ABSTRACT

Brucellosis is a disease of considerable economic and social importance caused by different species of *Brucella*. The disease is mainly an occupational disease in India and not an uncommon disease. The development of a highly sensitive, specific and definitive diagnostic for brucellosis remains as elusive target. The indirect Enzyme Linked Immunosorbent Assays can measure M, G and A immunoglobulin, which allows for a better interpretation of the clinical situation because of higher sensitivity and specificity compared to conventional serological tests.

The present work was undertaken at Project Directorate on Animal Disease Monitoring and Surveillance, Bangalore to study the sero-prevalence of human brucellosis and endemicity of infection in different parts of Karnataka state by using the conventional Rose Bengal Plate Agglutination Test (RBPT), Standard Tube Agglutination Test (STAT) and an indigenously standardised indirect Enzyme Linked Immunosorbent Assay (ELISA).

The study group was consisting of 618 professionals (Group 1), 1500 cases of Pyrexia of Unknown Origin (Group 2) and 652 individuals (Group 3) without a history of fever but with consistent joint pain, backache etc., making a total of 2770 samples.

The analysis of 2770 serum samples by RBPT and STAT had revealed 4.98% (138 positives) sero-prevalence and 11.58% by indirect ELISA (321 positives). All the sero-positive cases were distributed between 10 to 60 years of age. The sero positivity for a total of 2770 samples screened was 91.58% in males and 8.41% in females. Sero positivity was found to be more in the age group of 41-50 years (38%), followed by 31-40 years (37.07%), followed by 21-30 years (14.33%), followed by 51-60 years (6.85%), followed by 11-20 years (2.8%) with the least prevalence recorded in the age group < 10 years (0.93%).
The 618 serum samples from professionals had shown 2.26% (14 positive) of sero-positivity by RBPT and STAT and 15.69 % (97 positives) by indirect ELISA. Of all the 97 sero-positive professionals, the highest rate of sero-prevalence of brucellosis was observed among the veterinary inspectors (41.23%) followed by veterinary assistants (30.92%), veterinary officers (12.37%), veterinary supervisors (6.18%), animal attendants i.e. Group D (6.18%), shepherd (2.06%) and butcher (1.03%).

The 1500 serum samples collected from Pyrexia of Unknown Origin (PUO) cases, had given a sero positivity of 8.26% (124 positives) by RBPT, STAT and 13.6% (204 positives) by indirect ELISA. The sero positivity in males was 12% (180 positives) and 1.6% (24 positives) in females. The sero-prevalence was higher in males than females. The sero-positive cases were found to be highest between 20 to 40 years of age. The age group of <20 showed 0.8% prevalence, the age group > 20 years showed 7.46 % prevalence and the age group of > 40 years showed 5.33% of prevalence. A sero-prevalence of 9.27% (139 positives) and 4.33 % (65 positives) had been observed in South Karnataka and North Karnataka respectively. In individuals with no history of fever but associated with joint pain, backache etc., the sero positivity was reported only by indirect ELISA and it was 3.06%, (20 positives).

All the samples which were tested positive by RBPT were also positive by STAT with agglutination titers of ≥ 1:80. The indirect ELISA done by using the smooth lipopolysaccharide (S-LPS) antigen of *Brucella abortus* 99 and *Brucella melitensis* 16 M biotype 1 was found more sensitive than the RBPT and STAT.

The present study showed that the brucellosis is still a professional hazard in the veterinary practitioners and the cases of brucellosis may be easily misdiagnosed because of the deceptive nature of the clinical signs and symptoms. All the cases that showed the presence of antibodies to
*Brucella abortus* had varied clinical manifestations of brucellosis. The clinicians should keep in mind the possibility of an occupational or environmental exposure in cases of fever. It would also be worthwhile to create awareness about the disease in such professionals so that necessary precautions and periodic screening of such occupationally exposed people can be done. Elimination of the infection in animals by vaccination to produce *Brucella* free animals/animal products can prevent the infection in humans.