Serological Diagnosis of Brucellosis in Animals and Man and its Therapeutic Management

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ABSTRACT
A total of fifteen (15) unvaccinated and serologically Brucella positive animals (6 cows, 7 ewes and 2 rams) and one human screened by Rose Bengal plate test (RBPT) and standard tube agglutination test (STAT) were selected in this study. The antibody titres of the animals ranged between 1:80 I.U to 1:320 I.U. The positive animals were simultaneously treated with long acting oxytetracycline and streptomycin sulfate. The animals were found negative for brucellosis on 60th day after treatment, when retested by RBPT and STAT. All the animals gave birth to healthy newborn and the orchitis of ram were subsided after treatment. The man was treated with doxycycline orally and streptomycin injection. The person was found negative for brucellosis, when examined on 50th day of post-treatment. It may be concluded that long acting oxytetracycline and streptomycin helped to control the multiplication of Brucella organism in animals.

Keywords: Brucellosis, cow, human, sheep.

Brucellosis is a disease of major economic and zoonotic importance (Caselles et al., 1989) manifested by abortion, stillbirth, retention of placenta and infertility in animals. All domestic animals including wild animals and man act as host (Anon, 1971).

Although multiple antibiotic treatment for controlling the disease has been successfully used in man (WHO, 1986), the same has not been widely used in animals because of the application of test and slaughter programmes, high cost of treatment and variability in success (Marin et al., 1989). Brucella species had shown sensitivity to penicillin, oxytetracycline, streptomycin, gentamycin, rifampicin and some other quinolones on in-vitro studies (Robertson et al., 1973; Steineberg and Kunkel, 1982; Nicoletti et al., 1985). The present investigation was aimed to evaluate the effect of long acting oxytetracycline and streptomycin on seropositive animals diagnosed by serological tests having history of abortion storm as well as orchitis in the herd.

A total of fifteen (15) animals comprising 6 cows, 7 ewes and 2 rams consisted the subject of the present study. One para-veterinarian of the faculty regularly attending gynaecological cases showed joint pain and intermittent fever for 3 to 4 months, followed by orchitis, was also taken in this study. All the ewes aborted at 4 months of pregnancy, whereas the cows aborted in between 5 to 8 months of pregnancy. Following abortion all the cows suffered from retained fetal membrane which was removed by local veterinarian. One cow was suffering from
lameness and another one was showing fever (104°F). Both the rams showed unilateral orchitis and did not respond to routine treatment. The blood samples of the animals were collected and serum was first screened by Rose Bengal plate test (RBPT) and then titre was detected by standard tube agglutination test (STAT) as described by Alton and Jones (1967). The cows also showed positivity to milk ring test (MRT). All the animals showed antibody titre of 1:80 to 1:320 I.U. (Table 1). The serum sample of the para-veterinarian was sent to Sher-e-Kashmir Institute of Medical Sciences, Soura, and Srinagar and was found positive for brucellosis.

The positive animals were simultaneously treated with long acting oxytetracycline @ 20 mg/kg body weight intramuscularly at 72 h interval for 5 occasions and streptomycin sulfate @ 25 mg/kg body weight intramuscularly for 5 consecutive days starting from initiation of oxytetracycline injection. All the animals responded to the above treatment with clinical recovery of orchitis in both the rams. The serum samples tested on 60th days post-treatment showed negative results by both RBPT and STAT. These animals came into estrus in next breeding season and after breeding gave normal birth. Similar findings were also reported earlier (Nicoletti et al., 1985). Brucella organisms are sensitive to tetracycline and streptomycin (Hall and Manion, 1970; Ariza et al., 1985). Thus combination of long acting oxytetracycline and streptomycin helped to control the multiplication of Brucella organism in animals.

Zoonotic nature of the disease has also been recorded earlier (Singh et al., 2004; Mrunalini et al., 2004) and was recorded in the present study too. The para-veterinarian responded to the treatment of doxycycline 100 mg tablet daily for 45 days and streptomycin injection 1 g daily for 21 days. The person was found negative for brucellosis, when examined on 50th day post-treatment.

From the present investigations it can be concluded that long acting oxytetracycline and streptomycin can be used to treat brucellosis in animals and doxycycline in human. A practical and effective treatment regimen can be used to treat valuable breeding animals and will benefit farmers of such countries where people can not afford to control the disease by test and slaughter approach.

### References


