

Correspondence

Japanese encephalitis in Tamil Nadu (2007-2009)

Sir,

Japanese encephalitis virus (JEV), an arthropod borne pathogen can be found throughout the tropical zones of Asia. Approximately 3 billion people and 60 per cent of the world population live in JE-endemic regions, and there are approximately 50,000 cases and 15,000 deaths per annum notified from wide geographical range¹⁻³. Increase in population density, deforestation and increase in irrigation of agricultural areas may contribute to the rise in JE incidence⁴. World studies report the mortality due to JE ranging from 23 to 36 per cent and 18 per cent of cases end up with complications^{5,6}. Some studies say that infection may also result in residual sequelae in 30-60 per cent of the cases⁶. The major burden of this disease is in children. Diagnosis depends on a high degree of clinical suspicion and confirmation by serology or culture. CSF analysis, CT and MRI also play an important role¹.

Although JE is endemic mainly in tropical areas, existence and proliferation of encephalitis causing viruses in temperate and cold climates of hills and valleys have also been reported⁷. Here we report a retrospective study, analyzing the JE positivity among the acute encephalitis syndrome (AES) cases referred from tertiary care centers in Chennai - Government General Hospitals, Institute of Child Health, Stanley Medical College & Hospital, other Government Hospitals and private institutions during a period of three years (2007-2009). Most of the cases were referred from various districts in Tamil Nadu.

Serum and CSF samples from all AES cases were referred to King Institute of Preventive Medicine & Research (KIPM & R), Chennai, Tamil Nadu. AES cases were selected as per standard diagnostic criteria specified by the WHO standard protocol⁸, after obtaining informed written consent. Serum samples

were subjected to JE - DENGUE IgM COMBO ELISA, Australia, and CSF tested by JEV - CheX IgM ELISA (XCyton Diagnosis Pvt Ltd., Bangalore, India). As per the WHO diagnostic criteria, a case was confirmed as JE when either IgM was positive in serum or CSF or in both. In highly suspected cases, wherein serum was positive with negative CSF results and vice versa, repeat samples were requested for, to be collected after 7 days or during discharge. All the reactive serum and CSF samples along with 20 per cent negative samples were referred to the Regional Referral laboratory for quality control testing.

Of the 561 AES cases referred during the study period, JE was confirmed in (28) 4.9 per cent of cases. In 2007, of the 146 AES cases six (4.1%) were positive, in 2008, 11 of 208 (5.2%) were positive and in 2009, of the 207 cases, 11 (5.3%) were laboratory confirmed JE cases (Table). During the three years it was observed that only in four of the total positive cases, both serum and CSF were positive implicating the time of sample collection as a vital factor in diagnosis. Since virus isolation, even at the best of the laboratory facilities is tedious and RNA detection not very sensitive, a positive MAC ELISA in CSF or serum is the accepted standard for diagnosis as JEV infection^{9,10}.

In a study in Nepal, JEV positivity of 17.7 per cent was noted¹. Rayamajhi *et al*^{11,12} found 61.7 per cent of laboratory confirmed JE cases in one study and 86.2 per cent cases in another study. Akiba *et al*¹³ had found laboratory confirmed JE in 78 per cent of cases. The number of positive cases was much lesser in our study probably due to better vector control, vaccination programmes when compared to reports from Nepal and adjoining north Indian States¹¹.

In our study, of the total 28 positives in the three years, 17 (60.71%) were males. Eighty two per cent

Table. Year-wise age distribution of JEV infection

Year	Age (yr)					Total positives
	0-1	>1-5	>5-12	>12-18	>18	
2007	2/19	3/38	1/32	0/21	0/36	6/146 (4.10%)
2008	0/26	5/57	4/52	0/24	2/49	11/208 (5.2%)
2009	0/27	5/52	3/53	0/18	3/39	11/189 (5.8%)

Values are number positive/number tested

of JE patients in our study were under 12 yr of age. Occurrence of 2 cases in 2008 and 3 cases in 2009, in individuals above 18 yr of age was noted in our study, which indicates weaning of immunity at a later age. Of the 28 JEV positives during the three years, 16 were from Chennai followed six from Thiruvellore district, one from Kancheepuram, two each from Vellore and from Thiruvannamali district. We had received one positive case from Chittoor district of the bordering State of Andhra Pradesh.

Majority of the cases were reported soon after monsoon, *i.e.* during August and September months. Upsurge of cases during the rainy season (monsoon) has been shown earlier¹⁴. Cases started to appear in the month of April - May and peak during late August to early September and start to decline from October.

The JE cases were mostly from northern districts of Tamil Nadu where JE is found to be endemic¹⁵ and there has been a gradual increase in the positivity. JE vaccination has proven to be effective in the control and prevention of JE worldwide and this has been already undertaken in phases in Tamil Nadu¹⁶. Since it is the paediatric population which is highly implicated, augmenting the current vaccination programme throughout the country can control the infection^{2,13}. However, to prevent the disease public health measures such as vector control, widespread usage of mosquito nets, protective clothing and effective surveillance is necessary.

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