LEPTOSPIROSIS IN MAN

A Koteeswaran

Leptospirosis, a world-wide zoonosis caused by spirochetes of the genus *Leptospira* affecting humans and animals; humans are incidental hosts. Ayar made the earliest record of leptospirosis in Tamil Nadu among Madras hounds. 1 Since then reports on isolation of leptospires,4,5 seroprevalence among animals6-13 and in human beings14,15 were made from Tamil Nadu. However, most of the literature on leptospirosis is repetitive in nature.16

Faine et al17 observed that prevention measures included a knowledge on the number and frequency of both human or animal cases, the infecting serovar, serogroup or genetic group of leptospires, their maintenance host, means of transmission and the prevalence of antibodies indicating subclinical infection in the population.

Here, we furnish data on the percent positivity to leptospirosis in blood serum tested since 1997. Detailed analysis has been done on the serogroup distribution in the past three years (April 2003 to March 2006), percent positivity and serogroup distribution among different sexes and age group of clinically suspected human patients in Chennai (October 2004 to December 2005) and apparently healthy individuals belonging to risk groups (veterinary professionals and conservancy workers). Seroprevalence in various animal species screened in Tamil Nadu during (April 2004 and March 2006) are also furnished.

**Serum samples (human and animal) and screening by microscopic agglutination test (MAT)**

Screening of human and animal serum samples was conducted at Leptospira Research Laboratory using microscopic agglutination test.18 Reference *Leptospira interrogans* strains belonging to Australis, Autumnalis, Ballum, Canicola, Grippotyphosa, Sejroe, Hebdomadis, Icterohaemorrhagiae, Javanica, Pomona, Pyrogenes and Tarassovi serogroups were obtained from the Regional Reference Laboratory, (ICMR) andaman and Nicobar Islands.

Serum from clinically suspected human patients (N=67013), from various parts of Chennai received between 1997 and 2006 showed 57.55% seropositivity. Samples received between April 2003 and March 2006 (N= 25,449) were used to study the distribution of serogroups and prevalence trend studies, while samples from October 2004 to December 2004 were used to study the disease-distribution with reference to sex and age. Serum samples from apparently healthy human subjects belonging to two risk groups were screened. Group 1 comprised of 37 veterinary doctors and 76 supportive staff from Cuddalore district, a coastal area south of Chennai and Group 2 comprised of 151 conservancy workers in Coimbatore district, located in the western border of Tamil Nadu.

Serum samples from domesticated animals (671 cattle, 219 buffaloes, 151 sheep, 144 goats, 62 pigs, 241 dogs, 1 cat and 4 horses), wild animals in captivity (8 elephants, 5 lions, 2 each jackal and bonnet macaque, one each long tailed macaque, spotted deer and barking deer, panther and 27 rodents-Rattus rattus) were analyzed.

**Seroprevalence analysis**

Overall seropositivity by MAT in human samples was found to be 57.55%; highest (78.70%) during 1998-1999 and lowest (32.82%) in 2002-2003. Number of specimens received increased from 2054 in 1997-1998 to 10,014 in 2005-2006. This reflected on the increased awareness about the disease.

Analysis of the 25,449 serum samples received between April 2003 and March 2006 showed that the seropositivity during the three years was found to be 43.16%, 60.89% and 67.62% respectively. The seropositivity during 2003-2004 was less when compared to the subsequent years, which may be due to failure in monsoon and the increase in 2004-2005 and 2005-2006 may be due to the Tsunami and heavy floods in Tamil Nadu.

**Seroprevalence of different serogroups**

Seropositivity was seen to all the 12 serogroups tested in MAT. During 2003-2004, Hebdomadis (19.71%) was predominant followed by Australis (19.39%), Javanica (18.06%) and Grippotyphosa (16.42%). During 2004-2005, Australis (21.67%) was predominant followed by Pyrogenes (13.95%), Grippotyphosa (12.28%), Autumnalis (9.53%) and Hebdomadis (8.41%). During 2005-2006, Australis was highly prevalent (57.36%) followed by Pyrogenes (7.84%), Canicola (7.53%) and Hebdomadis (7.22%). During this study, Australis was more prevalent as compared to Autumnalis that was predominant during 1990’s.15 Similar observations were made in cattle and pigs in Primorskk Krai, a far eastern part of the

---

Center for Animal Health Studies, Tamil Nadu Veterinary and Animal Sciences University, Madhavaram Milk Colony, Chennai - 600 051, India

www.ijmm.org
Seroprevalence among animals

Seropositivity was 57.47% among domestic animals and 72.73% in wild animals in captivity and 37.03% in rodents with an overall percent positivity of 56.68% was seen. Among domestic animals, Australis was 20.28% followed by the other serovars: Hebdomadis (14.31%), Sejroe (12.85%), Pomona (12.51%), Pyrogenes (8.23%), Tarassovi (7.89%), Autumnalis (6.42%), Canicola (5.41%), Ballum (4.28%), Icterohaemorrhagiae (3.72%), Grippotyphosa (2.37%) and Javanica (1.75%). Among wild animals in captivity, Tarassovi was 30.43% with the other serovars being Javanica (26.09%), Pyrogenes (17.39%), Australis (8.69%) and Sejroe, Hebdomadis, Icterohaemorrhagiae and Pomona (4.35%). This frequency to serogroups among rodents (Rattus rattus) was found to be Australis and Icterohaemorrhagiae (22.73%), Javanica (18.18%), Autumnalis (13.64%), Canicola and Pomona (9.09%) and Grippotyphosa (4.55%).

Conclusions

In this study, it was concluded that Australis was the most predominant serogroup among humans and animals in Tamil Nadu during this study period. This study however, is based on MAT and conclusive data can only be obtained by isolation and typing of the different serovars.

References


Source of Support: Nil. Conflict of Interest: None declared.