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Molecular Detection of Tuberculosis in Dogs in the Three North-Eastern States Assam, Mizoram and Nagaland of India

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Abstract : Mycobacterium tuberculosis (MTB) is one of the most closely-related intracellular bacterial pathogens, grouped as the M. tuberculosis complex (MTC). MTB, the primary agent of human tuberculosis (TB), can develop clinical TB in animals as 75 percent of canine mycobacterial infection is caused by close contact with an infected human being. In the present study, molecular detection of TB in dogs in three North-eastern states of India, Assam Mizoram, and Nagaland was carried out. So far, there has been a lack of systematic study in these regions, hampered by slow diagnostic methods and poor infrastructure. In an attempt to rectify this situation, molecular epidemiology was carried out for nine months to detect canine TB in a sample of 340 dogs. Isolation of DNA was done with swabs (throat/nasal), nodules of lungs and fluids from 100 suspected dogs and the molecular study were carried out with the help of conventional and real-time PCR. Post-mortem study was also carried out. Our results showed that the prevalence of clinical TB in dogs from a high-risk setting was 1 percent. However, the prevalence of immunological sensitization to M. tuberculosis antigen in dogs living in contact with sputum smeared positive TB cases was almost 50 percent. The latter setting had the maximum impact in terms of TB transmission. During the study period, a survey with a standard questionnaire was carried out in the TB hospitals to study reverse zoonosis. It was observed that an infected human being was one of the major risk factors for dogs to contract the infection. This observation was drawn by examining the probable airborne transmission from humans to their pets or strays. The present study helped to discover the nuances of TB transmission more clearly and systematically as compared to other sporadic tests to detect MTB in canine.

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