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Original Research Article

Incidence of Japanese encephalitis among Acute Encephalitis Syndrome Cases in Netaji Subhash Medical College and Hospital Jamshedpur, Jharkhand, India

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Conflict of interest: Nil

Abstract:

Background: In endemic areas of India, Japanese encephalitis (JE) is a significant viral cause of acute encephalitis syndrome (AES). The purpose of this study was to ascertain the prevalence and clinical features of JE in patients from AES who were admitted Netaji Subhash Medical College and Hospital Jamshedpur, Jharkhand, India over a predetermined time frame.

Methods: Patients who presented with AES were the subjects of prospective observational research. Using the suggested IgM capture ELISA methodology, samples of blood and cerebrospinal fluid (CSF) were obtained and examined for JE virus (JEV)-specific IgM antibodies.

Results: Out of 90 AES cases enrolled, 59 (65.5%) were confirmed JE positive. The highest positivity was observed in the age group 5–10 years. Seasonal variation showed peaks during the monsoon and post-monsoon months. Mortality among JE positive cases was 61.1%.

Conclusions: A significant percentage of AES cases in Jamshedpur are caused by JE. To lower the JE burden in this area, increased surveillance, mass immunization, and vector control are required.

Keywords: Acute Encephalitis Syndrome (AES), Japanese Encephalitis (JE), monsoon, post-monsoon, cerebrospinal fluid.

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Introduction

With the exception of mild febrile seizures, acute encephalitis syndrome (AES) is characterized by an abrupt start of fever and a change in mental status or new-onset seizures [1]. Numerous etiologies, such as bacterial, viral, parasitic, and non-infectious causes, are included in AES. The Japanese encephalitis virus (JEV), which has the potential to cause serious neurological problems and death, is regarded as one of the most important causes of AES in India [2].

Pigs and water birds are involved in a zoonotic cycle that involves JE, a mosquito-borne viral encephalitis brought on by a Flavivirus and spread by Culex mosquitoes [3]. In Bihar and other northern Indian states where the disease is common, AES outbreaks frequently involve JE patients [4]. In endemic areas, JE still causes morbidity and mortality in both adults and children despite vaccination campaigns [5]. The purpose of this study was to characterize the clinical, seasonal, and demographic characteristics of JE-positive cases as well as the JE positivity among AES cases at Netaji Subhash Medical College and Hospital Jamshedpur, Jharkhand, India

Methods

Study Design and Setting: Between January 2024 and November 2024, a prospective observational study was carried out in a hospital at the Netaji Subhash Medical College in Jamshedpur, India.

Study Population: Patients of any age who presented with AES as defined by WHO criteria—acute onset fever with a change in mental status (disorientation, confusion, coma, inability to talk) and/or new-onset seizures (apart from simple febrile seizures)—were eligible for inclusion.

Sample Collection: Samples of blood and CSF were taken aseptically. A standardized IgM capture ELISA kit, suggested by the National Institute of

Virology, Pune, was used to test serum and CSF for JEV-specific IgM antibodies after they had been centrifuged and preserved.

Data Collection: Age, sex, clinical characteristics, seasonal distribution, and outcomes (death, neurological sequelae, and recovery) were all documented.

Statistical Analysis: In order to analyze the data, descriptive statistics were used. The percentage of AES cases that tested positive for JE IgM was used to represent incidence. Age distribution and seasonal changes were assessed.

Results

Table 1: Demographic and Clinical Profile (n=90)

Characteristic	Total AES (N)	JE Positive (n)	% JE Positive
Total Cases	90	59	65.5%
Male	50	35	70%
Female	40	24	60%
Age (years)			
0–5	10	5	5.5%
5–10	45	28	31.1%
>10	35	22	24.4%
Mortality		55	61%

Seasonal Distribution

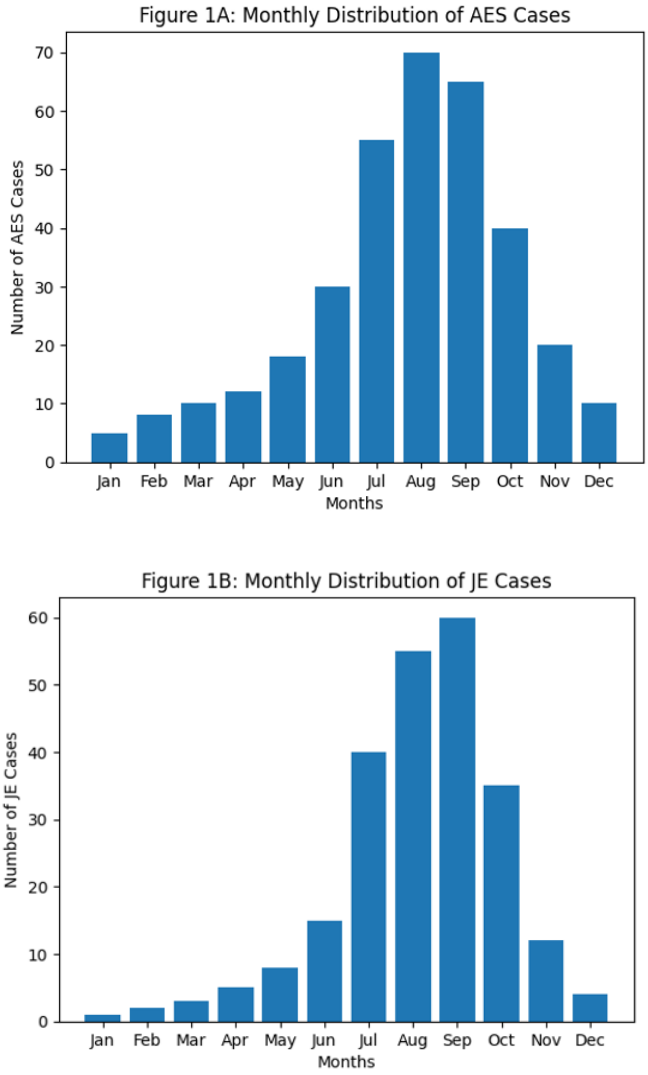

Figure 1: A) Bar graph showing monthly distribution of AES and B) JE cases

Interpretation: JE cases peaked during monsoon and post-monsoon months, consistent with vector-borne transmission patterns.

Age and Gender Distribution

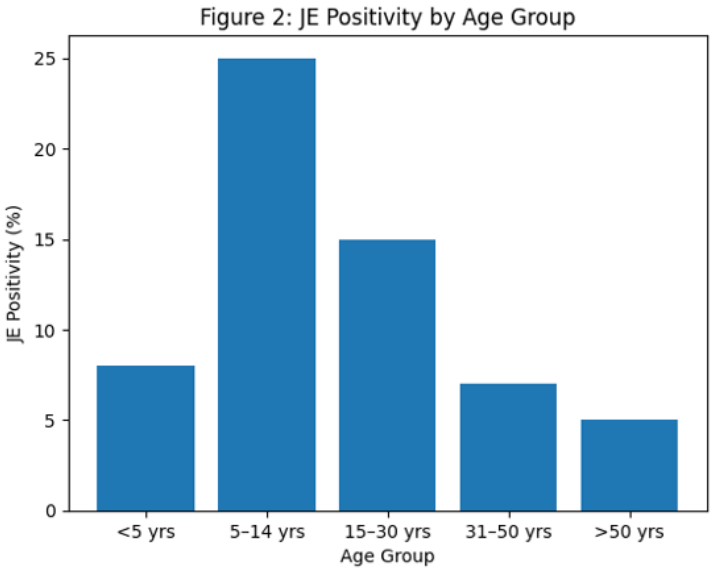

Figure 2: Bar graph showing JE positivity by age group

Table 2: Outcomes of JE positive cases

Outcome	JE Positive (n, %)
Recovered	18 (20%)
Neurological Sequelae	25 (27.7%)
Died	15 (16.6%)

Discussion

According to this study, JE accounts for a sizable percentage of AES patients at Netaji Subhash Medical College and Hospital Jamshedpur, Jharkhand, India which is consistent with findings from other Jharkhand districts. Previous research from NSMCH in a pediatric cohort from that JE was responsible for 22.04% of AES cases [6].

The age distribution revealed that children aged 5 to 10 had a greater incidence, which is consistent with the established JE epidemiology that places young children at higher risk. Because mosquitoes grow more during the monsoon, seasonal maxima are anticipated [7]. The documented death rate among JE cases (61.1%) highlights the importance of early detection and treatment and demonstrates the seriousness of the illness.

Jharkhand has reported varying case fatality rates and sustained AES and JE transmission as compared to state-level statistics. According to a study of state data from 2009 to 2014, the average CFR for JE patients was 14% (6), [4].

Limitations

- Lack of molecular confirmation for JEV and potential cross-reactivity in IgM assays.
- Single-center study limits generalizability.
- The study did not evaluate vaccination status systematically.

Conclusion

With seasonal peaks that correspond with vector activity, JE continues to be a significant etiologic agent among AES cases in Jamshedpur, especially in the pediatric age group. To lower the disease burden, JE surveillance must be strengthened, vaccination coverage must be increased, and vector management strategies must be put in place. It is advised to conduct more multi-center research using thorough diagnostic panels.

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