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CLINICAL PROFILE OF AES CASES IN A TERTIARY CARE CENTER OF NORTH BENGAL

Medicine

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ABSTRACT

Introduction: The clinical features of Acute Encephalitis syndrome (AES) vary widely across the world and little documentation is available from North Bengal. **Materials and methods:** A cross –sectional observational study was conducted at the Department of Medicine of a teaching hospital in North Bengal. 104 AES cases were enrolled and clinically evaluated and investigated as per the study protocol. **Results:** JE (72%) was most common causative agent followed by HSV Encephalitis (11.5%), Scrub Typhus (9.6%) and Dengue Encephalitis (2.88%). Male cases were predominant than female in our study. Fever and altered sensorium were most common presentation followed by seizures (51.9%), headache (29.8%), vomiting (18.2%), and hemiplegia (4.8%). Neurological evaluation revealed 80% of the patients had neck stiffness followed by positive Babinski sign (45.19%) and hypertonia (35%). **Conclusions:** JE is the commonest cause of AES in North Bengal and seizures are the commonest neurological manifestation after altered sensorium.

KEYWORDS

Clinical profile AES, seizures

INTRODUCTION

Acute encephalitis syndrome (AES) is characterized by an acute onset of fever and clinical neurological manifestation that includes mental confusion, disorientation, delirium, or coma[1]. AES is defined as new onset fever or recent history of fever (< 7 days) with change in mental status (including confusion, disorientation, coma, or inability to talk) and/or new onset of seizures (excluding simple febrile seizures)[2].

The acute encephalitis syndrome consists of an acute febrile illness with symptoms of meningeal involvement (sometimes headache only), added to which remains various combinations of the following symptoms and signs: convulsions, delirium, confusion, stupor, or coma; aphasia; hemiparesis with asymmetry of tendon reflexes and Babinski signs, involuntary movements, ataxia, and myoclonic jerks, nystagmus, ocular palsies, and facial weakness[3]. Acute encephalitis can be associated with severe complications, including impaired consciousness, seizures, limb paresis or death[4]. Worldwide, viruses are the commonest etiological agents, although bacterial or parasitic infections have also been incriminated[5].

The AES cases, based on the results of their microbiological and serological tests, can be classified as AES of suspected viral etiology (Confirmed JE, Non-JE and JE Status unknown) and AES of non-viral etiology (AES-bacterial or parasitic etiology)[7]. Cerebral malaria and non infectious causes of encephalopathy are needed to be excluded while considering the spectrum of AES[8].

MATERIALS AND METHODS

This was a hospital based cross-sectional observational study, conducted at the Department of Medicine, North Bengal Medical College, Darjeeling from May 2018 to April 2019 to document the clinical profile of AES cases admitted at our facility. The study included patients who fulfilled the following criteria:

INCLUSION CRITERIA:

1. Age >12 years
2. Clinically diagnosed as AES (acute onset alteration of sensorium with fever for less than 1 week)

EXCLUSION CRITERIA:

1. Fever of more than 1 week duration.
2. Patients with Metabolic Encephalopathy, Cerebrovascular Accidents, ICSOL
3. Those not consenting for inclusion in the study
4. Those left against medical advice

All patients with a provisional diagnosis of AES were assessed in detail. The medical history focused on recent ailments, travel, drug exposures, the onset, pattern, and duration of fever and features pertaining to any neurological alteration. This was followed by a systematic clinical examination with particular attention to the level of consciousness, and assessment of the neurological system.

Investigations were sent for routine hematology and biochemistry along with standard fever profile tests which include tests for Malaria and Dengue antigens, Scrub typhus IgM, Serum Serology for JE, Typhi dot IgM, and cultures of blood and urine. All patients underwent a CSF analysis which incorporated tests for ADA, JE Mac Elisa, RT PCR for HSV, apart from routine cytology, biochemistry and microbiological tests with Gram and ZN stains. Neuroimaging with brain MRI (with contrast) were conducted for all our patients.

RESULTS AND ANALYSIS

A total of 104 patients of acute encephalitis syndrome were included in this study, from the emergency wards of the Department of Medicine, North Bengal Medical College, Darjeeling. JE was the most common causative agent in our study, followed by HSV encephalitis (HSVE), Scrub Typhus (ST) and Dengue encephalitis (DE), cerebral malaria (CM) and bacterial meningitis (BM).

Demographic analysis revealed that the majority of patients (54.81%) were >40 years of with a mean age of 43.60±17.23 years. Males dominated the clinical picture with 68 out of 104 patients (65.38%), outnumbering the females in Japanese Encephalitis, HSV, and Scrub Typhus. The rural urban divide was biased towards the former for JE and all cases of dengue encephalitis came from urban areas, with other etiologies being equitably distributed (Table 1, Fig 1).

We analyzed the spectrum of clinical features in our study population and found that all patients had history of fever and altered sensorium, with high grade fever in the overwhelming majority. However, the fever intensity did not correlate with the mental status or presence of seizures. Mean duration of fever was 3.12 days. The patients diagnosed to have Scrub Typhus were presented late than other cases. 70.19% of patients had fever between 3-5 days duration and the mean duration of altered sensorium was 2.18 days.

The majority of patients (81.73%) had altered sensorium of ≤ 2 days.

Following fever and altered mentation, seizures (51.9%) was the next most common complaint. Other major complaints at admission were headache, vomiting, monoplegia, hemiplegia, facial deviation, aphasia, and dystonia. General examination revealed shortness of breath, jaundice, oliguria, maculo-papular skin rash and bleeding manifestations. Hepatomegaly and splenomegaly were detected in 13 and 10 patients respectively. Neurological examination revealed neck rigidity in 80% of AES patients. Hypertonia was found in 35% patient. Planter response was extensor in 45.19% of cases. Total number of patients with GCS ≤8 was 51(49.04%) and GCS ≥8 was 53(50.96%). The mean GCS was 8.39± 3.27.

Table 1: Sex ratio and residence of study population (n= 104)

	Total (n= 104)	JE (n = 75)	HSVE (n = 12)	CM (n=2)	ST (n=10)	BM (n=1)	Sepsis / MODS (n=1)	Dengue (n=3)
Male: Female	1.8:1	1.8:1	2:1	1:1	3:2	0:1	1:0	2:1
Rural: Urban	1.8:1	2.5:1	1:1	1:1	1:1	1:0	0:1	0:3

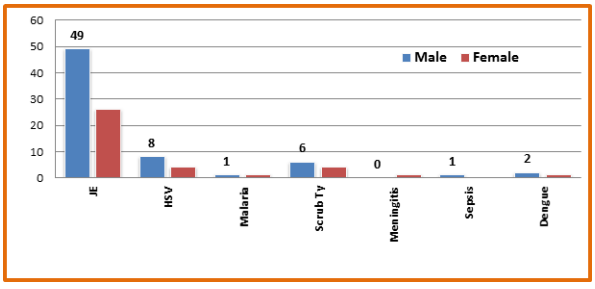

Fig. 1: Sex ratio according to etiology of AES cases (n= 104)

Table 2: Duration of major clinical symptoms (in days) with etiological classification (n = 104)

	Total (n= 104)	JE (n = 75)	HSVE (n = 12)	CM (n=2)	ST (n=10)	BM (n=1)	Sepsis / MODS (n=1)	DE (n=3)
Duration of altered sensorium	2.18	1.92	3.26	2.5	2.6	2	1	2
Duration of fever	3.12	2.73	3.11	4.5	4.60	4	5	6.24
Duration of stay at referring hospital	1.69	1.26	2.7	1	2	1	1	1.3

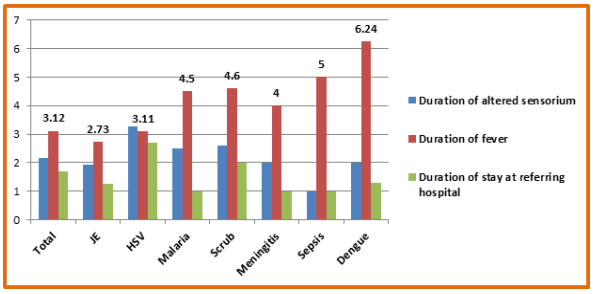

Fig 2: Duration of major clinical symptoms (in days) with etiological classification (n = 104)

Table3: Neurological Symptoms on presentation of study population (n = 104)

	Total (n= 104)	JE (n = 75)	HSVE (n = 12)	CM (n=2)	ST (n=10)	BM (n=1)	Sepsis / MODS (n=1)	DE (n=3)
Headache	31 (29.8%)	13	4	2	8	1	0	3
Vomiting	19 (18.2%)	7	3	2	4	1	0	2
Monoplegia	4 (3.8%)	3	1	0	0	0	0	0
Hemiplegia	5 (4.8%)	3	2	0	0	0	0	0
Facial deviation	3 (2.8%)	2	1	0	0	0	0	0
Aphasia	1 (.96%)	1	0	0	0	0	0	0
Dystonia	1 (.96%)	1	0	0	0	0	0	0
Seizures	54 (51.9%)	42	8	1	2	1	0	0

Table 4: Non- neurological signs of AES patients (n = 104)

Signs	Total (n= 104)	JE (n = 75)	HSVE (n = 12)	CM (n=2)	ST (n=10)	BM (n=1)	Sepsis / MODS (n=1)	DE (n=3)
Rash	9	0	0	0	6	0	0	3
Jaundice	12	5	0	1	4	0	1	2
SOB	29	16	7	1	4	0	1	0
Oliguria	10	4	1	1	3	0	1	0
Hepatomegaly	13	5	0	1	4	0	1	2
Splenomegaly	10	4	0	2	3	0	0	1
Bleeding manifestation	6	0	0	1	4	0	0	1

Table 5: Neurological signs in study population (n = 104)

Neurological signs	No of Patients	Percentage
Neck rigidity	83	80
Hypertonia	36	35
Extensor planter response	47	45.19
Flexor planter response	48	46.15

DISCUSSION

The incidence rate of AES in INDIA is 0.42/100,000 population per annum (1978-2011)[6]. Among 104 study subjects included in this study, majority were >40yrs of age (54.81%) with a mean age of 43.60±17.23 years. Similar age distribution has been seen in a study done by Kakkar et al[9]. In our study 65.38% were male and 34.62% patients were females with a male: female ratio of 1.81:1 reflecting the findings of Karmakar *et al* with a male: female ratio of 1.71: 1[10]. The male predominance might be due to the occupational exposure as majority of the men folk are engaged in outdoor activities in their professions.

All our patients had fever with an average duration of 3.12 days (range: 2-7 days) and altered sensorium. Fever was present in all cases in a study done by Saxena *et al* [9] and Rayamajhi *et al*[5]. The other major complaints at presentation in our study were seizures (51.92%), headache (29.8%), monoplegia (3.8%), hemiplegia (4.8%), vomiting (18.26%), aphasia (0.96%), facial deviation (2.8%), Dystonia (0.96%). In a study done by S.A.Karmakar *et. al.* the relative proportion of patients with seizures and focal deficit was 75.43% and 11% respectively[10]. In a recent publication in 2020 including 80 AES patients 73.7% had altered sensorium; 71.25% had convulsions, 25% had headache and 40% had vomiting.[11]

Meningeal signs such as neck rigidity were present in majority of our patients (80 out of 104 i.e 76.92%). Kernig's sign was present in 19 patients (18.26%). The presence of meningeal signs have varied widely across publications with Gupta and colleagues documenting this in 17.2% while Khinchi et al has found this to be 49.1%[11, 12]. The planter response was flexor in 46.15% and extensor in 45.19%, of our patients. In our study muscle tone was normal in majority of patients (65.38%) while the remaining patients exhibited an increased tone (34.62%).

While we discuss AES in our study, it is pertinent to mention that acute febrile encephalopathy (AFE) has emerged in the medical literature, which denotes a clinical term, which is used to an altered mental status that accompanies or follows a short duration of fever and is characterized by a diffuse and nonspecific brain insult and usually manifested by a combination of coma, seizures, and decerebrate rigidity. A study from King George's Medical Univeristy, Lucknow studied 120 patients of AFE. The authors observed pyogenic meningitis as the most common cause accounting for 36.7%, which was followed by acute viral encephalitis (AVE) in 28.33% of their patients (Japanese B encephalitis in 12.5%, herpes simplex virus encephalitis in 3.33%, and other undetermined viral causes in 12.5%). Cerebral malaria, sepsis related encephalopathy, and TB meningitis were diagnosed in 21.7%, 9.17%, and 4.2% of cases, respectively[13].

CONCLUSION

North Bengal shares a major burden of AES in India with a diverse microbiological etiology. Males and rural residence are more

commonly associated with AES in our part. While seizures are the most common clinical manifestations after the disease defining entities of fever and altered sensorium, relatively uncommon neurological features including meningeal signs and long tract signs are not uncommon. Japanese encephalitis is the leading cause of AES in this part of the world. Due to small study population, any definite conclusion cannot be opined from the present study. However, a larger study involving much more patients over a few years is required to have a stronger clinical significance.

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