



SEROLOGICAL STUDY FOR JAPANESE ENCEPHALITIS VIRUS AMONG HOSPITALISED PATIENTS

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Abstract

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Japanese encephalitis (JE)-epidemics have been reported in many parts of the country. The incidence has been reported to be high among pediatric group with high mortality. The incidence of JE in recent times is showing an increasing trend. It appears that JE may become one of the major public health problems in India, considering the quantum of the vulnerable pediatric population, the proportion of JEV infections among the encephalitic children and wide scattering of JE-prone areas. JE burden can be estimated satisfactorily to some extent by strengthening diagnostic facilities for JE confirmation in hospitals and by maintenance of contact with the nearby referral hospitals to collect the particulars on JE cases. Vaccination proves to be the best to protect the individual against disease

INTRODUCTION

Japanese encephalitis (JE) is a dreadful disease which is caused by single stranded positive sense RNA virus belonging to family flaviviridae. JE virus generates high mortality in pediatric group and today it is a major public health problem in South East Asia. Due to demographic, and environmental reasons vector transmission of JEV infection is very high and its outbreak commonly occurs every year among children in JE endemic and in JE-prone areas.¹ In India, the actual JE burden cannot be easily estimated because of scattered occurrence of JE in different states and regions. It could be only possible by strengthening diagnostic facilities for JE confirmation in hospitals situated in rural areas and by establishing national surveillance system for JE.

In India every year 30,000 to 50,000 cases of JE are reported out of which 10,000 patients died due to unavailability of treatment. Starting from April to November millions of JE cases are reported as vulnerable pediatric threat in many countries like China, India, Nepal, Bangladesh, Bhutan, Tibet, Korea, Japan,

Thailand, Malaysia, Vietnam, Philippines.² Unfortunately, most of the Southeast Asian countries do not have appropriate immunodiagnostic tools for timely detection of JE. Besides this, due to economic reasons they cannot afford an efficient JE vaccine for immunization due to large number of JE patients. Due to lack of detection and extra delay in treatment very high mortality occurs almost every year in these countries.³ Clinical presentation and patient history is suggestive of diagnosis but it still remains unreliable method of determining the specific etiology. A definite diagnosis improves the accuracy in treatment, as well as in better management of the patient. This prospective study was conducted to know the prevalence of Japanese encephalitis virus infection among hospitalized patients.

MATERIALS & METHODS

This prospective study was conducted at Department of Microbiology, in a tertiary care hospital over a period 5 months from January 2012 to May 2012. During this period consecutive non repetitive 50 blood samples from patients with undifferentiated fever with encephalitis

received from various clinical departments are tested for the presence of Japanese encephalitis virus IgM antibodies by rapid test method. It was done by using SD BIO line (JEV IgM) of one step IgM antibodies to Japanese encephalitis virus rapid test KIT. The diagnostic criteria for Japanese Encephalitis which were adopted in this study was the demonstration of the IgM antibodies by MAC ELISA in CSF samples, as reported by others,⁴ which is the Gold standard for the diagnosis of Japanese Encephalitis. To ensure the specificity of the assay, known positive and negative controls were included. There was no geographical or temporal clustering of cases.

RESULTS AND DISCUSSION

In this prospective study blood samples from patients with undifferentiated fever with encephalitis from various departments are tested for detection of JEV IgM antibodies by rapid test method. Among 50 samples tested, 26 are from males and 24 from females. Among these 50 samples tested all are negative for JEV IgM antibodies.

DISCUSSION

Japanese Encephalitis is one of the leading causes of Acute Encephalopathy, affecting children and adolescents in Tropical and Sub tropical Asia. Epidemic outbreaks of Japanese Encephalitis continue to pose a significant public health problem in most parts of India, especially in the Southern states.

The present study was carried out to diagnose Japanese Encephalitis cases among patients who were clinically suspected as Encephalitis. Among the clinical manifestations, reported fever was present in 100 % of the cases and altered sensorium and headache accounted for 85 % - 100 % and 50 % of the cases respectively , Male preponderance , which were noticed in our study is also well documented by several earlier reports.⁵

The available information on the proportion of JEV infections among undifferentiated fever cases varies greatly in different populations. In a study in Thailand, 14% (22/156) of adult patients presenting with acute undifferentiated fever were due to JEV. In a study carried out

in Penang, Malaysia, among pediatric patients with non-specific febrile illness, 0.4% (2/482) were due to JEV infection during 1990 to 1992.⁶ In another study conducted in 1967 in South Vietnam among American servicemen presenting with acute pyrexia of unknown origin, 6.8% (54/793) of cases were attributed to JEV.⁷

The viral encephalitis cases that were negative for JEV infection in the present study may have been due to other common etiological agents such as mumps, measles, enteroviruses such as coxsackie and echo, herpes simplex, and adenoviruses. Bacterial and tuberculous meningitis also fall into the differential diagnoses when biochemical findings and the cellular changes in the CSF are not conclusive. Cerebral malaria and Reye's syndrome also present with a similar clinical picture. One of the reasons for the no JEV infections among undifferentiated fever cases in the present study may be due to the fact that almost all of the patients had probably been previously exposed to the JEV and were therefore protected from disease. In previous studies, nearly all Thai adults in Chiangmai, Thailand,⁸ were shown to be infected by the age of 30 years

and it has been suggested that previous infection with JEV protects against disease to a greater extent than it protects against re-infection. Cases of undifferentiated fever negative for JEV infection may have been due to infections such as influenza, infectious mononucleosis, chikungunya, leptospirosis, typhoid, or rickettsial diseases.

CONCLUSION

Japanese Encephalitis was sporadic in nature affecting all age groups, but predominantly, children. No specific antiviral therapy is available for Japanese encephalitis. The specific etiological diagnosis of Japanese Encephalitis cases helps the patient management protocols and avoids unnecessary use of antiviral therapy. Acyclovir therapy which is of no proven advantage in the cases of Encephalitis which were caused due to the Japanese Encephalitis Virus, needs supportive and symptomatic treatment. Thus, the management protocol was restricted to temperature control, seizure control, and the control of aggravating intracranial pressure and fluid and electrolyte management. Current JE

vaccines are safe, effective and cost-effective. Effective JE vaccination programs provide the only solution to the ongoing threat of JE to endemic populations.

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