



Assessment of acute encephalitic syndrome of children in relation to clinical profile

Dr. Anil Kumar¹, Dr. Sujit Kumar^{2*}

¹ Associate Professor, Department of Pediatrics, Nalanda Medical College and Hospital, Patna, Bihar, India

² Assistant Professor, Department of Pediatrics, Nalanda Medical College And Hospital, Patna, Bihar, India

Abstract

Acute encephalitis syndrome (AES) is a term used by WHO for syndromic surveillance in the context of Japanese encephalitis (JE). Encephalitis is inflammation of the brain. Severity is variable. Symptoms may include headache, fever, confusion, a stiff neck, and vomiting.

The present study is carried out with the objective to evaluate the clinico-demographic profile of hospitalized paediatric AES cases to determine the incidence and outcome of acute encephalitis syndrome to document the outcome of the study in relation to the clinical profile of the enrolled subjects.

The data from the 50 patients were collected and presented as below. All the patients were undergone CSF analysis, Fundus examination, Montoux test, Chest X - ray, CT Brain, MRI Brain, EEG, Virological studies.

Hence from the above study it can be concluded that AES major cause of mortality in children in this region of Bihar. Even though vaccination has been incorporated in the National Immunization Schedule in these endemic regions, vaccination rates and efficacy are still low.

Keywords: Japanese encephalitis, AES (Acute encephalitis syndrome), epidemiological, geographical etc.

Introduction

In India, AES outbreaks in north and eastern India have been linked to children eating unripe litchi fruit on empty stomachs. Unripe fruit contain the toxins hypoglycin A and methylene cyclopropyl glycine (MCPG), which cause vomiting if ingested in large quantities. Hypoglycin A is a naturally occurring amino acid found in the unripened litchi that causes severe vomiting (Jamaican vomiting sickness), while MCPG is a poisonous compound found in litchi seeds that causes a sudden drop in blood sugar, vomiting, altered mental states leading to lethargy, unconsciousness, coma and death. These toxins cause sudden high fever and seizures serious enough to require hospitalisation in young, severely malnourished children.

Acute encephalitis syndrome (AES) is a term used by WHO for syndromic surveillance in the context of Japanese encephalitis (JE). Encephalitis is inflammation of the brain. Severity is variable. Symptoms may include headache, fever, confusion, a stiff neck, and vomiting. Complications may include seizures, hallucinations, trouble speaking, memory problems, and problems with hearing^[1].

Causes of encephalitis include viruses such as herpes simplex virus or rabies, bacteria, fungus, or parasites. Other causes include autoimmune diseases and certain medication. In many cases the cause remains unknown. Risk factors include a weak immune system. Diagnosis is typically based on symptoms and supported by blood tests, medical imaging, and analysis of cerebrospinal fluid^[2].

Certain types are preventable with vaccines. Treatment may include, antiviral medication (such as acyclovir), anticonvulsants, and corticosteroids. Treatment generally takes place in hospital. Some people require artificial

respiration^[1]. Once the immediate problem is under control, rehabilitation may be required^[2]. In 2015, encephalitis was estimated to have affected 4.3 million people and resulted in 150,000 deaths worldwide^[3, 4].

Clinically, a case of 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 may include an increase in irritability, somnolence or abnormal behaviour greater than that seen with usual febrile illness.

Acute encephalitis syndrome (AES) is characterized by an acute onset of fever and clinical neurological manifestation that includes mental confusion, disorientation, delirium, or coma. Apart from viral encephalitis, severe form of leptospirosis and toxoplasmosis can cause AES. Keeping in mind the wide range of causal agents and the rapid rate of neurological impairment due to pathogenesis, clinicians face the challenge of a small window period between diagnosis and treatment. Several government initiatives have been undertaken to educate and improve the hygiene of people living in the JE endemic zones. Government and non-government organizations have been instrumental in providing proper nutrition to the AES-affected population as most of the affected people belong to the lower economic strata of the society.

Acute Encephalitis Syndrome (AES) including Japanese Encephalitis (JE) is a group of clinically similar neurologic manifestation caused by several different viruses, bacteria, fungus, parasites, spirochetes, chemical/ toxins etc. There is seasonal and geographical variation in the causative organism.

The outbreak of JE usually coincides with the monsoon and post monsoon period when the density of mosquitoes increases while encephalitis due to other viruses specially entero-viruses occurs throughout the year as it is a water borne disease. The encephalitis by Arbovirus of North America includes the newly introduced West Nile Encephalitis (WNE). The case fatality and morbidity is very high among various viral encephalitis specially in JE or entero-virus encephalitis in various parts of India. For surveillance purposes, all the cases of Acute Encephalitis Cases to be reported under the heading of iacuteencephalitis. In the WHO's guidelines for JE surveillance, syndromic surveillance for JE is recommended. This means that all cases of Acute Encephalitis Syndrome (AES) should be reported. Laboratory confirmation of suspected cases can be done where feasible [5].

Based on the above literature and the reported data the study was planned to evaluate the clinical profile of the children's affected by Acute Encephalitic Syndrome (AES). The present study is carried out with the objective to evaluate the clinico-demographic profile of hospitalized paediatric AES cases to determine the incidence and outcome of acute encephalitis syndrome to document the outcome of the study in relation to the clinical profile of the enrolled subjects.

Methodology

The study was planned in Department of Paediatrics in Nalanda Medical College and Hospital, Patna Bihar, India. The data from the 50 patients were collected and presented as below. The approval of the institutional ethic committee had been taken before the study. All the patients were informed consent. The aim and the objective of the study are conveyed to all patients.

All the patients were undergone CSF analysis, Fundus examination, Montoux test, Chest X - ray, CT Brain, MRI Brain, EEG, Virological studies.

Inclusion Criteria

All paediatric patients up to 12 years of age brought to Nalanda Medical College and fulfilling the standard WHO case definition of AES as mentioned above were included in the study.

Exclusion Criteria

This included patients presented like AES picture, but with

clinico-investigational diagnosis confirmative of cerebral malaria, Reye syndrome or other non-infectious encephalopathy.

Results & Discussion

The patients positive with the AES were included in the study. The patients were admitted in the hospital and undergone the various tests and pathological findings. The data from the 50 Encephalitic patients were collected and presented as below. The table 1 shows the data of the patients related to age group, type of sex and the rural or urban origin of the patients.

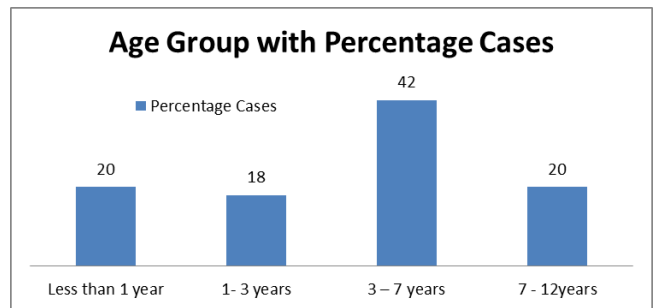


Fig 1: Age group with Percentage Cases

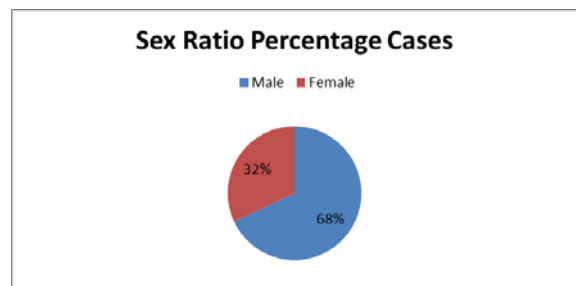


Fig 2: Sex Ratio Percentage Cases

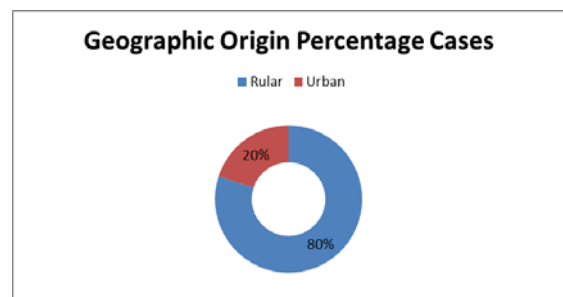


Fig 3: Geographic Origin

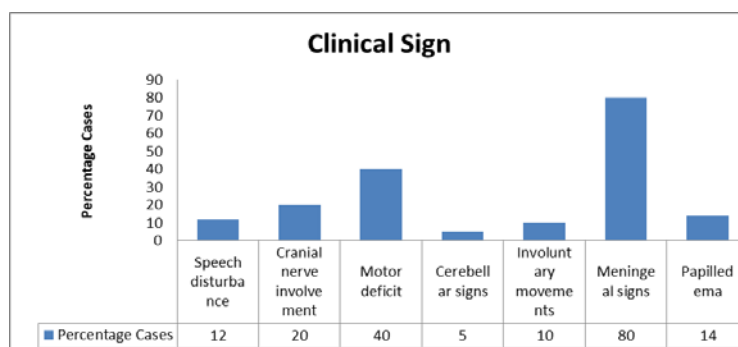


Fig 4: Clinical Sign

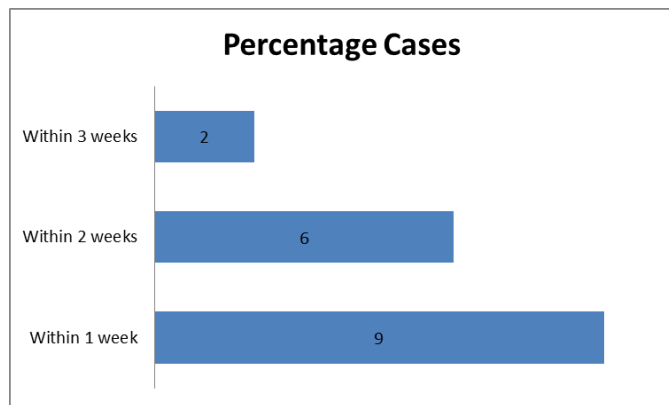


Fig 5: Death occurrence

Viral encephalitis is an important cause of mortality and morbidity in children. Viral agents responsible for sporadic encephalitis include Varicella zoster virus, Mumps, Human herpes virus 6 and 7, Epstein Barr virus, and most importantly, Herpes simplex virus. Herpes simplex virus encephalitis (HSE) is the most common cause of sporadic fatal viral encephalitis, with an incidence of 1-3/million in western countries [6]. Not much information is available regarding proportion of AES cases due to HSE in the Indian setting. In untreated patients, mortality is high (70%), which is decreased to 30% in treated patients in a timely manner with the antiviral drug Acyclovir (risk of sequelae of around 11%) [7].

Acute encephalitis syndrome (AES) is a term used by WHO for syndromic surveillance in the context of Japanese encephalitis (JE) [8]. Acute Encephalitis Syndrome is defined clinically 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). Acute encephalitis syndrome is a medical and neurological emergency, requiring immediate consideration of key issues including immediate life support, identification of cause, and when available, institution of specific therapy.

Limitations of the Study is records of clinical assessment with respect to symptomatology, neurological status and course during hospital stay were not available for analysis. These might have proved to be invaluable for prognostication.

Conclusion

Hence from the above study it can be concluded that AES major cause of mortality in children in this region of North India. Even though vaccination has been incorporated in the National Immunization Schedule in these endemic regions, vaccination rates and efficacy are still low. Better public awareness and education, quality vaccination coverage and effective vector preventive strategies are required in order to combat this annual scourge that affects thousands of children and leads to considerable morbidity and mortality.

References

1. Meningitis and Encephalitis Information Page. NINDS. Archived from the original on 29 October 2017. Retrieved 29 October 2017.
2. Meningitis and Encephalitis Fact Sheet. National Institute

of Neurological Disorders and Stroke. Archived from the original on 29 October 2017. Retrieved 29 October 2017.

3. GBD 2015 Disease and Injury Incidence and Prevalence Collaborators (8 October 2016).
4. GBD 2015 Mortality and Causes of Death Collaborators (8 October 2016).
5. http://nvbdcp.gov.in/WriteReadData/1892s/Revised_guidelines_on_AES_JE.pdf
6. Steiner I. Herpes simplex virus encephalitis: new infection or reactivation? *Curr Opin Neurol*. 2011; 24:268-74.1
7. Granerod J, Ambrose HE, Davies NW, Clewley JP, Walsh AL, Morgan D, *et al*. Causes of encephalitis and differences in their clinical presentations in England: a multicentre, population-based prospective study. *Lancet Infect Dis*. 2010; 10:835-44.
8. World Health Organisation. Acute Encephalitis Syndrome. Japanese encephalitis surveillance standards. January 2006. From WHO-recommended standards for surveillance of selected vaccine-preventable diseases. WHO/V&B/03.01. Available from: <http://www.who.int/vaccines-documents/DocsPDF06/843.pdf>. Accessed on 8 August, 2012.