Estimation of Zoonotic Tuberculosis in Captive spotted Deer

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Abstract

Tuberculosis is one of the chronic infectious diseases of a great public health concern and of economic and historical significance. The ease and frequency of spread of tuberculosis from animal to human and *vice versa* is uncontrolled. The present study was undertaken on 48 captive wild deer from different zoo's/ parks of Maharashtra and of workers who come in contact with the animals. The screening of captive spotted deer and personnel in contact showed an important zoonotic role of tuberculosis because most deer were noted to be infected with *M. tuberculosis* of human strains and in contact workers tested positive.

Introduction

Wild animals suffer from various diseases, few of them being highly zoonotic. Tuberculosis is one of the chronic infectious diseases of a great public health concern and of economic and historical significance (Rathore and Khera 1983). In India the disease was reported as early as 4000 years ago. Dawn of the 20th century heralded extensive investigation on tuberculosis in man and animals, which further advanced the knowledge about susceptible wild animal hosts. The ease and frequency of the spread of tuberculosis from animal to human and from human to animals in an uncontrolled environment makes this an important zoonosis. Tuberculosis is one of the major infectious zoonotic disease, which is still of global concern (Upadhaya *et.al*., 1986, Garg *et.al*., 1990 & Singh *et al*., 1991).

Materials and Methods

The present study was undertaken on the 48 captive spotted deer (*Axis axis*) from different zoo's / parks of Maharashtra and in contact workers. The requisite samples were collected and tested from four different centers viz., Maharajbagh Zoo, Nagpur (M. Zoo Ngp), Seminary Hills Deer Park, Nagpur (SHDP Ngp.) Veer Mata Jijabai Bhosale Udyan, Byculla, Mumbai, VJBU, Mumbai and Rajiv Gandhi Zoological Park and Wildlife Research Center, Katraj, Pune (RGZP, Pune).

Blood samples were collected from each deer after chemical restraint using Xylazine and Ketamine. Passive haemagglutination (PHA) test was performed with harvested serum as per the method described by Jagannath and Sengupta (1983) with slight modification, sheep red blood cells stabilized with tanic acid and sensitized with purified protein derivative (PPD) of *Mycobacterium tuberculosis*. The haemagglutination readings were recorded as suggested by Stavitsky (1984). The in-contact workers from centers under study were screened by Mantoux test (Abrahams and Harlad, 1967).

Results and Discussion

The Prevalence of tuberculosis in captive wild deer and in-contact worker was studied and evaluated. A total of 48 deer were selected comprising 12 animals from each center and all in contact workers. The overall prevalence of tuberculosis in deer was found out to be 10.41% Table 1. Chakraborty *et.al* (1993) also reported 9.6% incidence of tuberculosis in wild herbivores. These findings are supported Barrat *et al* (1988) who also documented 17.6% prevalence.

The estimated prevalence of tuberculosis due to *M. tuberculosis* was 8.33% and *M. bovis* was 2.08%. The highest prevalence of tuberculosis caused by *M. tuberculosis* was 25% at VJBU Mumbai, followed by 8.33% at SHDP, Nagpur and by *M. bovis* 8.33% at VJMU Mumbai.

Overall prevalence of tuberculosis of contact workers was 26.46% at different zoo's of Maharashtra. Zoowise prevalence of tuberculosis in contact workers is presented in Table 2.

In the present study it has been observed that 20% contact workers were positive at Maharajbagh Zoo Nagpur, 23.52% at Seminary Hills Deer Park Nagpur and 25% at Veermata Jijabai Bhosale Udyan, Mumbai for tuberculosis by Mantoux test.

Surmiak (1970) stated that there were reasons to believe that the infection to animals which were observed positive reactors for tuberculosis must have been introduced by an animal attendant or visitors harbouring the Tuberculosis infection. Similar findings were also reported by Krishnaswami & Mani (1983), Thakuria (1996), Garg *et.al* (1990) & Upadhyay *et.al* (1986). Similar findings were observed in the present study.

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Table 1: Prevalence of tuberculosis in Captive Deer

Sr. No.	Center	No. of Deer Tested	Deer found positive reactors					
			M.bovis		*M.tuberculosis*		Total	
			No.	%	No.	%	No.	%
1	M. Zoo, Nagpur	12	-	-	-	-	-	-
2	SHDP, Nagpur	12	-	-	1	8.33	1	8.33
3	VJBU, Mumbai	12	1	8.33	3	25	4	33.33
4	RGZP, Pune	12	-	-	-	-	-	-
Total		**48**	**1**	**2.08**	**4**	**8.33**	**5**	**10.41**

Table 2 : Prevalence of tuberculosis in contact workers

Sr. No.	Place	No. of workers tested	Positive reactors by Mantoux test	
			No.	%
1	M. Zoo, Nagpur	10	2	20
2	SHDP, Nagpur	17	4	23.53
3	VJBU, Mumbai	4	1	25
4	RGZP, Pune	3	-	-
Total		**34**	**7**	**20.58**

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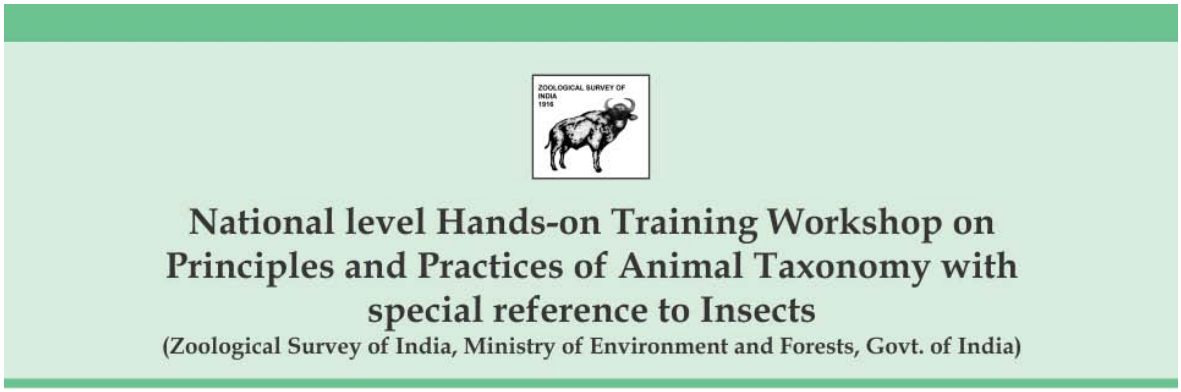

About the workshop
A one week National Level Hands-on Training Workshop on Principles and Practices of Animal Taxonomy with special reference to Insects is being organized by Zoological Survey of India, Western Ghat Regional Centre, Calicut, Kerala. The one week residential workshop is intended to educate and popularize Animal Taxonomy – the science of discovering, naming and classifying animals. To demonstrate and communicate the underlying concepts in taxonomy, the workshop will focus on standard techniques and procedures practiced in the science of Entomology. The subject area specialists of repute will deliver presentations/lectures and also impart hands-on training on collection, preservation, curation and identification techniques, with regard to significant insect groups like Lepidoptera (butterflies & moths), Odonata (dragon flies & damselflies), Mantodea (Praying mantids), Hymenoptera (ants, bees and wasps), Coleoptera (beetles), Diptera (flies), Orthoptera (Grass-hoppers) and Aquatic insects (including Hemiptera). A one- day field visit will be organized to Vanaparvam Biodiversity Conservation Park, Kakkavayal, Calicut, to get acquainted with the procedures and techniques related to inventorying insects. Modern trends in insect taxonomy like molecular systematics will also be dealt with. The medium of instructions will be English.

Broad objectives
The workshop aims: · To introduce the Principles, Practices and Scope of Animal Taxonomy· To Impart practical/ hands-on training in standard Taxonomic Procedures· To develop basic skills in Identifying the Insect fauna
Target Groups: Post graduates and young researchers in the field of Zoology, Wildlife Biology and Life Sciences.
Venue and Dates: The workshop will be conducted at Zoological Survey of India (ZSI), Western Ghat Regional Centre (WGRC), Calicut-6, Kerala, from 27th February – March 3rd, 2012.

Eligibility Criteria* : 1. Age: Applicants should be below 35 years as on 1.1.2012. 2. Educational Qualifications and Experience: Post Graduates in Zoology, Wildlife Biology and Life Sciences. At least one year research experience desirable ***Ph. D holders are not encouraged to apply.** A total of 25 participants will be selected on all-India basis, according to the above criteria. Selected participants will be asked to submit copies of their Certificates.

Travel, Boarding and Lodging for the participants: The participants will be provided a second class to and fro fare by train and the free dormitory accommodation.

How to Apply: Application form that is to be filled and submitted can be downloaded from http://zsi.gov.in/right_menu/29.11.11/ZSI/Index.html. The duly filled application form should reach the Course coordinator on or before 10th January 2012, by email only.

Contact: The Course Coordinator, National Workshop on Animal Taxonomy, Zoological Survey of India, Western Ghat Regional Centre, P.O. Eranhipalam, Calicut-673006, Kerala, India, Ph. 0495-2770101 Ext. 211; Fax: 0495-2771929. Email: workshop.zsi@gmail.com