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Original Research

To assess the outcome of acute infectious encephalitis

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ABSTRACT

Background: Acute infectious encephalitis/encephalopathy syndrome (AIES) is characterized by fever with impaired consciousness ranging from confusion to coma. The present study assessed the outcome of acute infectious encephalitis. **Materials & Methods:** The present study was conducted on 86 patients of AIES of both genders. In patients features like presence of fever, headache, vomiting, altered sensorium, bleeding diathesis and respiratory symptoms were noted. Blood pressure, pulse rate, jaundice, edema, lymphadenopathy, flushing, skin rash and bleeding diathesis were also recorded. **Results:** Out of 86 patients, males were 42 and females were 46. Clinical features were hypotonia in 45, seizures in 32, areflexia in 13, focal weakness in 18, hypotension in 57, pneumonia in 23, bleeding in 17, muscle dysfunction in 44 and raised ICP in 67. The difference was significant ($P < 0.05$). The mean SOPA score was 12.4, GCS score was 7.3, hemoglobin was 10.56 gm/dl and leukocyte count was 15.2 mm.³ 62 patients survived and 24 died. **Conclusion:** Authors found that common features were hypotonia, seizures, areflexia, focal weakness, hypotension, pneumonia, bleeding, muscle dysfunction and raised ICP.

Key words: Hypotonia, Seizures, Encephalitis

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Introduction

Acute infectious encephalitis/encephalopathy syndrome (AIES) is characterized by fever with impaired consciousness ranging from confusion to coma. This may be associated with seizures other than common febrile seizures.¹ AIES may be due to viral, bacterial, fungal, rickettsial, spirochetal or parasitic infections. Autoimmune encephalitis may also simulate AIES but have different clinical presentation, different etiology and responds to immunotherapy. The spectrum of AIES varies in different geographical regions because of differences in circulating organisms.

Acute meningitis is a central nervous system (CNS) infection, which could lead to fatality and neurological damages.² The etiologic agents include viruses,

bacteria, fungi and parasites, etc. Worldwide, around 200,000 viral encephalitis cases are reported annually. At least 275,000 deaths from bacterial meningitis have been estimated to have occurred in all ages in 2010; around 166,100 of these being children aged under 5 years. The permanent disability rate ranges between 25% to 50% after bacterial infections and 18% after viral infection. With the concomitant use of immunosuppressive therapies and common HIV infection, the incidence of CNS mycosis has increased in the last two decades. Thus, there is a need to understand the infectious etiologies of AE.³

Mortality in encephalitis patients is secondary to raised intracranial pressure (ICP), status epilepticus (SE), aspiration pneumonia and/or autonomic instability. In

dengue, chikungunya, malaria, leptospirosis and rickettsial infections, death may occur due to bleeding and refractory hypotension complicated by myocardial dysfunction. The patients with dengue, JE and West Nile encephalitis may present with acute flaccid weakness that may contribute to respiratory failure. Infectious encephalitis is generally a monophasic illness, and many patients survive with variable outcome if they are supported by intensive care and mechanical ventilation (MV) whenever needed.⁴ The present study assessed the outcome of acute infectious encephalitis.

Materials & Methods

The present study was conducted in the department of general medicine. It consisted of 86 patients of AIES of

both genders. Ethical clearance was taken from institutional ethical committee and written consent was obtained. General information such as name, age, gender etc. was recorded. Encephalitis was diagnosed on the basis of fever, impaired consciousness and cerebrospinal fluid (CSF) pleocytosis with or without seizure and focal neurological deficit. Patients with normal CSF were considered acute infectious encephalopathy. In patients features like presence of fever, headache, vomiting, altered sensorium, bleeding diathesis and respiratory symptoms were noted. Blood pressure, pulse rate, jaundice, edema, lymphadenopathy, flushing, skin rash and bleeding diathesis were also recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 86		
Gender	Males	Females
Number	42	44

Table I, graph I shows that out of 86 patients, males were 42 and females were 46.

Graph I Distribution of patients

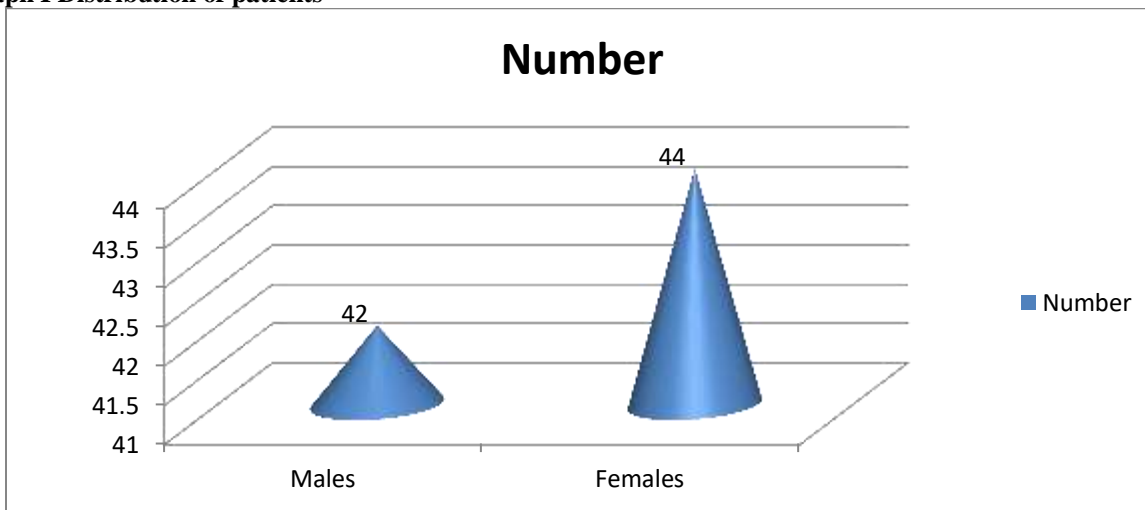


Table II Assessment of clinical features

Clinical features	Number	P value
Hypotonia	45	0.01
Seizures	32	
Areflexia	13	
Focal weakness	18	
Hypotension	57	
Pneumonia	23	
Bleeding	17	
Muscle dysfunction	44	
Raised ICP	67	

Table II, graph II shows that clinical features were hypotonia in 45, seizures in 32, areflexia in 13, focal weakness in 18, hypotension in 57, pneumonia in 23, bleeding in 17, muscle dysfunction in 44 and raised ICP in 67. The difference was significant ($P < 0.05$).

Graph II Assessment of clinical features

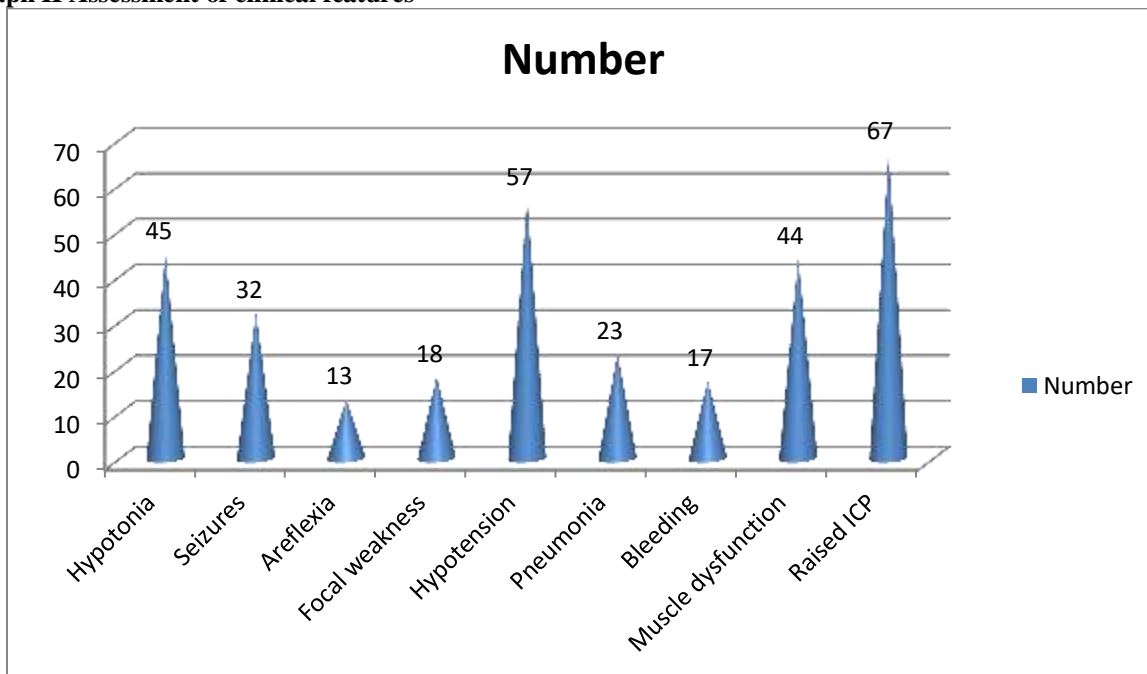


Table III Other parameters

Parameters	Mean
SOFA score	12.4
GCS score	7.3
Hemoglobin (gm/dl)	10.56
Leukocyte (mm^3)	15.2
Survived	62
Died	24

Table III shows that mean SOPA score was 12.4, GCS score was 7.3, hemoglobin was 10.56 gm/dl and leukocyte count was 15.2 mm^3 . 62 patients survived and 24 died.

Discussion

Encephalitis is an inflammation of the brain. It is caused either by an infection invading the brain (infectious encephalitis) or through the immune system attacking the brain in error (post-infectious or autoimmune encephalitis).⁵ Anyone at any age can get encephalitis. There are up to 6,000 cases in the UK each year and potentially hundreds of thousands worldwide. In the USA there were approximately 250,000 patients admitted to hospital with a diagnosis of encephalitis in the last decade.⁶

The inflammation is caused either by an infection invading the brain (infectious encephalitis) or through the immune system attacking the brain in error (post-infectious or autoimmune encephalitis).⁷ Viruses are the most common cause of infectious encephalitis (e.g.

herpes viruses, enteroviruses, West Nile, Japanese encephalitis, La Crosse, St. Louis, Western equine, Eastern equine viruses and tick-borne viruses). Any virus has the potential to produce encephalitis, but not everybody who is infected with these viruses will develop encephalitis. Very rarely, bacteria, fungus or parasites can also cause encephalitis.⁸

In present study, out of 86 patients, males were 42 and females were 46. Clinical features were hypotonia in 45, seizures in 32, areflexia in 13, focal weakness in 18, hypotension in 57, pneumonia in 23, bleeding in 17, muscle dysfunction in 44 and raised ICP in 67.

Kalita et al⁹ in their study found that one hundred sixty-four out of 258 (64%) AIES patients needed ICU admission. Their median age was 35 (2–85) years and 71 (43%) were females. The etiology was viral in 44

(herpes and Japanese encephalitis in 12 each, dengue in 17, mumps, measles and varicella in 1 patient each), non-viral in 64 (scrub typhus in 48, falciparum malaria in 6, leptospira in 3 and bacterial in 7) and undetermined etiology in 56 (34%) patients. Sixty-nine (42%) patients needed MV. On multivariate analysis, Glasgow Coma Scale (GCS) score, Sequential Organ Failure Assessment (SOFA) score and raised intracranial pressure were independent predictors of MV. Forty-three (26%) patients died, and all were in the MV group. Higher SOFA score and untreatable etiology were independent predictors of mortality. At 3-month follow-up, 14% had poor and 86% had good outcome. Low GCS score, focal weakness and status epilepticus independently predicted poor outcome. We found that the mean SOPA score was 12.4, GCS score was 7.3, hemoglobin was 10.56 gm/dl and leukocyte count was 15.2 mm.³ 62 patients survived and 24 died. Infectious encephalitis usually begins with a 'flu-like illness' or headache followed by more serious symptoms hours to days, or sometimes weeks later. The most serious finding is an alteration in the level of consciousness. This can range from mild confusion or drowsiness, to loss of consciousness and coma. Other symptoms include a high temperature, seizures (fits), aversion to bright lights, inability to speak or control movement, sensory changes, neck stiffness or uncharacteristic behaviour. Autoimmune encephalitis often has a longer onset. Symptoms will vary depending on the type of encephalitis related antibody but may include: confusion, altered personality or behaviour, psychosis, movement disorders, seizures, hallucinations, memory loss, or sleep disturbances.¹⁰

Conclusion

Authors found that common features were hypotonia, seizures, areflexia, focal weakness, hypotension, pneumonia, bleeding, muscle dysfunction and raised ICP.

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