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SEROPREVALENCE OF LEPTOSPIROSIS IN A TERTIARY CARE TEACHING HOSPITAL

Dr.N.Mythily MD.Professor of Microbiology, Coimbatore Medical College, Coimbatore -641014

Dr. R.Radhika * MD Senior Assistant Professor of Microbiology, Coimbatore Medical College, Coimbatore -641014 *Corresponding Author

ABSTRACT Leptospirosis is a worldwide zoonosis caused by pathogenic Leptospira species. The severity of this acute febrile illness varies considerably from mild to rapidly fatal. The wide spectrum of symptoms and signs makes clinical diagnosis very unreliable. It is a disease amenable to antibiotic therapy if treatment is started earlier. The objective is to study the seroprevalence of Leptospirosis among suspected patients. ELISA is highly sensitive and specific in the diagnosis of Leptospirosis. A total of 485 samples were collected from April 2017 to March 2018. Leptospira IgM Elisa done and a total of 53 patients tested positive. These samples were also tested for Dengue, Malaria and Typhoid. Clinical and Demographic data analysed for these Patients. Serological tests play an important role in the early diagnosis of Leptospirosis.

KEYWORDS : Lepto serology, Lepto Elisa, IgM Leptospira

Introduction:

Leptospirosis is an emerging zoonotic disease prevalent worldwide.[1,2,5,9] It commonly occurs in tropical, subtropical and temperate zones.The infection is acquired by direct or indirect exposure to urine of reservoir animals through contaminated soil, mud and water entering via small abrasions or breaches in the skin during occupational, recreational, habitational or vocational activities. Infection may also be acquired by drinking or inhalation of contaminated water. The infection is commonly associated with field workers, with increased incidence in rural than urban population.[1,5,6]The disease has a wide clinical spectrum varying from mild influenzalike illness to fulminant and often fatal presentation with multiorganinvolvement.[3]Important causes of death include renal failure, cardiopulmonary failure, and widespread hemorrhage. Leptospirosis with multiorganinvolvement carries a poor prognosis and is more common in patients in whom there has been a delay in the initiation of antibiotics.[4]

Leptospirosis is frequently under-diagnosed, due to nonspecific symptoms early in the course of the disease.[1,2,11]Itis a disease amenable to antibiotic therapy, and if left untreated, may prove fatal. Hence there is a need for rapid diagnostic modalities to initiateproper and timely management.[3]Serological tests for Leptospirosis will aid the clinicians to confirm the diagnosis and start the treatment at an earliest stage. Hence the present study was done to determine the seroprevalece of Leptospirosis among inpatients in a Tertiary care Teaching Hospital of South India.

Materials and Methods:

This is a prospective study and was done for 1 year from April 2017 to March 2018 at Coimbatore Medical College Hospital in the Department ofMicrobiology.A total of 485 patients clinically suspected to be suffering from leptospirosis who were admitted were serologically evaluated in the Department of Microbiology. The clinical data of the patients were also analyzed.

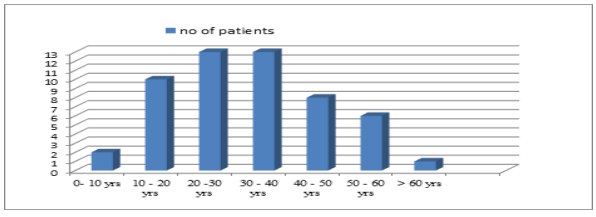
ELISA was done with PanbioleptospiraIgM ELISA kit. The test procedure was performed according to the protocol provided along with the kit. The results were interpreted according to the manufacturer's instructions.Negative and positive controls were included in each run.Cut-off was calculated and reporting of results was done as positive, negative and equivocal as per the manufacturer's guidelines provided along with the kit. In case of any indeterminate/equivocal results, repeat blood sample was requested after one week and the test was repeated.The clinical data of these patients were also analyzed.

These samples were also tested for Dengue, Malaria and Typhoid.

Results:

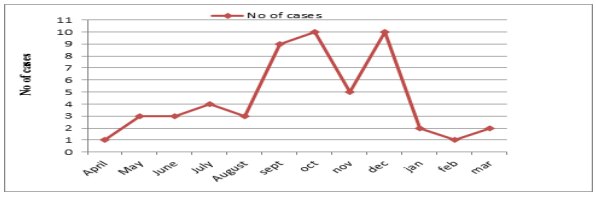
A total of 53 patients were diagnosed positive for leptospirosis from April 2017 to March 2018. Out of total 53 patients 37 (70%)were male and 16(30%) were female. Maximum number of cases 13 (25%)were found in the age group 20 – 30 yrs & 30 – 40 years(25%) 10 cases(19%) were seen in the age 10 – 20 yrs; 8 cases(15%) in 40 – 50 yrs; 6 cases (11%) in 50 – 60 yrs ; 2 cases(4%) in 0- 10 yrs and a single case(1%) above 60 years.

Fig1: Age distribution of Leptospirosis



Maximum incidence of cases were found in month of October and December.

Fig 2: Seasonal Distribution of Leptospirosis



All Patients presented with fever . 38(72%) had mild to moderate grade fever and 13 (28%) had high grade fever. Clinically icterus was present in 30 (60%) patients. Conjunctival suffusion was seen in 20 (38%) patients. headache in 42 ((80%);Myalgia and vomiting in 40 (75%) patients. Abdominal pain seen in 18 (34%) cases.Oliguria was seen in 25(47%) patients .5Patients who had renal failure ,bleeding manifestations succumbed to the illness.All 53 patients were positive for leptospiraIgM ELISA . There was Leucocytosis in 40 patients. Thrombocytopenia was observed in 30 (60 %) patients. Renal function tests were deranged in 25 (47%) patients (serum creatinine>1.5 mL).The liver function tests were deranged (total bilirubin>1.2 mL/dL.) in 40 (75%) patients; totalbilirubin more than 15 mL was seen in 8 patients.

1 patient had coinfection with Dengue and widal test was positive for 2 patients .

Discussion:

The clinical presentation of Leptospirosis is difficult to distinguish from dengue, malaria, influenza and many other diseases characterized by fever, headache, jaundice and myalgia. A high index of suspicion is needed in endemic areas and leptospirosis must be considered when a patient presents with acute onset of fever, headache and myalgia.[7]In our study, the most common features were fever, vomiting, headache,

myalgia andhaemorrhagic manifestation similar to study done by chaudhry et al[3].

In our study adults were affected more than paediatric age group, Males are affected more than Females and the maximum cases were seen in 20 - 40 years age group. chaudhry et al[3] and GanesanArumugametal[11] observed similar results whereas both gender are equally affected in the study done by Daher ,Vieira etal[12].The age and sex distribution of patients in this study indicates that leptospirosis is the disease of occupationally active age group i.e., young to middle age adults (20–40 years) with a male preponderance which correlates with study by GanesanArumugametal[11] and Rameshetal[1].

In our study, maximum cases were seen in September , October and December. Bhatia et al,[7]observed peak cases during may –August, October and November. During monsoon, the infection rate is high. ShivsakthiPawar et al[9] also observed a seasonal peak of Leptospirosis.This shows that the polluted environment may play an important role for spreading this disease.

The diagnosis of leptospirosis in humans is almost entirely dependent on laboratory findings.

Serological tests for leptospirosis will help the clinicians to confirm the diagnosis and start the treatment at the earliest stage.[1] The IgM ELISA has been recommended by the WHO as a diagnostic test for the serodiagnosis of leptospirosis,in areas where health-care resources are limited [4] . A number of studies have reported that IgM ELISA has high sensitivity and specificity for the diagnosis of acute leptospirosis. PanbioLeptospiraIgM Elisa was used in our study. Same kit has been used by Swapnaetal[6]and Maskey et al[10] in their study. Swapna et al[6] observed that the sensitivity and specificity of Ig M Elisa is 25.6% and 83.3% with a positive predictive value of 87.5% . Due to its reasonably good sensitivity and positive predictive value, ELISA can be considered as a good screening test for leptospirosis.[6,8]Maskey et al[10] observed that LeptospiraIgM ELISA has a sensitivity of 100% and a specificity of 95%.Serology plays a pivotal role in the early diagnosis of leptospirosis.[10]

Conclusion:

The diagnosis of leptospirosis is often undermined due to lack of clinical suspicion, and unavailability of testing facilities.Though MAT is the gold standard test, it has many limitations.It is time consuming and need expert personnel for performing the test. There is an urgent need for a highly sensitive and specific test for early diagnosis of leptospirosis. In this study, ELISA proved to be a sensitive test for serodiagnosis of leptospirosis. Due to its reasonably good sensitivity and positive predictive value, it can be considered as a good screening test for leptospirosis.

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