



A CLINICO-EPIDEMIOLOGICAL PROFILE OF ACUTE ENCEPHALITIS SYNDROME(AES) IN CHILDREN

Paediatric Medicine

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ABSTRACT

BACKGROUND: According to World Health Organization (WHO) Definition- Clinically a case of Acute Encephalitis Syndrome 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 such as confusion, disorientation, coma or inability to talk and/or new onset of seizures. Initially Tuberculosis meningoencephalitis and bacterial meningoencephalitis were common causes but now there is a change in paradigm of Acute Encephalitis Syndrome to viral meningoencephalitis.

METHODS: A descriptive observational study was undertaken at the department of pediatrics, in a tertiary care hospital in a city in Western Maharashtra. Children aged 0- 12 years fulfilling the WHO definition of AES were included as study subjects. Detailed history for necessary demographic characteristics and clinical examination findings were tabulated and analyzed. To establish the relationship between two quantitative variables relative statistical analysis was applied.

RESULTS: A total of 60 cases formed as study subjects. With higher proportion of subjects were between 5 to 12 years (46.7%). Majority of them being males 33 (55%). A majority of cases were reported during post-monsoon period 26 (43.3%). All cases had altered sensorium, 90% cases had fever. With the use of CSF parameters majority of cases had viral encephalitis (58.3%), followed by bacterial encephalitis (26.7%). Out of 60 cases 53 cases (88.3%) were immunized.

CONCLUSIONS: The percentage of AES cases in this study was 1.55%. Most common age group affected is below 5 years to 12 years. Male children are more affected than females with a ratio of 1.4:1. Most common presenting symptom was altered sensorium (100%) followed by fever (90%). Meningeal sign was present in 18 patients (30%). Out of 60 cases viral aetiology was found in 35 cases (58.3%), followed by bacterial aetiology in 16 (26.7%).

KEYWORDS

AES, Viral, Bacterial, CSF.

INTRODUCTION

According to World Health Organization (WHO) Definition- Clinically a case of Acute Encephalitis Syndrome 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 such as confusion, disorientation, coma or inability to talk and/or new onset of seizures¹.

Major cause of encephalitis is found to be CNS infections and more than 100 causative agents are identified². Recurrent epidemics of encephalitis of unknown aetiology have occurred in India. There have been more than 44,000 cases and nearly 6000 deaths from encephalitis in India, Between 2008 and 2014, particularly in Uttar Pradesh and Bihar. There has been a rise in encephalitis, with over 125 children reported to have died in one hospital in Gorakhpur alone in 2016³.

However, alternate novel viral-aetiologies for AES outbreaks including Enteroviruses, Chandipura virus and Nipah virus are found in the recent studies even in the JE endemic regions. High mortality is seen in explosive AES cases and hence is a major public health concern in India⁴.

Moreover similar symptoms are seen in a number of other infectious conditions, and distinguishing encephalitis from other conditions is a challenging task.

Initially Tuberculous Meningoencephalitis and bacterial Meningoencephalitis were common causes but now there is a change in paradigm of Acute Encephalitis Syndrome to viral meningoencephalitis. Hence there is a need of studies to analyze the changing clinical profile and etiology of AES in children.

AIM AND OBJECTIVES:

1. To find out the percentage of Acute Encephalitis Syndrome (AES) cases.
2. To study the various demographic features and clinical presentation in Acute Encephalitis Syndrome (AES).

METHODOLOGY

The study was done at Tertiary Care Centre in the Department of Pediatrics, in a tertiary care hospital in a city in Western Maharashtra after due permission from the Institutional Ethic and Scientific Committee and Review Board and after taking Written Informed Consent from the patient's parents / legal guardian. Total 60

patients as per inclusion criteria were included in the study.

Detailed history for necessary demographic characteristics like age, sex, seasonal variation were tabulated and analyzed. Immunisation history was noted and analysed.

The percentage of total Acute Encephalitis Syndrome (AES) patients was calculated. Patients were examined and the clinical manifestations were tabulated as per their frequency. Routine investigations and lumbar puncture was done in all patients except in those where it was contraindicated. Radioimaging, serological tests and CBNAAT was performed wherever necessary as per the probable aetiology.

Characteristic CSF findings were analysed. Aetiology of Acute Encephalitis Syndrome (AES) was determined by characteristic clinical findings, CSF picture, and relevant investigations. The different aetiologies were analysed to see for any change in paradigm of Acute Encephalitis Syndrome (AES).

RESULTS

Table 1: Age wise distribution of cases

Age (in years)	Number of Children	Percentage
<1	12	20%
1-5	20	33.3%
5-12	28	46.7%
Total	60	100%

Out of total cases 28 (46.7%) cases had age between 5-12 years, 20 (33.3%) cases had age between 1-5 years and 12 (20%) cases had age less than 1 year.

Table 2: Gender wise distribution of cases

Gender	Number of Children	Percentage
Female	27	45%
Male	33	55%
Total	60	100%

Out of total children 33 were males and 27 were females. The male dominance was observed in the study subjects

Table 3: Season wise comparison of cases

Season	Number of Children	Percentage
Pre Monsoon	12	20%

Monsoon	22	36.7%
Post Monsoon	26	43.3%
Total	60	100%

Out of 60 cases majority of the cases were seen in post monsoon season(43.3%) followed by monsoon season(36.7%).

Table 4: Signs and Symptoms

Signs And Symptoms	Number of Children	Percentage
Fever	48	90%
Seizure	37	71.6%
Altered Sensorium	60	100%
Headache	8	13.3%
Vomiting	29	48.3%
Loose Stools	6	10%
Meningeal Signs	18	30%
Shock	4	6.6%

All the cases had altered sensorium(100%),90% of cases had fever and 71.6% presented with seizures.

Table 5: Immunization History

Immunized	Number of cases	Percentage
Yes	53	88.3%
No	7	11.7%
Total	60	100%

Out of 60 cases 53 children were immunized and 7 cases are not immunized

Table 6: CSF Suggestive Diagnosis

CSF suggestive	Number of cases	Percentage
Viral	35	58.3%
Bacterial	16	26.7%
Tubercular	4	6.7%
Dengue	4	6.7%
Chikungunya	1	1.6%
Total	60	100

The results were predicted based on cell count, sugar and protein in CSF. With the use of above CSF parameters majority were diagnosed as viral aetiology (58.3%) followed by bacterial aetiology (26.7%).

DISCUSSION

The predominant age group in our study was found to be between 5 to 12 years. Similar results were observed in study done by Sneha et al⁵, Saumyen et al⁶ whereas in a study conducted by Jaya Karthika et al⁷ the predominant age group was < 1 year.

The proportion of AES was high in males (55%) than females (45%) in our study. Similar results were observed in studies done in our country by Sneha et al⁵, Y.R.Khinchin et al⁸, JayaKarthika et al⁷.

In our study the seasonal occurrence of AES cases was peak during post-monsoon(October –February) which was similar with findings in study by Sneha et al⁵, Y.R.Khinchin et al⁸. In a study conducted by Rakesh Kumar et al⁹ most VE cases were seen during the hot and wet months between July and October.

Meningeal signs were seen in 30% of the cases. In a study done by JayaKarthika et al⁷ meningeal signs were observed in 32.1% cases and in another study done by Y.R.Khinchin⁸ meningeal signs were observed in 49.1% cases.

The predominant presentation in our study was altered sensorium(100%) followed by fever(90%),seizures(71.6%). Similar presentation were observed in studies done by Y.R.Khinchin et al⁸, Saumyen et al⁶. In a study conducted by Jaya Karthika et al⁷ fever(94.6%) was the predominant symptom followed by altered sensorium(85.7%), seizures In our study majority of the cases were fully immunised (88.3%). In a study conducted by Sneha et al⁵ 48.5% were fully immunised, 29.4% were partially immunised and 22.1% were not immunised.

In our study viral encephalitis(58.3) was predominant followed by bacterial (26.7%),. In a study conducted by Sneha et al⁵, Jaya Karthika

et al⁷, Rayamajhi et al¹⁰ predominant aetiology was viral followed by bacterial and Tuberculous Meningitis. In a study conducted by SA Kamarakar¹¹ in 2005 although predominant aetiology was viral encephalitis(37.3%), pyogenic meningitis also accounted for 33.8%. This shows the change in paradigm to viral meningoencephalitis

CONCLUSION

We studied 60 cases of acute encephalitis syndrome among 3847 patients admitted in our hospital during study period. The percentage of AES cases in this study was 1.55%. Most common age group affected is below 5 years to 12 years. Male children are more affected than females with a ratio of 1.4:1. Most common presenting symptom was altered sensorium (100%) followed by fever (90%). Meningeal sign was present in 18 patients (30%). Out of 60 cases viral aetiology was found in 35 cases (58.3%), followed by bacterial aetiology in 16(26.7%).

Limitations

The major limitation of this study was investigations like PCR for specific viral aetiology could not be done due to financial constraints.

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