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Survey of bovine tuberculosis and its predisposing factors around Muzaffarpur District, Bihar

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Abstract

Tuberculosis, caused primarily by *Mycobacterium Tuberculosis* in humans, is a dreaded disease affecting more than 9 million people every year, causing 1.4 million deaths per year worldwide. In cattle, Bovine Tuberculosis, a dreaded disease, is caused by *Mycobacterium Bovis*. *M. bovis* is transferred to humans through different routes and induces *M. tuberculosis*. In the current survey, we chose our Muzaffarpur district to estimate the occurrence of suspected Bovine TB. A total of 433 cattle heads have been surveyed as yet, out of which three have been found to be highly suspected of Bovine TB. The predisposing factors, such as inadequate nutrition, poor housing, management practices, the genetic breeds, etc., are also responsible for the spread of Bovine TB.

Keywords: Bovine tuberculosis, disease, cattle, survey, predisposing factors

Introduction

Tuberculosis, caused primarily by *Mycobacterium tuberculosis* in humans, is a dreaded disease affecting more than 9 million people every year, causing 1.4 million deaths per year worldwide (ICMR, Olea-Popelka *et al.*, 2008; Waters *et al.*, 2018) [7, 12]. In cattle, Bovine Tuberculosis, a dreaded disease, is caused by *Mycobacterium bovis*. Both species are members of the *Mycobacterium Tuberculosis Complex* (MTBC) (Cosivi *et al.*, 1998) [4]. Cattle and buffaloes are the primary reservoirs of *M. bovis* (Bapat *et al.*, 2017, Borna *et al.*, 2013) [2, 3]. In the Indian pastoral economy, livestock is essential for our health and wealth, and it significantly contributes to government revenue and the local economy. India is ranked first in milk production in the world. Of about 300 million domesticated cattle, 21.8 million are infected with *M. bovis* (Duffy *et al.*, 2020) [5].

According to the livestock census 2019, the population of cattle and buffaloes in Muzaffarpur district is 425801 and 296568, respectively (total 7.2 lakhs) (Duffy *et al.*, 2020) [5]. According to a 2013-14 survey, the total milk production is 243.23 million litres, but according to the area and geographical conditions, the district should contribute more than this amount of milk. In addition to adversely impacting cattle productivity, Bovine TB also induces *M. Tuberculosis* in humans via zoonotic transmission through different routes (Bapat *et al.*, 2017) [2]. The zoonotic transmission from 'cattle to cattle' and 'cattle to humans' is more common (1). Out of all human TB cases, about 10% caused by *M. bovis* in developing countries (Olea-Popelka *et al.*, 2008; Pedro *et al.*, 2013) [7, 10]. The main transmission routes to humans are using unpasteurized milk, inhaling infected droplets, etc. The caretakers and their families, living close to infected cattle, have significant chances to get infection (Bapat *et al.*, 2017, Clinton *et al.*, 2014) [2, 6]. In addition to signs and symptoms, the predisposing factors are essential to survey the suspected cases of bovine tuberculosis. The aim of this survey to provide the initial information of suspected cases of bovine tuberculosis in five blocks of Muzaffarpur district of Bihar, India.

Material and Method

In the current study, five blocks, namely Kanti, Mushahari, Motipur, Bochahan, and Sakra, of Muzaffarpur, Bihar, India, have been surveyed. The concerned veterinary medical officer, vaccinators, and artificial insemination workers were also involved in this survey program,

which involved random visits. The juveniles (more than six months) and the adults are included in this survey program. Two breeds of cow (Indigenous and Jersey) and a single breed of buffalo (Murrah) have been included, and pregnant cattle heads are not included in this survey.

The survey's primary goal is the isolation of suspected cattle, which is purely based on signs, symptoms, and predisposing factors of Bovine TB. A questionnaire format is generated to gather current information and their history. The questionnaire format is used to survey suspected cattle heads and contains owner details, animal categorisation, different signs and symptoms, other diagnostic methods, medications, and details of predisposing factors. Predisposing factors include nutrition, housing, management, and heredity.

Result

A total of 433 cattle heads were surveyed, and this is

Name of blocks	Cattle				Buffalo		Total	
	Indigenous		Jersey					
	Surveyed	Suspected	Surveyed	Suspected	Surveyed	Suspected	Surveyed	Suspected
Bochachan	35	0	25	0	30	0	90	0
Kanti	47	0	36	1	20	1	90	2
Mushahari	22	0	30	0	8	0	60	0
Sakra	30	0	35	0	25	1	90	1
Motipur	40	0	40	0	10	0	90	0
Total	174	0	166	1	93	2	433	3

Discussion

The ongoing Bovine Tuberculosis (BTB) survey in Muzaffarpur district highlights several critical animal and public health concerns. Bovine TB, primarily caused by *Mycobacterium bovis*, is a significant zoonotic disease that affects cattle and buffaloes and can be transmitted to humans (Bapat *et al.*, 2017) [2]. The preliminary results from this survey indicate that out of 433 cattle heads, three are highly suspected of having BTB, two of which are buffaloes, and one is a cow. This survey recently shows that the proportion of suspected cases is 0.69%.

The survey's focus on five blocks (Kanti, Mushahari, Motipur, Bochahan, and Sakra) out of the planned 16 indicates a systematic approach to assessing the prevalence and risk factors associated with BTB. The presence of suspected cases in rural blocks like Kanti and Sakra underlines the importance of continuous monitoring and intervention strategies. The survey also reveals the inconsistency in the different symptoms in cows and buffalo. The death of a buffalo in Sakra also raises concerns about the disease's severity and potential impact on the local livestock economy. The farmers of the study site were not aware of symptoms and preventive measures, and one more mistake made by such one was that those farmers taken many opinions at a time, especially in cases of infectious diseases.

The predisposing factors, such as inadequate nutrition, poor housing, and management practices, as well as the genetic predisposition of certain breeds, are critical areas that need to be addressed to mitigate the spread of BTB. However, the risk of zoonotic transmission to humans, particularly among those in close contact with infected animals, underscores the urgent need for improved awareness and preventive measures, such as pasteurisation of milk and better hygiene practices among caretakers.

This survey underscores the importance of a comprehensive approach that includes the identification and isolation of

continuing. Out of 433, 340 are cows, and 93 are buffaloes, of which three cattle heads are highly suspected of bovine tuberculosis, and out of 430, some (about 10) cattle heads are suspected of other diseases, and the remaining 420 are typical. Out of three cases, two are buffalo and a cow. The three suspected cases show most of the symptoms of BTB. The most prominent symptoms are a nagging cough, murmuring sound, weight loss, rib visibility, reduced milk, pneumonia, poor physical condition, etc. No enlargement of lymph nodes is found in such three cases, i.e., all symptoms indicate that the three cases are of pulmonary tuberculosis. This survey was done in the last three months of 2023 and the first six months of 2024. All three cases are found in rural areas of Kanti and Sakra blocks. One cow and one buffalo from the Kanti block and a buffalo from the Sakra block. The buffalo from the Sakra block has since died.

suspected cases and the implementation of robust preventive measures. This approach is crucial to protecting animal and human health in the Muzaffarpur district, Bihar.

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References

1. Ayele WY, Neill SD, Zinsstag J, Weiss MG, Pavlik I. Bovine tuberculosis: an old disease but a new threat to Africa. *Int J Tuberc Lung Dis*. 2004;8(8):924-937.
2. Bapat PR, *et al.* Prevalence of zoonotic tuberculosis and associated risk factors in central Indian populations. *J Epidemiol Glob Health*; 2017.
3. Borna M, Salome D, Silvia A, Hatten-Dorf J, Claudio LMJ, Seven DC, Paul HVD, Jakob Z. Zoonotic *Mycobacterium bovis*-induced tuberculosis in humans. *Emerg Infect Dis*. 2013;19(6).
4. Cosivi O, Grange JM, Daborn CJ, Raviglione MC, Fujikura T, Cousins D. Zoonotic tuberculosis due to *Mycobacterium bovis* in developing countries. *Emerg Infect Dis*. 1998;4:59-70.
5. Duffy SC, *et al.* Reconsidering *Mycobacterium bovis* as a proxy for zoonotic tuberculosis: A molecular epidemiological surveillance study. *Lancet Microbe*. 2020.
6. Clinton MJ, Diana M, Cardwell MB, Robert R Jr, Gregory GC. Human and cattle: a review of bovine zoonosis. Davis (CA): University of California, California Animal Health and Food Safety Laboratory System; 2014.
7. Olea-Popelka FJ, Costello E, White P, McGrath G,

- Collins JD, O’Keeffe J, Kelton DF, Berke O, More SJ, Martin SW. Risk factors for disclosure of additional tuberculous cattle in attested-clear herds with one confirmed lesion at slaughter in Ireland during 2003. *Prev Vet Med.* 2008;85:81-91.
8. Central TB Division, Ministry of Health and Family Welfare. India TB report 2019. New Delhi: Government of India; 2019. Available from: <https://tbcindia.gov.in>
 9. Paolo BM, Carly CR, Mitchell PV. Enhanced detection of *Mycobacterium bovis*-specific T cells in experimentally infected cattle. *Front Vet Sci.* 2021;8:676710.
 10. Pedro P *et al.* Prevalence of latent and active tuberculosis among dairy farm workers exposed to cattle infected with *Mycobacterium bovis*. *PLoS One.* 2013;7(4):e2177.
 11. Srinivasan S, Easterling L, Rimal B, Niu XM, Conlan AJK, Dudas P. Prevalence of bovine tuberculosis in India: a systematic review and meta-analysis. *Transbound Emerg Dis.* 2018.
 12. Waters WR, Palmer MV, Buddle BM, Vordermeier HM. Bovine tuberculosis vaccine research: historical perspectives and recent advances. *Vaccine.* 2012;30:2611-2622.

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