



Prevalence of Leptospirosis among patients screened for dengue like illness during community surveillance in a slum population in Pune, Maharashtra.

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ABSTRACT: Leptospirosis exhibit nonspecific symptoms making it difficult to distinguish from dengue. Blood samples from 254 patients with dengue like illness (DLI) were collected. IgM antibodies were detected in seven (2.7%) DLI cases. 156 samples were tested for leptospiral serovar detection by Microscopic Agglutination Test (MAT). Two samples showed 'Lai like' leptospiral serovar. Serovar Lai is documented for the first time in Pune. This underlines the importance of regular surveillance of leptospirosis.

KEYWORDS: Leptospirosis, serovar, Dengue like illness

I. INTRODUCTION

Leptospirosis is a sudden onset, systemic febrile infectious disease that is caused by pathogenic spirochaetes that belongs to Genus *Leptospira*. The clinical manifestations of leptospirosis vary from an undifferentiated fever syndrome to multiple organ failure and death. Symptomatic patients exhibit various nonspecific symptoms such as fever, headache, anorexia, myalgia, nausea, vomiting, diarrhoea, conjunctival suffusion and cough (1).

With this range of nonspecific clinical symptoms, it is difficult to distinguish leptospirosis from other viral/bacterial febrile diseases considering their specific clinical and epidemiological criteria (2). Therefore, differential diagnosis of leptospirosis and dengue especially faces challenges as both have similar clinical profile and seasonal onset. This may have underestimated leptospirosis cases in various regions. Nonspecific symptomatology, no availability of diagnostic tests, low sensitivity of available tests and lack of active surveillance in the affected regions impede the accurate incidence and prevalence of leptospirosis.

Most of the documented studies are hospital based. The present study is community based and was aimed to estimate number of leptospirosis cases among dengue like illness cases in Janata Vasahat, Pune, India.

II. EXPERIMENTATION

A prospective community-based incidence study was executed in a population of 29,797 from Janata Vasahat slum in Pune city, India. This slum area is at the foothill of Parvati Temple and is 10 km away from Sassoon General Hospital, Pune. The healthcare provider of the study population is municipal corporation health centres in that area and general practitioners. The study was conducted from March 2014 to November 2016.

The study was approved by Ethical Committee of B.J. Government Medical College and Sassoon General hospital, Pune. Prior to sample collection, a written informed consent was obtained from each patient.

A case of dengue like illness (DLI) was defined as an acute febrile illness of 2-7 days duration with 2 or more of the following symptoms: headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, leucopenia (3).

Blood samples from DLI patients were collected with all aseptic precaution at general practitioners' clinic and municipal corporation health clinics in the study area. Blood samples were transported in cold chain to Microbiology Laboratory at B.J. Government Medical College, Pune.

Serum was separated and then subjected to IgM ELISA for Leptospirosis as per manufacturer's instructions. 156 Serum samples were sent to Regional Medical Research Centre (RMRC, ICMR -National Reference Centre for Leptospirosis), Port Blair, Andaman and Nicobar



for serotyping.

III. OBSERVATIONS FROM THE TESTS CONDUCTED

Blood was collected from 254 DLI cases. IgM antibodies for leptospirosis were detected in seven DLI cases (2.7%) among which four were adults and three adolescents. Out of 254 DLI cases, 156 serum samples were sent to RMRC-ICMR centre at Port Blair to know infecting serovar. Out of 156 samples, two samples showed the presence of serovar Lai-like.

Considering the range of nonspecific clinical symptoms, it is difficult to distinguish leptospirosis from other febrile illnesses based on clinical and epidemiological criteria. Similar seasonal onset and predominance in rainy season make differential diagnosis of dengue and leptospirosis difficult.

In the present study, IgM antibodies to leptospira were detected in seven patients out of 254 DLI cases (2.7%). Various studies on Leptospirosis in DLI has been documented which are mostly hospital based. These studies showed the presence of IgM antibodies for leptospira in patients ranging from 15 to 20%. Such high positivity is because they all are hospital-based studies. Community based data is scarce.

Two samples were positive on serotyping among 156 sent to RMRC-ICMR reference centre (1.28%). These two positive samples showed antibodies to serovar Lai-like.

Leptospira interrogans serovar Lai was originally isolated in 1958 in China where it was the most common serovar causing more than 50% cases. It causes anicteric type of Leptospirosis which differs clinically and pathologically from typical Weil's disease (4). Serovar Lai was identified as a new serovar of icterohaemorrhagiae serogroup in 1966 (5).

Serovar Lai has been associated with pulmonary haemorrhage in China and Korea (4). In 2000, Lai serovar was isolated and identified on Andaman Islands which was not isolated from a patient with pulmonary symptoms but from a patient with fever and bodyache (6). Deshmukh P. et al in 2017 identified Lai serovar in 5% patients with fever for more than or equal to 5 days (7).

In 2002, Bal AM et al documented Autumnalis, Copenhageny, Pomona being dominant serovars in febrile patients in and around Pune (8). Poddar et al in 2016 reported Grippotyphosa in Pune district. The study was done on paddy field workers (high-risk group) reporting with fever at rural hospital in Pune district (9).

In the present study, we could identify only Lai serovar. The serovar pattern thus seem to change over the period of time and as per geographic location too. This underlines the need of regular sero-surveillance at certain intervals. This will give an idea of circulation serovars at the particular time and location, which can help in preventive measures.

IV. CONCLUSION

A more realistic view of cases of leptospirosis is important to adopt adequate control and preventive measures. As a part of surveillance programme of leptospirosis, negative samples of dengue should be tested for leptospirosis. Understanding the changing pattern of leptospira serovars can be used to prepare vaccine.

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