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Seroprevalance of Leptospira in AES Cases in a Tertiary Care Hospital in South East Assam

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Introduction

Acute encephalitis syndrome (AES) is caused by a wide range of viruses and bacteria[1]. Japanese encephalitis (JE) is considered as a main viral etiology of patients with AES in Assam[2]. Leptospirosis is primarily a zoonosis, with humans serving as accidental hosts. Leptospirosis is a zoonosis which in its milder form resembles any other viral illness and in its severe form needs to be differentiated from other common infectionin tropical regions of India like viral encephalitis, scrubtyphus, dengue, malaria, viral hepatitis, and Hantavirus Infection. Most cases of human leptospirosis worldwide have been attributed to rodents. Human leptospiral infection primarily resulted from direct or indirect exposure to the urine of infected animals. . Leptospira organisms can survive for a long period in natural aqueous environments[3]. .Leptospira is a thin spiral organism with tightly set coils, and it is characterized by very active motility, by rotating ("spinning") and bending. Usually one or both ends of this single-cell organism are bent or hooked, but straight forms also occur that rotate and travel more slowly than hooked forms .Agricultural workers are most infected during cultivated rice activity in marshy land[4] or capturing fish or animals.

Leptospirosis ranges in severity from a mild, self-limited febrile illness to a fulminant life-threatening illness. Clinical presentation generally include fever, altered sensorium, hepatic and renal dysfunction. Muscle pain and tenderness is common and characteristically involves the calves and lower back. A tip-off to identification of leptospirosis is conjunctival suffusion which occurs frequently in leptospirosis, but is uncommon in other infectious diseases. Additional ocular findings typically include subconjunctival hemorrhages and icterus. An erythematous rash limited to the pretibial areas of both legs appearing on about the fourth day of illness was a feature of an outbreak of "Fort Bragg Fever" which also included headache, malaise, and splenomegaly among soldiers in North Carolina, the etiology of which was later determined to be *L. interrogans* serovar Autumnalis[5]. Severe leptospirosis is characterized by dysfunction of multiple organs including the liver, kidneys, lungs, and brain. The

combination of jaundice and renal failure, known as Weil's disease, was first described in 1886[6] and remains one of the most clinically recognizable forms of leptospirosis. Clinical signs of bleeding are common and occur in the majority of patients with severe leptospirosis. Most bleeding manifestations are mild, including petechiae, ecchymoses, and epistaxis. However, some patients have severe gastrointestinal (melena or hematemesis) or pulmonary haemorrhage.The confirmed cases of leptospirosis for the first time in Assam were reported in patients with pyrexia of unknown origin in the year 2008[7]. We have focused hereon the detection of leptospira in AES patients from Assam, India.

Aims & Objectives

To establish the seroprevalance of Leptospirosis as an etiology in patients of suspected Acute encephalitis syndrome (AES) who were found to be sero negative for Japanese Encephalitis.

Methods

A prospective cross sectional study was conducted for 1 year from March 2019 to February 2020 in a tertiary care hospital. A total of 100 cases, which were tested sero-negative for Japanese encephalitis were tested by MAC ELISA for Leptospira specific IgM at Silchar Medical College and Hospital, Silchar, Assam, India. The study was approved by the Institutional Ethical Committee of Silchar Medical College and Hospital. Written informed consent was obtained from the patient or guardian.

Results

Among the 100 patients, 39 (39%)were found to be positive for Leptospira.The age of the patients ranged between 10-70 years. Twenty nine of the thirty nine patients (74.36%) were males. Thirty two of thirty nine patients belonged to rural background and depended on agriculture for their livelihood.

Table 1: Clinical features of patients with leptospirosis in Assam, India, n (%).

Clinical findings	Frequency (%)
Fever	39 (100)
Altered sensorium	30 (76.92)
Headache	30 (76.92)
Nausea	21 (53.84)
Vomitting	10 (25.64)
Diarrhoea	16 (41)
Neck rigidity	11 (28.2)
Seizure	10 (25.64)
Decreased micturation	10 (25.64)
Abdominal pain	5 (12.82)
Conjunctival suffusion	21 (53.84)
Jaundice	33 (84.61)
Petechiae	12(30.76)

Table 2: Prevalance of Leptospira

Total no. of cases	IgM positive cases	Prevalance
100	39	39%

Discussion

The present study reveals leptospira as an aetiology of AES in Assam, India. Lack of awareness among local people and treating clinicians, similar clinical manifestation with the other viral and bacterial aetiology and lack of appropriate laboratory diagnostic facilities are the other reasons for under-reporting of this disease.

Clinical presentation of the patients showed that fever was the most common symptom as recorded in other studies[8,9]. Involvement of nervous system was also observed exhibiting altered sensorium in most of the cases which is in conformity with previous findings[10]. Most leptospirosis cases are mild and resolve spontaneously. Early initiation of antimicrobial therapy may prevent some patients from progressing to more severe disease. Proper supportive therapy and use of dialysis to treat renal failure have reduced the leptospirosis-related mortality.

Identification of leptospirosis in its early stages is largely a clinical diagnosis and relies on a high index of suspicion based on the patient's risk factors, exposure history, and presenting signs and symptoms. Rapid diagnostic tests for leptospirosis are improving, but a negative result should not be relied on to rule out early infection. For these

reasons, empirical therapy should be initiated as soon as the diagnosis of leptospirosis is suspected. It is also important to investigate the factors associated with the transmission of leptospirosis to human for effective and sustained prevention and control programs[11-14].

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