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Zoonoses and Food Hygiene News, published four times a year, provides a medium for disseminating technical information on matters related to zoonoses and food hygiene generated in the world, particularly in Nepal. The editors welcome submissions on these topics with appropriate illustrations and references. The views and opinions expressed in the News are those of the authors.

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Study on Prevalence of Bovine Tuberculosis in Buffaloes and Cattle of Dhading District

Anjana Silwal, Durga Datt Joshi and K. B. Shrestha

ABSTRACT

A study was conducted among 50 cattle and buffaloes belonging to 20 owners at Dhading district to find out the prevalence of tuberculosis by single intradermal tuberculin testing. Among 45 cattle tested, 2(4%) were found positive. Similarly among the 5 buffaloes tested, one (20%) was found positive. The total prevalence was found to be 6%. TB was more prevalent animals above 5 years of age which was 8% whereas 3.7 % of the animals below 5 years of age were found to be positive.

BACKGROUND OF TUBERCULOSIS

Tuberculosis is a mycobacterial disease of man, animals and birds, caused by pathogenic organisms of the genus Mycobacterium, characterized by progressive development of tubercles in different organs leading to deaths in untreated cases. Tuberculosis occurs in every country of the world and is of major importance in dairy cattle among animals with *M. bovis* as the specific cause of tuberculosis in cattle (Radostatis *et al.*, 2000).

According to WHO (2006), 5% cattle are affected worldwide with tuberculosis and 30% cattle lose their power of productivity. It is a serious zoonotic disease of high economic importance. All mammals are susceptible to Mycobacterial infection. Bovine tuberculosis is prevalent among cattle and buffaloes in Nepal (Joshi *et al.*, 1974; Morel, 1985; Joshi, 1986; Dhakal & Tiwari, 1993; NZFHRC, 2002).

The Office International des Epizootics (OIE) classifies BTB as a list B disease, a disease which poses great public health significance. It is of significance to the international trade of animals and animal products.

M. bovis can be transmitted by the inhalation of aerosols, by ingestion, or through breaks in the skin. *M. bovis* can infect humans, primarily by the ingestion of unpasteurized dairy products but also in aerosols and through breaks in the skin (Evans *et al.*, 2007).

Bovine TB in Nepal

May be the first report on buffalo TB was from the government farm at Pokhara in which out of 39 buffaloes, 2 buffaloes were found positive with 7 doubtful reactors revealing the prevalence of this infection to be 24.4% in the farm (Joshi *et al.*, 1974). In 1981, 88 buffaloes in the same farm were tuberculin tested and 4 (4.55%) were found to be positive for TB (Joshi, 1986). The prevalence of TB was estimated in Pakhribas (Dhankuta) using the single intradermal comparative Tuberculin test by Morel (1985). A total of 2% buffaloes were positive to the test with 2% of the buffaloes as inconclusive reactors.

According to the FAO (1987) report, Bovine T.B was detected as enzootic in Nepal. In a study carried out in different slaughter houses of Nepal, 14% of buffaloes were found to have tuberculosis lesion (Joshi, 1987). Among 800 milking cows 32 (4%) positive reactors were of Kathmandu and Pokhara (Pun *et al.*, 2004). At IAAS in Chitwan, out of 39 buffaloes, 4 (10.25%) had severe infection of TB with 16 (41.2%) showing mild reaction. Similarly, in Mangalpur VDC of Chitwan, out of 107 adult buffaloes tested, 16 (14.95%) & 18 (16.82%) showed mild and severe infection of TB respectively. The overall data revealed 15.06% prevalence (Dhakal & Tiwari, 1993).

In a study carried out in different slaughterhouses of Nepal, 14% of buffaloes were found to have tuberculous lesions (Joshi, 1987). Joshi *et al.*, (1999) studied slaughtered buffaloes of Kathmandu for TB lesions during 1983/84 among 3,232 buffaloes, and later in 1992 to 1996 among 5,500 buffaloes. There were 452 (13.98%) and 350 (6.36%) positive cases respectively.

Bhattarai (2003) conducted a study at Kanchanpur by single intradermal tuberculin test. Only 1 buffalo (5.88%) was distinct positive although 7 (41.8%) showed reaction to the test among 17 tested. Out of 53 cattle, 16.98% cattle showed positive reaction. Bhattarai (2006) conducted a cross sectional survey among 120 cattle and 114 buffaloes from eight clusters of Western Chitwan. Among them 8 cattle (6.66%) and 12 buffaloes (10.52%) were found positive to tuberculin test.

Most of these studies except Joshi (1987) and Joshi *et al.*, (1999) used single intradermal test. In a single intradermal test, 0.1ml Purified Protein Derivative (PPD) of bovine tuberculin was injected in the neck or caudal fold and the reaction is read between 48-72 hours following injection (Chakraborty, 1997), for maximum sensitivity and 96 hours for maximum specificity (Radostitis *et al.*, 2000). Reactions like swelling, redness etc are noted. The measurement is made with Vernier Calliper or through palpation (Chakraborty, 1997). However subjective method of palpation is more accurate and also permits a decision to be shaded by the nature of the lesions (Radostitis *et al.*, 2000).

OBJECTIVES

- To find out the prevalence of bovine tuberculosis among cattle and buffaloes in the study area of Dhading district by single intradermal tuberculin testing.

- To evaluate knowledge and generate awareness of the people about the public health importance of TB.

MATERIALS AND METHODS

Study area, animal sampling and data analysis

The study was conducted in two VDCs, Sunaula Bazaar ward 7 and Salbash ward 5 of Dhading district which is located north-west from the center of the Dhading Besi. A total 20 houses were visited and a total of 50 cattle & buffaloes of both sexes over 6 months of age were screened for bovine tuberculosis by single intradermal cervical test.

Single intradermal tuberculin testing procedure

Tuberculin testing among the selected animals was conducted using single intra-dermal injection of tuberculin PPD as below:

- On the cervical area of the skin of neck was shaved, cleaned with disinfected 70% ethanol.
- The initial thickness of skin was measured by using Vernier Calliper and was recorded.
- 0.1ml PPD was injected intradermally with tuberculin syringe and needle and the site was marked with a marker.
- Subsequent reading of the skin thickness was recorded in 48 hours and 72 hours post injection as suggested by Radostits *et al.* (2000).

The data analysis was made based on both qualitative and quantitative nature of the data using Microsoft Excel software.

RESULTS

Tuberculin test

Out of 50 animals tested with single intradermal tuberculin test, 45 were cattle of which 27 were female, 18 were male, and 5 were buffaloes of which 4 were female and 1 was male.

Prevalence

Out of the 50 animals, among 45 cattle tested, 2(4%) were found positive. Similarly among the 5 buffaloes tested, one (20%) was found positive. Among cattle, one positive animal was in lactating stage and other was none lactating. Similarly tested buffalo was also in lactating stage. The total prevalence was found to be 6%.

In the relationship between the age factors in animals, the age between more than 6 months to below 5 years of animals were found less susceptible to TB than above 5 years of age. TB was found higher in animals above 5 years. Although not statistically significant ($p=0.94$) based on Fisher's exact test, out of 25 animals, 2(8%) of the animals above 5 years of age were positive for TB, whereas out of 27 animals only 1(3.7 %) of the animal more than 6 months to below 5 years of age was positive.

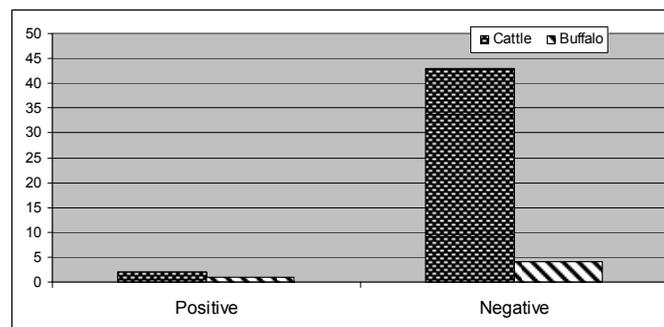


Fig. no. 1: Number of positive and negative cases knowledge of TB in owners

Out of the 20 cattle and buffalo owners 17 owners did not know about TB and 3 owners were aware about TB in cattle and buffaloes.

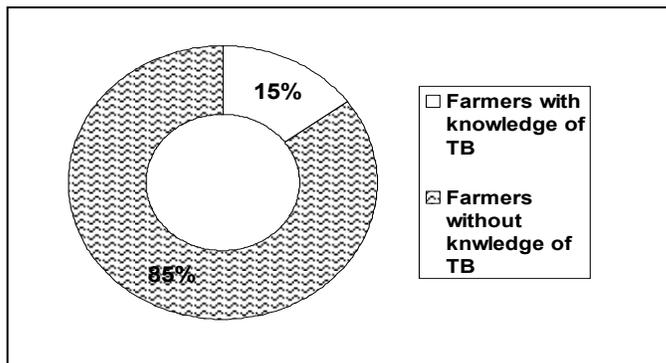


Fig no. 2: Knowledge of TB and its zoonotic aspects

DISCUSSION

The earlier results (Pun, et al., 2004) revealed that 5.35 % buffaloes and 4% cows were positive for SICT. The results of SICTS positivity in milking cows and buffaloes appear to be clear indication for the presence of bovine tuberculosis in Nepal (Pun *et al.*, 2004). The study by Dhakal and Tiwari (1993) demonstrated 16.25 percent prevalence in buffaloes in Mangalpur VDC. At IAAS in Chitwan, out of 39 buffaloes, 4 (10.25%) had severe infection of TB with 16 (41.2%) showing mild reaction. Similarly in Mangalpur VDC of Chitwan, out of 107 adult buffaloes tested, 16 (14.95%) and 18 (16.82%) showed mild and severe infection of TB respectively. The overall data revealed 15.06% prevalence. This shows the prevalence from our study (6%) is much lower than the data revealed from Dhakal and Tiwari (1993), Joshi (1974) in cattle and buffaloes from Pokhara, Joshi (1987) and Joshi et al (1999) in slaughter buffaloes, NZFHRC (2002) in cattle and buffaloes and Bhattarai (2003) in cattle and buffaloes. These results are similar to Pun 2004 in cattle and buffaloes and Bhattarai (2006) in cattle and buffaloes. Current results are higher than the reports by Morel (1985). These studies demonstrate the presence of BTB in various parts of Nepal but the situation all over the country varies with different levels of prevalence in different geographical regions at different times.

CONCLUSIONS

Tuberculosis was found to be prevalent on cattle and buffalo of Dhading district. Farmers were not well educated so they did not know about the TB and its zoonotic importance. The different factors such as managerial, social, religious, age, sex, species may play important role in knowledge about TB and its transmission. More comprehensive studies with representative samples are needed to identify positive animals and to plan control programs.

RECOMMENDATIONS

- Creating awareness among the people about the standard hygienic requirement and to improve husbandry practices is of paramount importance.
- Research should be carried out in large scale to determine the involved public health risk and special attention should be given to prevent zoonotic transmission.

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Bam (1995) conducted a study during 1980-1994 among 534 adult patients aged between 14 to 45+ years of age. Among them 264(49.44%) were male and 270 (50.56%) were female. The study indicated that allergic rhinitis and asthma are most common allergic disorders in Nepal. Bista, (1996) studied on ocular allergy cases in at Geta Eye Hospital, Kailali. He studied about 20,848 patients for the different ocular problems during the year 1992. Prevalence of ocular allergy was 3.5%.

A new district, new house, climate, pollution, damp houses are some of the important risk factors for developing the allergic disease (Bam, 1994). Global incidence of major allergic disorder is estimated to be 10% among general population. This problem has increased over the last three decades in many countries. In India, 18.32% of its population is reported to suffer from allergic disorder (Malla, 2002).

Joshi (2000) studied asthma and eczema in Butwal. Out of 3,361 patients registered in this clinic during a period of one year, asthma was noted in 66 (1.96%) & eczema in 23 (0.68%) patients. Malla (2002) carried out study in identification of common allergens by skin prick test among the allergy patients attending private clinics. In this study, 641 cases were registered & tested with 290 (45.2%) male and 351(54.8%) female patients. Out of 641 cases, 62% of cases had nasorespiratory disease and 38% cases had asthma as major problem. Similarly, 99 (15.5%) cases had asthma and rhinitis, 188 (29.4%) cases had rhinitis, 244 (38%) cases had urticaria. 46 (7.2%) cases had allergic pharyngitis and 20 (3.1%) cases had allergy conjunctivitis.

Pokhrel (2006) carried out a study in pattern of cutaneous allergy in dermatology OPD of the Tribhuvan University Teaching Hospital, Maharajung, Kathmandu. In this study, Brahmin ethnic group had 456 (28%) highest allergy problem. Followed by Chhetri 400 (24%), 390 (23%) were from different groups of Janjati (including Magar, Tamang, Lama, Sherpa, Rai, Limbu, Tharu, etc), 300 (18%) were Newar, 18 (1%) were Dalit and 37 (2%) were from other.

Review on Allergic Cases of Community Urban Health Clinic Ward No. 19 KMC

Ms. Kabita Shahi, NZFHRC

Introduction

Allergy is a hypersensitivity disorder of the immune system (allergy at Dorland's Medical Dictionary). Allergic reactions occur to normally harmless environmental substances known as allergens; these reactions are acquired, predictable, and rapid. Strictly, allergy is one of four forms of hypersensitivity and is called *type I* (or *immediate*) hypersensitivity. It is characterized by excessive activation of certain white blood cells called mast cells and basophils by a type of antibody known as IgE, resulting in an extreme inflammatory response. Common allergic reactions include eczema, hives, hay fever, asthma attacks, food allergies, and reactions to the venom of stinging insects such as wasps and bees (Kay, 2000).

Mild allergies like hay fever are highly prevalent in the human population and cause symptoms such as allergic conjunctivitis, itchiness, and runny nose. Allergies can play a major role in conditions such as asthma. In some people, severe allergies to environmental or dietary allergens or to medication may result in life-threatening anaphylactic reactions.

A variety of tests now exist to diagnose allergic conditions; these include testing the skin for responses to known allergens or analyzing the blood for the presence and levels of allergen-specific IgE. Treatments for allergies include allergen avoidance, use of anti-histamines, steroids or other oral medications, immunotherapy to desensitize the response to allergen, and targeted therapy (Retrieved from <http://en.wikipedia.org/wiki/Allergy>)

In Nepal, allergic diseases are expected to affect around 20% of its population and thus are among the major causes of ill health. The investigation of allergic patients includes skin test and challenge procedures (e. g. Food allergy tests) as well as various laboratory investigations (Joshi, et al, 2003).

OBJECTIVE OF THE STUDY: To describe and analyze the allergy recorded and reported data from Community Urban Health Clinic ward no. 19 KMC.

METHODOLOGY: This study was conducted at Community Urban Health Clinic of Ward 19 KMC. All the allergy reported and recorded data of 3 year period (June, 2007-June, 2010) were collected from Clinic during the one month study period (April 2011 to May 2011).

RESULTS: During the period of June 2007-June 2010, a total number of 455 patients were attended the clinic. Among them 361(79%) were female and 94(21%) were male patients. Out of all patients 15 (3.3%) were found to be allergy patients. Out of 15, 14 (93.3%) were patients of respiratory tract infection and remaining 1 (6.7%) was of skin allergy.

Age and sex wise distribution: The age and sex wise distribution of patients during the year 2007-2010 is given in table 1 and types of allergy cases during different years is given in table no. 2.

Table No. 1: Total number and sex distribution of the patients during the year 2007-2010

S.N	Age	2007/08		2008/09		2009/10	
		M	F	M	F	M	F
1.							
2.	0-12m	5	1	-	-	3	2
3.	1-4 yrs	9	4	4	2	1	-
4.	5-14 yrs	2	4	1	2	5	4
5.	15-45 yrs	21	104	14	102	11	92
6.	50>	11	18	5	11	2	15
Total		48	131	24	117	22	113

Source: Recorded and reported data from Community Urban Health Clinic ward no. 19 KMC.

Table no 2: Types of allergic case during different years

S. N.	Years	Skin disease	Respiratory Tract Infection (RTI)	Total
1.	2007-2008	1	7	8
2.	2008-2009	-	6	6
3.	2009-2010	-	1	1
Total		1	14	15

Source: Recorded and reported data from Community Urban Health Clinic ward no. 19 KMC.

CONCLUSION: Allergy is one of the major problems in human. This is the outcome of various causes like climate change, pollution, poor hygiene and sanitation.

RECOMMENDATION:

- Hygiene and sanitation with contamination of the environment has to be improved inside the clinic.
- Most of the cases are of skin disease and respiratory tract this means infections allergy should be improved for the patient inside the clinic.
- Mass awareness program should be conducted at OPD of clinic for all kinds of disease including allergy.
- Safety measures should be taken for prevention of allergies like sunburn, severe cold, food, water, meat, dust/dirt
- Protective like masks, gloves, sunscreen lotion, glasses etc, should be used for the prevention of occupational hazards

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News:

Approval of JE Project in Nepal

The Japanese Encephalitis Project in Nepal has been approved internally on 26 August 2011 by International Development Research Centre (IDRC), Ottawa, Canada.

Overall Objective:

- To reduce the vulnerability of at-risk populations to the current JE threat and improve planning to become more resilient and prepared for anticipated changes in JE epidemiology.

Specific objectives:

- Develop a socio-ecologic description of the determinants of risk for JE in Nepal
- Build and support capacity for multi-sector collaboration in JE prevention and control based on ecohealth principles.
- Assess implications of research findings for public health, animal health and community planning to reduce vulnerability to JE threats and increase resilience

Prof. Dr. Craig Stephen, visited to NZFHRC:

Prof. Dr. Craig Stephen, DVM PhD, Director, Centre for Coastal Health Faculty of Veterinary Medicine University of Calgary, Canada has visited to NZFHRC to discuss and develop JE control project work planning, survey process from 11 -18 September 2011.

DISCONTTOOLS Expert Group Meeting on Anthrax:

Dr. Durga Datt Joshi, Executive Chairman, NZHFRC has attended the meeting of the **DISCONTTOOLS** Expert Group on anthrax. This meeting was held in the IFAH-Europe offices located on the 5th floor in Rue Defacqz, 1 in B-1000 Brussels Belgium on 27-29 July, 2011. During the meeting Dr. Joshi has presented a paper titled "**Anthrax Status in South East Asia and Western Pacific Region**".

KDMA Research Award Awarded for the year 2009:

KDMA research award for the year 2066 B.S. (2009) was awarded jointly to Ms. Kabita Shahi and Ms. Indira Mainali for their research works titled:

- Review on Allergic Case of Community Urban Health Clinic Ward No. 19 KMC,
- A Survey on Allergic Cases Among Health Institute Students and Teachers in Shi-Gan Int'l College of Science & Technology, Narayan Gopal Chowk Kathmandu, Nepal

K.D.M.A. Research Award:

Please kindly submit your research work paper on allergy award for the year 2010 for the consideration by the end of December 2011 to KDMART office Chagal, G.P.O. Box 1885, Kathmandu, Nepal, Phone: 4270667, 4274928 and Fax 4272694. This award was established by Dr. D.D. Joshi in 2049 B.S. (1992) on the memory of his wife, the late Mrs. Kaushilya Devi Joshi. The award includes a grant of NCRs. 10,001 with certificate.

**From: Zoonoses & Food Hygiene News, NZFHRC
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TO:

Dr/Mr/Ms

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