

A Study of the Clinico-Etiological Profile of Acute Encephalitis Syndrome Cases in a Tertiary Care Hospital of Upper Assam with Special Reference to Japanese Encephalitis

Prasanta Dihingia¹, Debarun Choudhury², Sreemanta Madhab Baruah³, Tridip Kr. Das⁴, Chayanika Dutta⁵

ABSTRACT

Introduction: Acute Encephalitis Syndrome is a major health problem in Assam, claiming thousands of lives every year and crippling the survivors. Japanese Encephalitis is the leading agent of this group. Much emphasis has been given to the vaccination drive but the effort has not been fruitful. This study aims to explore the common presentations of these diseases, the causative agents and the vaccination status of those affected.

Material and methods: This is a single centre observational study carried out in Unit-V of the Department of Medicine of Assam Medical College and Hospital, Dibrugarh for a period of two years. Acute Encephalitis Syndrome was defined as per World Health Organisation definition. Data were collected and serum and CSF were analysed in search of the etiologic agent.

Results: Of the 74 cases studied, 37 tested positive for Japanese Encephalitis. Fever, altered sensorium and seizure were the most common presentations. Herpes Simplex had 50% mortality, the highest among all the agents tested for. Only 2 out of 37 cases had been vaccinated against Japanese Encephalitis.

Conclusion: Acute Encephalitis Syndrome is a major threat to public health, particularly in Assam. Adequate vaccination coverage could prevent significant morbidity and mortality.

Keywords: Acute Encephalitis Syndrome, Japanese Encephalitis

outbreaks every July-October.

Other common agents include Herpes simplex virus(HSV), Dengue virus, Orientia tsutsugamushi, West Nile virus and some enteroviruses.

More than 10,000 AES cases were registered in 2018 alone all over India, of which around 1500 were proven to be due to JE. 509 cases were from Assam alone and the disease claimed 94 lives, the highest of all the states.⁴

Japanese encephalitis is a mosquito-borne encephalitis caused by a flavivirus. It has been reported most frequently from the rice-growing countries of South-east Asia and the Far East. *Culex vishnui* and *Culex tritaeniorhynchus* are the usual vectors and feed mainly on pigs, as well as birds such as herons and sparrows. Humans are accidental hosts. The Case Fatality Rate is around 30% and 20-30% of those who survive from severe disease have permanent neurological sequelae.⁵ Most vulnerable age group is 5-15 years. There is no specific treatment for Japanese encephalitis, but given the high fatality rate, patients require hospitalisation, supportive care and treatment of symptoms by rest and fluids, analgesics and antipyretics.

Current research aimed to study the clinical profile of AES cases and to study the vaccination status of AES cases.

MATERIAL AND METHODS

This was a single centre prospective observational study carried out in Unit-V of the Department of Medicine of Assam Medical College and Hospital(AMCH), Dibrugarh for a period of two years from January 2016 – December 2018.

Inclusion criteria: All patients admitted in Medicine Unit V,

¹Associate Professor, Department of Medicine, ²Post-graduate trainee in Medicine, Department of Medicine, ³Assistant Professor, Department of Medicine, ⁴Assistant Professor, Department of Medicine, ⁵Registrar, Department of Medicine, Assam Medical College and Hospital, Dibrugarh, Assam, India

Corresponding author: Dr. Sreemanta Madhab Baruah, Assistant Professor, Department of Medicine, Assam Medical College and Hospital, Dibrugarh, PIN-786002, India

How to cite this article: Prasanta Dihingia, Debarun Choudhury, Sreemanta Madhab Baruah, Tridip Kr. Das, Chayanika Dutta. A study of the clinico-etiological profile of acute encephalitis syndrome cases in a tertiary care hospital of upper assam with special reference to Japanese encephalitis. International Journal of Contemporary Medical Research 2019;6(6):F6-F8.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.6.8>

INTRODUCTION

As per the World Health Organization, a case of acute encephalitis syndrome (AES) is defined as “a person of any age, at any time of year, with the acute onset of fever and a change in mental status (including symptoms such as confusion, disorientation, coma, or inability to talk) AND/OR new onset of seizures (excluding simple febrile seizures). Other early clinical findings can include an increase in irritability, somnolence or abnormal behaviour greater than that seen with usual febrile illness.¹” It is a major public health problem in India in general and Assam in particular, associated with significant morbidity and mortality.²

It is mostly caused by neurotrophic Arboviruses. In India, Japanese encephalitis virus(JEV) is the leading etiological agent.³ Due to its requirement of 'amplifying hosts' (pigs, herons and egrets) and vectors (*Culex* mosquitoes), it is localized to certain regions of the country, mostly rice paddy growing areas, and occurs in the monsoon and post-monsoon season due to high vector density. Upper Assam including Dibrugarh is one of the worst affected areas with seasonal

AMCH who fulfill WHO criteria for case definition of AES.

Exclusion criteria: Known case of space occupying lesion of brain and head injury.

Based on the case definition, a total of 74 cases were taken up for study after considering exclusion criteria. Informed written consent were taken from the participants or their attendants after explaining the nature of the study. Ethical clearance was obtained from the institutional ethics committee. Data were collected in a proforma which included the demographic details, clinical features on presentation and the vaccination status. Altered mental status was defined as a GCS<15. Serum was analyzed for IgM antibodies to JEV, Dengue, Chikungunya and Orientia tsutsugamushi (causative agent for Scrub typhus). Cerebrospinal fluid (CSF) was analyzed for physical, biochemical, cytological, ADA, IgM antibodies to JEV, HSV and West Nile Virus. MRI Brain was not possible in all patients due to various reasons and hence was not included in statistical analysis. Statistical methodology: Data were compiled and analyzed using Microsoft Excel 2007.

RESULTS

Out of 74 cases taken up for study, 37 cases tested positive for JEV either in serum or CSF samples. 5 cases were positive for Dengue and Scrub typhus each, 2 for HSV and 1 for Chikungunya, 3 had tuberculous meningitis(TBM), 7 had pyogenic meningitis, 1 tested positive for West Nile virus and the cause could not be found out in the remaining 13 cases (Fig. 1).

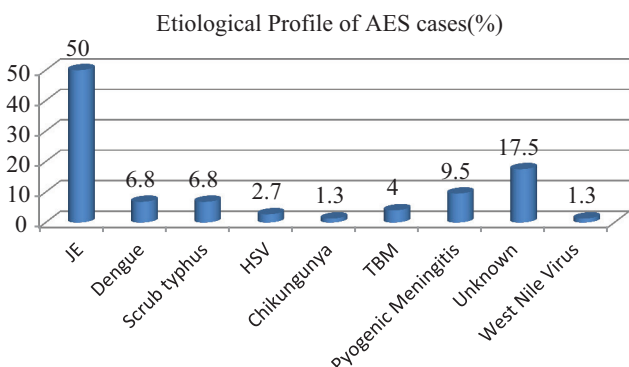


Figure-1: Showing the etiological agents of AES cases.

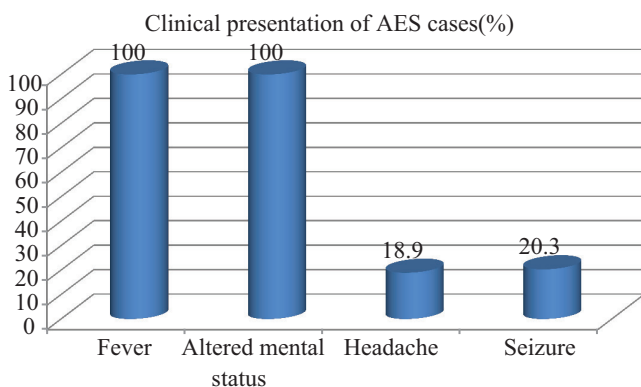


Figure-2: Showing the clinical features of AES cases on presentation.

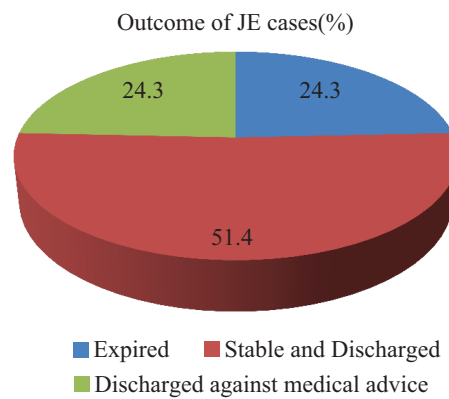


Figure-3: Showing outcome of JE cases

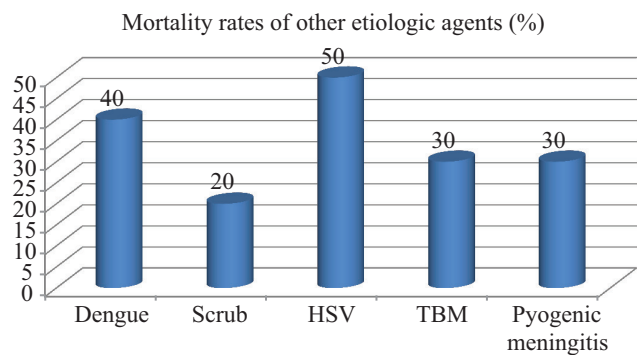


Figure-4: Showing mortality rates of non-JE cases

All the cases had fever with altered sensorium as their clinical presentation. 14 cases(18.9%) had headache and 15 cases(20.3%) had seizure on presentation (Fig. 2). 19(51.4%) JE cases were discharged after stabilization while 9(24.3%) cases expired and 9(24.3%) cases were discharged against medical advice (Fig. 3).

Among the other etiologic agents, HSV had the highest mortality rate followed by Dengue, TBM and pyogenic meningitis (Fig. 4).

Only 2 cases out of 74 had been vaccinated against JEV. They were diagnosed based on their CSF JE IgM. They made good recovery with no neurological sequelae.

DISCUSSION

Japanese Encephalitis is still the leading cause of acute encephalitis in this part of the country. In our study, 50% cases were due to JEV. In a similar study, it was 40.77%.⁶ Fever and headache were the most common presentations in our cases which correlated with previous studies.^{7,8} HSV has the highest mortality rate. Almost 20% cases remained undiagnosed probably due to some agents for which routine testing is not done. Rare causes like West Nile virus and Chikungunya virus (one case each, both discharged after stabilization) were isolated in this study.

Vaccination with the approved JE vaccine is one of the most effective preventive measures given the complex eco-epidemiology of the disease that involves multiple hosts supporting the circulation of JE Virus. In addition vector control measures also have their limitations given the exophilic as well as exophagic tendencies of the proven vectors belonging to Culex group. Subsequent to a major

outbreak of JE in Eastern UP during 2005, Government of India introduced JE vaccination with SA-14-14-2 vaccine in phased manner starting from 2006.

As per Govt. of India guidelines, 2 doses of JE vaccine have been approved to be included in Universal Immunisation Program to be given one along with measles at the age of 9 months and the second with DPT booster at the age of 16-24 months from April, 2013.

Countries which have had major epidemics in the past, but which have controlled the disease primarily by vaccination, include China, Korea, Japan, Taiwan and Thailand.

The study was done on all cases satisfying AES definition and thus also included non-viral causes including meningitis due to the similarity in presentation. The small sample size might be a limitation of the study but it was carried out in a single unit of a single tertiary care centre of a remote part of India where access to health care is not comprehensive. This might also account for the failure to test other rare but important causes of AES.

CONCLUSION

With preventive measures and early detection, it is possible to tackle the menace of encephalitis to a large extent. It was disappointing to find that 72 cases had not been vaccinated against JEV inspite of the vaccination drive. The 2 cases which were vaccinated had good recovery, which once again highlights the need to educate the masses about the benefits of vaccination.

REFERENCES

1. <https://www.who.int/bulletin/volumes/86/3/07-043307/en/> [accessed on 3/1/19].
2. Narain JP, Lal S. Responding to the challenge of acute encephalitis syndrome/JE in India. *J Commun Dis.* 2014;46:1-3.
3. Narain JP, Dhariwal AC, MacIntyre CR. Acute encephalitis in India: An unfolding tragedy. *Indian J Med Res.* 2017;145:584-587.
4. <http://nvbdcp.gov.in/index1.php?lang=1&level=1&sublinkid=5773&lid=3693> [accessed on 3/1/19].
5. <https://www.who.int/news-room/fact-sheets/detail/japanese-encephalitis> [accessed on 15/3/19].
6. Medhi M, Saikia L, Patgiri SJ, Lahkar V, Hussain ME, Kakati S. Incidence of Japanese Encephalitis amongst acute encephalitis syndrome cases in upper Assam districts from 2012 to 2014: A report from a tertiary care hospital. *Indian J Med Res* 2017;146:267-71.
7. Phukan AC, Borah PK, Mahanta J. Japanese encephalitis in Assam, Northeast India. *Southeast Asian J Trop Med Public Health* 2004; 35: 618-22.
8. Patgiri SJ, Borthakur AK, Borkakoty B, Saikia L, Dutta R, Phukan SK. An appraisal of clinicopathological parameters in Japanese encephalitis and changing epidemiological trends in upper Assam, India. *Indian J Pathol Microbiol* 2014; 57: 400-6.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 20-04-2019; **Accepted:** 20-05-2019; **Published:** 09-06-2019