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SEROPREVALENCE OF BOVINE TUBERCULOSIS IN KRISHNA DISTRICT OF ANDHRA PRADESH, INDIA

Hareesh Didugu[1*], Ramanipushpa RN[2], Narasimha Reddy Ch E[1], S BhskaraRamraju Sagi[3], Venkateswara Reddy M[4], Anitha Devi M[5], Nanda Kishore K[6]

[1]Veterinary Assistant Surgeon, Animal Disease Diagnostic Laboratory, Vijayawada, Andhra Pradesh, India; [2]Associate Professor, Department of Veterinary Microbiology, NTR College of Veterinary Science, Gannavaram , Andhra Pradesh, India; [3]Veterinary Assistant Surgeon, State Institute of Animal Health, Tanuku, Andhra Pradesh, India; [4]Veterinary Assistant Surgeon, Veterinary Dispensary, Pedakakani, Andhra Pradesh, India; [5] Veterinary Assistant Surgeon, Animal Disease Diagnostic Laboratory, Kakinada, Andhra Pradesh, India; [6]PG Scholar, Department of Veterinary Pathology, NTR College of Veterinary Science, Gannavaram, Andhra Pradesh, India

Abstract: *Mycobacterium bovis* is a chronic, infectious, contagious, debilitating disease affecting all age groups and species including humans. The seroprevalence for *Mycobacterium bovis* among bovines in Krishna district was investigated in this study. A total of 456 serum samples were collected, 48 from non-descript cattle, 62 from crossbred cattle and 346 from buffaloes. The IDEXX®*M. bovis* antibody test kit was used to detect antibodies against *Mycobacterium bovis.* Among 456 bovine samples, 4 (0.87%) were positive against *Mycobacterium bovis* antibodies. The seroprevalence of Bovine tuberculosis (bTB) was significantly lower (2.08% in non-descript cattle, 3.22% in cross bred cattle and 0.29% in buffaloes) in the studied area.

Keywords: Bovine Tuberculosis, Krishna District, *M.bovis*, Seroprevalence.

INTRODUCTION

Bovine tuberculosis (bTB), caused by *Mycobacterium bovis (M. bovis)* is a chronic, infectious, contagious, debilitating disease that has become a resurgent problem in animals and humans [1]. Cattle in the early stages of the disease, before any lesions are visible, may also excrete viable mycobacteria in nasal and tracheal mucus. In rare cases, humans can be infected with *M. bovis* by direct inoculation. It is an occupational hazard to people handling infected meat and was referred as Butcher's wart. As per WHO (World Health Organization), MBTC causes 8 million new cases and 3 million deaths every year, potentially infecting one third of the world population [2]. Major cause of zoonotic tuberculosis is via consumption of unpasteurized milk [1]. Infection caused by *M. bovis* is considered as a major zoonotic disease in most of the world. Saliva, milk and other

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discharges serve as major sources of infection. Apart from humans contracting infection from animals, they will also transmit the infection to different animals [2]. Hence to assess the prevalence of bTB, a study concerning *M. bovis* in bovines using ELISA as a sero-diagnostic aid was carried out in Krishna district of Andhra Pradesh, India.

MATERIALS AND METHODS

A total of 456 blood samples (48 non-descript cattle, 62 cross bred cattle and 346 buffaloes) were collected randomly from various villages in Krishna district, Andhra Pradesh, India during August, 2014 to February, 2015. Ten ml of blood sample was collected aseptically from each animal, from jugular vein using BD® vaccutainers, allowed to clot at room temperature, transferred to laboratory. The serum was separated and stored at -20°C until further use. IDEXX®*M. bovis* antibody test kit was certified by the OIE (World organisation for Animal Health) as fit for detection of antibodies to *M. bovis*in sera samples of bovines. Procedure was conducted as per the manufacturer guidelines and optical densities of samples were read at 450 nm using BioTek® microplate reader. The results were analysed with xChekPlus® software.

RESULTS AND DISCUSSION

Results revealed that only 4 (0.87%) out of 456 samples were found positive for *M. bovis* antibodies. One (2.08%) among 48 non-descript cattle, 2 (3.22%) among 62 cross bred cattle and 1 (0.29%) among 346 buffaloes were found positive.

Apart from developing countries TB continue to pose a threat to the economy of developed countries. Owing to this TB was listed in 'cattle diseases and infections' by OIE and holds a great significance in international trade of animals and animal products [3]. Very low prevalence of 0.87% of bTB observed in this study was in agreement with the findings of Neeraja *et al.* [4], who reported 0% in Bangalore, India. On contrary high prevalence 13.82% [5] in India, 50% in Egypt and 51.92% [6] in Iraq using ELISA as a diagnostic method was reported by various authors. Higher prevalence of 3.22% in crossbred cattle compared to 2.08% in non-descript cattle as observed in this study was in concurrence with the findings of Acha and Szyfres [7], who reported higher prevalence of bTB in exotic dairy breeds compared to indigenous cattle. Contrary to the findings of Bonsu*et al.* [8] and Rawat and Kataria [9], lower prevalence of bTB was observed in buffaloes (0.29%), compared to cattle in this study. Low prevalence of bTB in the studied area may be attributed to better farming practices, availability of timely veterinary aid and improved farmer awareness.

Bovine tuberculosis, caused by *Mycobacterium bovis,* continues to be an important livestock disease in many countries and its control and eradication is complicated by the lack of sensitive tests as well as presence of significant wildlife reservoirs [2]. Traditional tests like single intradermal test are time consuming, molecular diagnostic tests like PCR need technical expertise, whereas ELISA is simple, reliable and easy to perform. Invention of pasteurisation of milk, a major breakthrough, assists in reducing the possibility of zoonotic transmission of TB via milk. But, habit of consuming raw milk, major chunk of milk distribution by vendors and reduced adaptability to pasteurised milk in India serves as important factors contributing zoonotic tuberculosis. Common practice of pooling of milk poses a public health threat to consumers as Kleeberg [10] reported that any effected bovine can shed enough bacilli to contaminate milk form 100 bovines. Government of India is having a robust TB control programme in humans. Emergence of multidrug resistant (MDR) and extensively drug resistant (XDR) strains of *Mycobacterium spp.,* along with lack of specific control programme for containing bovine TB are leading to cross infection and reinfection of humans from infected cattle, limiting the effective eradication of disease as a whole [11]. Lack of collaboration between vets and human doctors in controlling TB hold significance, stressing the need for *one health* approach in eradicating the disease.

CONCLUSION

In this regard, it is to conclude that there is a stringent need to implement bTB control programme with test and slaughter policy supported by financial aid to the farmers. Continuous epidemiological studies among animals and humans should be conducted to assess the prevalence and mode of transmission of disease for effective eradication of tuberculosis and its zoonotic implications.

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