Osong Public Health Res Perspect 2014 5(1), 54–67
http://dx.doi.org/10.1016/j.phrp.2014.01.003
pISSN 2210-9099 eISSN 2233-6052

ORIGINAL ARTICLE

Study on the Prevalence of Leptospirosis among Fever Cases Reported from Private Clinics in the Urban areas of Villupuram District, Tamil Nadu, India

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Received: December 23, 2013
Revised: January 13, 2014
Accepted: January 20, 2014

KEYWORDS:
Ig-M ELISA,
leptospirosis,
MSAT,
prevalence,
private clinics

Objectives: To know the prevalence of leptospirosis cases reported in private clinics among fever cases in Villupuram District, Tamil Nadu, India to know its real magnitude of the problem and to diagnose Leptospirosis among fever cases from differential diagnosis.
Methods: 1502 Blood serum samples collected from three urban towns namely Kallakurichi (Latitude: 11° 73′ N; Longitude: 78° 97′ E), Villupuram (Latitude: 11° 75′ N; Longitude: 79° 92′ E) and Thindivanam (Latitude: 12° 25′ N; Longitude: 79° 65′ E) in fifteen clinics based on case definition of leptospirosis delineated by the National Vector Borne Disease Control Programme (NVBDCP), Government of India. Samples were tested in the laboratory of the Zonal Entomological Team (ZET), Cuddalore with Macroscopic Slide Agglutination Test (MSAT) and Ig-M ELISA.
Result: There were 65 positive cases detected from 1502 blood serum samples in both MSAT and Ig-M ELISA. It could be known that there was 4% cases contributed from private clinics among fever cases. From this study, further it was known that all age groups of people affected irrespective of sexes based on their living condition associated with the environment prevailed of the disease.
Conclusion: From this study, it was quantified that 4% of cases reported in private clinics among fever cases and its findings ascertained both the importance of differential diagnosis as well as reports that should be included to the Government for knowing its real magnitude for planning.

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1. Introduction

Leptospirosis is a bacterial disease that affects humans and animals. It is caused by bacteria of the genus *Leptospira* and is a life threatening zoonotic disease which has become an important urban slum health problem [1−3]. In humans, it causes a wide range of symptoms among fever predominant cases in less than 7 days, including conjunctival suffusion, myalgia, vomiting, jaundice, abdominal pain, diarrhea, or a rash. If the disease is not treated, the patient could develop kidney damage, meningitis (inflammation of the membrane around the brain and spinal cord), liver failure, or respiratory distress [4].

It is also known that leptospirosis is a common infection in India and is under-reported due to a lack of clinical awareness and early diagnostic facilities. Since it has a high mortality in the presence of some complications, early diagnosis will save a number of lives in rural areas; there is definitely a need for concern about leptospirosis in patients, clinicians, microbiologists, and public health personnel [4].

In India, the disease is more commonly associated with natural disasters, especially during the monsoon period at which times acute epidemics may occur [5]. A multicentric study in India showed that leptospirosis accounts for about 12.7% of cases of acute febrile illness responsible for attendance at hospitals [6]. Carrier animals include rats, pigs, cattle, bandicoots, and dogs. The predominant serovars are Copenhageni, Autumnalis, Pyrogenes, Grippotyphosa, Canicola, Australis, Javanica, Sejroe, Louisiana and Pomona. Outbreaks of leptospirosis have increasingly been reported in Kerala, Gujarat, Tamil Nadu, and Karnataka, and sporadic cases have been reported in Goa, Andhra Pradesh, and Assam [5].

Further, leptospirosis has been known to be endemic since the early part of the 20th century on the Andaman and Nicobar Islands, where serovars Ratnapura, Valbuzzi, and Grippotyphosa have been recently documented as causes of severe epidemics [7]. The highest rates occur during October and November, with seroprevalence of up to 55% in the general population [8]. Interestingly, the predominance of leptospirosis in coastal regions is most likely correlated with the presence of semi-domestic brown rats. In the inland urban regions, other serovars with other host animals/rodents were presumed to cause the “mild” leptospirosis that is usually unrecognized or misdiagnosed.

Some studies have been found in the literature which show leptospirosis is associated with poor sanitation in household environments [9]. Deficiencies in the sanitation infrastructure where slum inhabitants reside were found to be socio environmental factors; differences in socio economic status contributed to the risk of *Leptospira* infection, indicating that the social factors that produce unequal health outcomes should be addressed [10]. In addition, leptospirosis is transmitted during direct contact with animal reservoirs or water and soil when it is contaminated due to urbanization, due to an increased rodent population; this particularly occurs throughout the developing world during seasonal heavy rainfall and flooding [8,11,12].

Numerous studies have been undertaken on the etiology of the disease and reasons for manifestation of this disease, whereas studies on improving the detection of cases, other than the government health care system and its reporting to public health managers, are found to be scarce. Hence, the present study aimed to ascertain the degree of leptospirosis in private clinics, which might not be included in reports of District Health authorities and the consequences of the real magnitude of this disease not being known for implementation of early control and preventive measures. In addition, this study revealed the differential diagnosis of leptospirosis among fever cases, and that it has a spectrum of symptoms which mimic other prime communicable diseases, such as dengue and malaria.

2. Materials and methods

To study the prevalence of leptospirosis in Villupuram District of Tamil Nadu, India, particularly cases reported from private clinics were investigated. Major urban areas situated in Villupuram District are Kallakuruchi, Tindivanam, and Villupuram (Figure 1). Five private clinics were selected from each area, giving a total of 15 which were assigned for the present study through a Memorandum of Understanding (MoU). The private clinics included are shown in Table 1.

The study was conducted from August 2011 to July 2012.

2.1. Sample collection

Serum samples were collected from fever cases with leptospirosis as delineated by the National Vector Borne Diseases Control Programme, Government of India [13]. This definition was familiarized among medical practitioners prior to the study. Samples were collected from each private clinic every week and subjected to the macroscopic slide agglutination test (MSAT) and Ig-M ELISA, adopting the standard procedures for detecting leptospirosis. Tests were performed by the Zonal Entomological Team, Cuddalore. Soon after positive cases were detected, this was communicated to the Deputy Director of Health Services concerned for Villupuram and Kallakuruchi, to improve the environmental sanitation, medication with prescribed drugs, and water quality, etc. In addition, the topography of the village was also studied to determine whether the environment is conducive for the disease. Total sample collections and the positive status from each clinic of Kallakuruchi,