



"STUDY OF ETIOLOGICAL CLINICAL LABORATORY FEATURE IN CASE OF ACUTE ENCEPHALITIS SYNDROME WITH JAPANESE ENCEPHALITIS IN PARTICULAR

Paediatric Medicine

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ABSTRACT

Objective: This study aimed to investigate the characteristics of children admitted with AES, including the cause, clinical presentation, outcomes, and cerebrospinal fluid (CSF) analysis. **Methods:** A total of 112 patients aged 1 month to 12 years were included in the study, which took place from June 2021 to August 2022. Detailed history, clinical examination, and relevant investigations, such as CSF analysis and neuroimaging, were conducted. **Results:** The prevalence of AES in the study population was 1.03%, with a higher incidence among male children. Fever and altered sensorium were the most common presenting complaints, followed by seizures. Abnormal neuroimaging findings were observed in 10.71% of cases, and bacterial or viral causes were identified in 23.2% of cases. **Conclusion:** AES is a significant health concern in children, particularly in India, with various clinical presentations and etiologies. Early recognition, appropriate investigations, and timely management are crucial for improving outcomes and reducing the burden of AES in pediatric populations.

KEYWORDS

INTRODOCTUN

CNS infections are a common and serious neurological emergency in children, often leading to significant morbidity and mortality. The objective of the my study is to examine characteristics of children admitted with AES, including the underlying cause, clinical presentation, outcomes, and cerebrospinal fluid (CSF) analysis. AES is condition which refers to a collection of clinical presentation, which include sudden onset of fever, changes in mental status, with or without the development of new feature of seizure. AES encompasses a range of similar illnesses caused by various pathogens such as bacteria, virus, fungi, parasites, and even chemical toxin. India faces a pressing public health issue of considerable magnitude due to AES with an estimated annual occurrence of approximately 50 thousands cases and 10 thousands deaths. It can found in both epidemic and sporadic forms, and there are variations in the causative organisms based on the seasonal and geography. most common causative organism is virus worldwide. for every 100,000 individuals in the population, there are approximately 3.5 to 7.4 new cases of the disease reported each year.[4]

AIMS AND OBJECTIVES

- 1) To establish the etiology of AES(Acute Encephalitis Syndrome).
- 2) To study the clinical features of the disease.
- 3) To establish the outcome of the disease

METHOD AND MATERIAL

My Study design was Descriptive study. Study conducted at Department of Pediatrics, Anugrh Narayan Magadh Medical College and Hospital, Gaya. Study population: Age group between 1 month to 12 years

Study duration: June 2021 to August 2022

Inclusion Criteria:

- Acute onset of fever
- Change in mental status like disorientation, confusion, altered consciousness, or even coma. They may have difficulty speaking or communicating effectively.
- New onset of seizures.

Exclusion Criteria:

Simple Febrile seizures: Children who presented with seizures that are considered simple febrile seizures, associated with fever, were excluded from the study. This is because simple febrile seizures are a distinct condition and not considered part of AES.

Known case of Seizure disorder.

Traumatic encephalopathy.

Metabolic encephalopathy:

Following step was done in my study

1. history in detail.
2. clinical examination

3. Investigation

Investigations: CBC, RBS, S. Electrolyte, LFT, KFT, CSF Blood culture, neuroimaging

RESULTS AND OBSERVATIONS

During the period from July 2021 to June 2022, a study was conducted in the pediatrics departments to identify and analyze cases of acute encephalitis syndrome (AES). A total of 112 patients, aged between 1 month and 12 years, were included in the study. The prevalence of acute AES in this study was found to be 1.03%.

Gender Distribution:

Out of the 112 patients, 66 were male, accounting for 58.9% of the total, while 46 were female, accounting for 41.1%. The male-to-female ratio observed in this study was 1.4:1, indicating a slightly higher prevalence of AES symptoms in males.

Presenting Complaints:

The most common presenting complaints among the patients were fever and altered sensorium, both reported by 100% of the cases. Seizures were the third most common complaint, reported by 76.8% of the cases.

Meningeal Symptoms:

In this study, 18 out of the 112 patients (16%) exhibited features of meningeal irritation. Among these patients, vomiting was the most common presentation, reported by 58.9% of the cases. Headache was the second most common complaint, reported by 19.6% of the cases, followed by neck pain reported by 7.1% of the cases.

Other Important Symptoms:

Some rare symptoms observed in the study included diarrhea, black stool, and hypertonia. Diarrhea was present in most of the cases (8%).

Signs:

Among the 112 patients, 46 children (41%) exhibited features of raised intracranial pressure (ICP), which was the prominent sign observed. Meningeal irritation signs were present in 36 children (32%), indicating signs of irritation or inflammation of the meninges. A total of 6 children (5.5%) showed focal neurological deficits, indicating localized impairment in neurological function. Cranial nerve palsies were observed in 4 children (3.5%), indicating dysfunction of specific cranial nerves.

Recurrence of Seizures:

Among the 112 patients included in the study, 17 cases (31%) experienced a recurrence of seizures during their hospital treatment.

Mechanical Ventilation:

Out of the 112 patients, 18 cases (16.1%) required mechanical

ventilation for various reasons.

Hypoglycemia:

In this study, 24 children (21.5%) had hypoglycemia.

Hyponatremia:

The incidence of hyponatremia among the 112 cases was 25%.

Bacterial and Viral Causes:

Only 26 patients (23.2%) had a confirmed etiology, with 10 patients (8.9%) having a bacterial cause and 10 patients (8.9%) having a viral cause. Six patients (5.4%) were diagnosed with tuberculous encephalitis. Among the 10 viral patients, 6 were diagnosed with VZV encephalitis, and 4 patients were suspected to have Japanese encephalitis based on neuroimaging (MRI) findings and ELISA test.

Neuroimaging:

Neuroimaging was normal in 90 patients (80.35%). Abnormal neuroimaging findings were found in 12 patients (10.71%). Neuroimaging could not be performed in 10 cases (8.92%) due to unconsciousness.

Outcomes:

In this study, out of the 112 cases, 64 cases (57%) had a normal outcome, indicating that they recovered without any significant long-term effects. However, 14 children (12.5%) unfortunately passed away due to acute encephalitis syndrome. Additionally,

DISCUSSION

During the study conducted by Manish Kakkar et al[25], the common age group affected was less than 5 years. However, in the study by Sneha et al.[23] the common age group affected was 1 to 3 years. In the present study, the common age group affected was less than 1 year. These findings indicate that the age distribution of individuals affected by the condition differs among the studies.

In terms of gender distribution, the percentages vary among the different studies. In the study conducted by Khinchi et al.[21] 54% of the cases were male and 45% were female. In the study by Kakkar et al, 59.3% were male and 40.7% were female. The Gorakhpur[29] study reported 51.3% male cases and 48.7% female cases. Sneha et al [23] found that 75% of the cases were male and 25% were female. In the present study, 59% of the cases were male and 41% were female.

Regarding the pattern of signs, altered sensorium was consistently present in all three studies. The occurrence rates of meningeal signs and focal neurological deficits varied to some degree among the studies. The prevalence of hypoglycemia differed as well, with Ekambaranath Sambasvam et al reporting 40% of the patients with hypoglycemia and the current study finding an occurrence rate of 21.51%.

The Glasgow Coma Scale (GCS) scores also varied among the studies. Khinchi et al[21] reported that 29.5% of the patients had a GCS score less than 8, while the Gorakhpur study found 54% with a GCS score less than 8. Ekambaranath Sambasvam et al reported 100% of the patients having a GCS score less than 8. In the present study, 25% of the patients had a GCS score less than 8.

In terms of etiology, the present study identified bacterial etiology in 10 cases through CSF culture and sensitivity testing. Six cases were diagnosed as tuberculous meningitis (TBM) using the GeneXpert test, and viral etiology was confirmed in 10 cases. Out of the viral cases, 6 tested positive for Varicella-Zoster Virus (VZV) through IgM ELISA. Two cases showed equivocal results for Japanese Encephalitis (JE) IgM ELISA, suggesting a possible JE infection. Additionally, 2 cases exhibited MRI features indicative of JE. Based on these findings, 4 cases were considered as probable JE based on clinical and laboratory evidence.

These results highlight the diverse etiologies of acute encephalitis syndrome in the study population, with bacterial, tuberculous, and viral causes being identified. Differentiating viral etiologies, particularly JE, is important for appropriate management and treatment decisions.

CONCLUSION

- Prevalence: The prevalence of AES in your study was found to be

1.03%, indicating that it is a relatively rare condition.

- Age Group: Infants (<1 year) were the most commonly affected age group in your study.
- Gender Distribution: Male children were more affected than females, with a male-to-female ratio of 1.4:1.
- Presenting Symptoms: Fever with altered sensorium was present in all patients, and seizures were observed in 85.7% of cases.
- Meningeal Symptoms: Meningeal symptoms, indicating the involvement of the meninges, were present in 58.9% of cases.
- Raised ICP: Approximately 41.1% of patients exhibited features of raised intracranial pressure (ICP), while meningeal signs were observed in 32.1% of patients.
- Focal Neurological Deficit: Focal neurological deficits were observed in 5.4% of cases, indicating localized abnormalities in neurological function.
- Mechanical Ventilation: About 32.1% of patients required mechanical ventilation, indicating the severity of the condition in some cases.
- GCS and Dysglycemia: A GCS score below 8, indicating compromised consciousness, was found in 25% of patients. Dysglycemia was detected in 21.4% of patients.
- Hyponatremia: Approximately 25% of patients presented with hyponatremia at the time of admission.
- Abnormal Neuroimaging: Neuroimaging revealed abnormalities in 10.7% of cases, indicating structural changes in the brain associated with AES.
- Etiology: The etiology of AES was identified in 23.2% of patients, with bacterial etiology found in 8.9% and tuberculous etiology in 5.4% of cases. Among the viral etiologies, varicella encephalitis was found in 6 cases.
- Outcome: Out of 112 patients, 61% achieved a full recovery, 12.5% experienced sequelae, and 12.5% unfortunately succumbed to the disease.
- Predictors of Poor Outcome: A bad GCS score at presentation, mechanical ventilation requirement, low sodium levels, and abnormal neuroimaging were identified as predictors of a poor outcome in AES cases.

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