloes (10) with the history of abortion or infertility in and around Coimbatore and Namakkal. The sera samples were collected along with the data on age, species and nature of service etc. The sera samples were subjected to screening for Brucella antibody by using Rose Bengal plate test (RBPT) and Standard tube agglutination test (STAT). The antigens for the above test were procured from IVPM, RaniPet.

Sera that showed positive RBPT were further titrated by the standard tube agglutination test. Samples were collected from the owner's and...
persons who has got close contact with the animal showing positive reaction for Brucella abortus antibodies by Rose Bengal Plate test and was later confirmed by standard tube agglutination test. A titer of 1:40 and above was taken as infective titer for animal brucellosis and 1:80 and above was considered to be positive for human brucellosis.

Out of the total 146 sera samples, (136 were obtained from cattle and 10 from buffaloes), 32 sera (23.52%) from cattle were positive and no buffalo sera were positive by RBPT. Brucella abortus mainly infects cattle and is the main cause of contagious abortion in cattle (Crawford et al., 1990). Sheep, goats, dogs, camels, buffaloes as well as feral animals may also contract B. abortus infection. This might be the reason for no occurrence of brucellosis in buffaloes, very less number of samples was screened for brucellosis in case of buffaloes and could also be one of the reasons of getting no positive reactors against Brucellosis. The 32 sera samples which were positive by RBPT were subjected to STAT. 13 samples which showed RBPT+ reaction were negative by STAT; out of the nine samples showed RBPT++ reaction, two were found positive by STAT and out of the 10 samples showed RBPT+++, eight were found positive by STAT. Totally 10 samples of the 32 samples (31.25%) from the cattle were positive for the brucellosis by STAT.

Ten human sera were collected from the persons who had close contact with the cattle, positive were subjected to STAT, but it was found that all sera were negative for brucellosis. Koshi and Meyers (1967) reported 20 cases of brucellosis in human over a ten year period out of which 11 cases were connected with animal husbandry.

The animals, which are positive, are having history of natural service and poor management. It indicates that management exerts a major influence in the prevalence of the diseases. Similar observations were made by Radoaitits et al. (1994) indicating that differences in various factors like management, housing, nature of service, sanitary condition and method of disposal of infected animals affected prevalence of diseases.

Maximum percentage (12.5%) of animals positive for brucellosis were of 7-year age group followed by 6 (11.1%), 8 (11.1%) and 5 (9.8%) years age group. No prevalence was found in younger age group (four years and less) as compared to older animals (more than four years age groups). Nicoletti (1980) expressed similar views indicating less prevalence of brucellosis in young ones. It showed that the aged animal have more chances of exposure to the bacteria and contracting disease. Nicoletti (1980) also reported prevalence was significantly higher in cattle than buffaloes. Enright (1990) reported that susceptibility of cattle to B. abortus infection is influenced by the age, sex and reproductive status of the individual. Sexually mature, pregnant cattle are more susceptible to infection with the organism than sexually immature cattle of either sex. Natural exposure to field strains occurs primarily at the time of parturition of infected cows.

In this study the cattle which showed positive titer for Brucella abortus are infertile. This infertility is due to B. abortus infection. Since natural service is being practiced for the all cattle, which showed positive titer for B. abortus, the infection might be transmitted from the infected bull through semen containing organism, by natural service.

There is little evidence to show that Brucellosis is spread from an infected bull to susceptible cattle by natural service (Manthei, 1968). Roberts (1971) reported that abortion in cattle caused by B. abortus and a subsequent period of infertility is usually experienced. According to early field observations, the bull was generally supposed to be one of the more important factors in the spread of the diseases (Roberts, 1971). The evidence indicates that Brucella infection of the uterus plays a definite role in infertility even though Boyd and Reed (1960) reported that infertility and endometritis did not occur in the recently infected non-pregnant
animal. These reports emphasize strongly that Brucella abortus is one of the microbial agents causing infertility in a herd and it should be controlled to prevent economic losses due to reproductive failure and abortion.

ACKNOWLEDGEMENT

The authors wish to thank the Tamilnadu State Council for Science and Technology, Chennai for funding this study.

REFERENCES


