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Clinical Profile of Encephalopathy in Medical Intensive Care Unit in A Tertiary Care Centre

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Abstract

Encephalopathy is a broad term used for brain dysfunction of varying causes, which if not treated can lead to decorticate or decerebrate posture and permanent structural change in the brain. It can result due to hypoxia, hypoglycemia, and electrolyte imbalance, nutritional, toxic, metabolic, vascular, demyelinating or infective factors. Arousal and awareness systems involved in higher cognitive functions suffer when the milieu is deranged. Clinical manifestation are non-specific and do not always point to the etiology.[1]

Keywords: Clinical, Encephalopathy, hypoglycemia, ICU.

Introduction

Treatment and prognosis of encephalopathy depends on the cause, extent of damage, duration of encephalopathy and presence of previous neurological illness. If proper treatment is not given permanent structural damage can occur, hence it is important to recognize and treat early.[1] The cornerstone of management is the identification of precipitating factors. Physiologic, metabolic and pharmacologic precipitants should be investigated aggressively, and whenever possible corrected or eliminated.[4] Potentially reversible encephalopathies do add to the morbidity and mortality in critically ill patients.[1] Sepsis-Associated Encephalopathy (SAE) is the most common type of encephalopathy that is seen within a medical ICU.[5] Critically ill patients are at increased risk of developing delirium, which has been considered one of the most common complications of intensive care unit (ICU) hospitalization.[2,3] Common precipitants of delirium in the ICU include primary brain injury, exposure to sedative and analgesic medications, drugs with anticholinergic properties, substance withdrawal, sepsis, respiratory failure, shock, mechanical ventilation, intravascular catheters and sleep deprivation.[4] Many patients in the ICU develop a global alteration in cognitive function that may be structural or metabolic in origin. Terms used to describe these disturbances include delirium, acute confusional state, organic brain syndrome, acute organic reaction, cerebral insufficiency, brain failure, ICU psychosis and

encephalopathy. Etiology specific terms, such as septic encephalopathy or hepatic encephalopathy have been used when there is a strong presumption regarding the causative mechanism. It has been postulated that many of these disorders are clinical expressions of a pathophysiologic spectrum, collectively referred to as ‘‘critical illness brain syndrome’’ or ‘‘critical illness encephalopathy’’.[4]

The present study was conducted to note the causes, clinical features, management and outcome of encephalopathy in a medical intensive care unit. The present study was conducted to note the types, clinical features, management

Objectives

1. To study demography of encephalopathy in medical intensive care
2. To study the clinical features and management of encephalopathy.
3. To study the various types of encephalopathy.

Materials and Methods

The study was conducted in patients admitted in medical intensive care unit of a government-run tertiary care hospital from December 2022 to December 2022 after approval of the Institutional Ethics Committee. A total of 110 patients were included in this study. Study protocol was explained in detail to the patients/relatives and informed written consent in regional language was obtained from them prior to conducting the study. A detailed history and clinical examination with required relevant investigations were carried out in every patient.

Study Type: It was a hospital based observational cross-sectional study.

Sample size: Sample size was calculated to be 110. Approval from Institutional Ethical Committee was taken. The subjects were evaluated as per predesigned proforma.

Study Settings: Intensive Care Unit of tertiary care hospital of Department of General Medicine

Study Subjects: Encephalopathy cases in medical intensive care unit (ICU)

Inclusion Criteria

- Patients presenting with symptoms and signs of encephalopathy and admitted in medical intensive care unit.
- Patients with age more than 12 years

Exclusion criteria

- Patients of encephalopathy not admitted in medical intensive care unit.
- Patients with age less than 12 years
- Patients with no symptoms and signs of encephalopathy.

Patients were evaluated and followed up till discharge or death.

All patients’ level of consciousness, temperature, blood pressure, pulse and respiratory rate was recorded. Patients were also carefully examined for icterus, signs of stroke, neck stiffness, signs of dehydration, signs of COPD, signs of pneumonia, asterexis distension of abdomen and ascites. Encephalopathy was diagnosed on clinical basis and with the aid of investigations.

Results

Table 1: Age & gender distribution of study subjects

Age in years	Female	Male	Grand total
<20	8	10	18
21-30	7	14	21
31-40	7	13	20
41-50	6	15	21
51-60	6	7	13
61-70	5	7	12
>70	2	3	5
Total	**41**	**69**	**110**

In our study, we found that male (69) admitted with encephalopathy were more as compared to female

patients (41), with males constituting about 62.7% as compared to 37.3 % females. Maximum number of patients presented in the 3rd (21 patients), 4th (20 patients). Number of male patients were more as compared to female patients in all age groups.

Table 2: Symptoms of encephalopathy

Symptoms of encephalopathy	No. of patients
Altered sensorium	93
Loss of consciousness	17
Convulsion	9

Table 3: Other complaints associated with encephalopathy

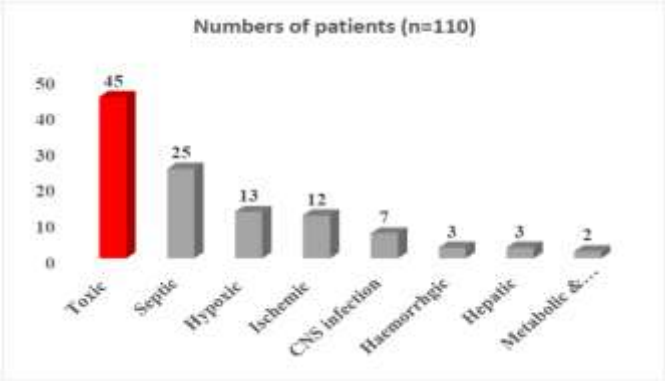
Complaints	No. of patients
Vomiting	51
Consumption of poison	45
Fever	34
Breathlessness	13
Cough	12
Weakness of limbs	12
Diarrhea	11
h/o Snake bite	9
Hanging	4
Yellowish discoloration of eyes	3
Distension of abdomen	3

In our study most common other complaints associated with encephalopathy was vomiting (51), followed by consumption of poison (45)

Table 4: CNS Examination Finding (n=110)

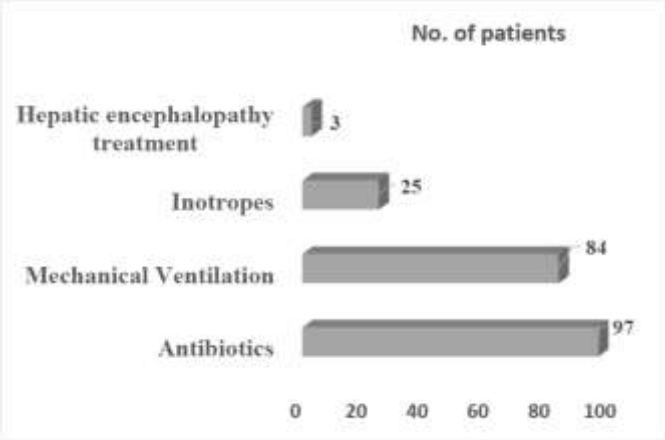
CNS examination		No. of patients
Higher functions	Disoriented	64
	Stupors	17
	Comatose	17
	Delirious	12
Cranial nerves	Pin point pupil	37
	Dilated pupil	17
Power	Right hemiparesis	9
	Left hemiparesis	6
Other signs	Bilateral extensor plantar	21
	Neck stiffness*	7

CNS examination revealed the following findings: disorientation was seen in (64) cases, pin point pupil was seen in 37 patients. Right hemiparesis dominance was seen over left.



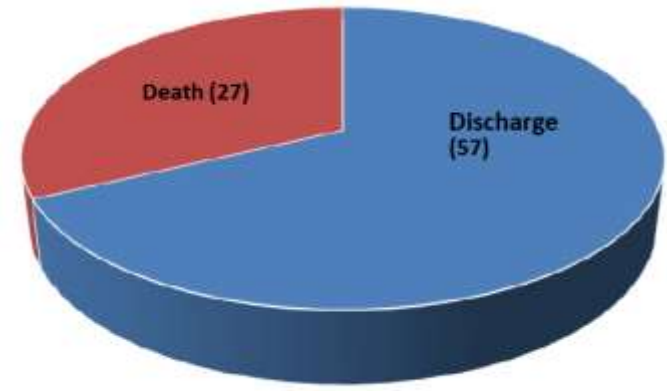
Graph 1: Type of Encephalopathy

In the present study toxic encephalopathy was found most commonly followed by septic & hypoxic types of encephalopathies



Graph 2: Management

The overall mortality in Patients on mechanical ventilation found to be 32% in our study,



Graph 3: Prognosis in Patients on Mechanical Ventilation

Discussion

The study was carried out to find out the various causes, clinical features, management and outcome of encephalopathy in medical intensive care unit. In the present study it was observed, males constituting about 62.7% as compared to 37.3% females. Spronk et al6 found 65.2% males and 34.8% females in their study. While Chandra et al.1 found encephalopathy among the patients of encephalopathy 19 (90.5%) were 90 % males. In our study, 84% patients had altered sensorium, 15% patients had lloss of consciousness and 8% patients had convulsion. Our findings correlate with Grover S et al.7, Chandra SR et al1. In our study CNS examination found, disorientation in 58%, stupors in 15% .Jackson AC et al.8 mentioned that the level of consciousness of patients varied from drowsiness to deep coma. Raicević R et al9 found that 55% patients were drowsy, 33% were stupors. We observed toxic (40%) encephalopathy, septic (22%) encephalopathy comparable to Cowppli-Bony P et al10. We also found that patients who expired had one or more co-morbidities with hypertension being the commonest. Seeking medical attention at the earliest would help in better outcome in these persons with encephalopathy.

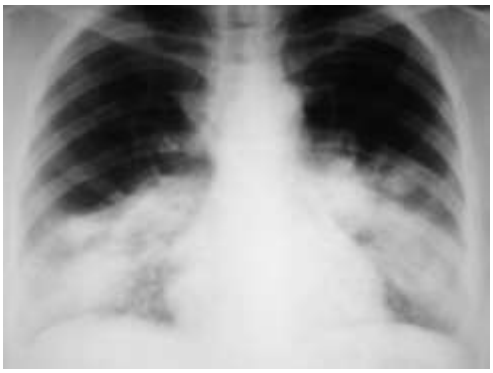


Figure 1: Patient of Pneumonia with septicaemia- Chest X-ray of patient showing bilateral lower zone consolidation

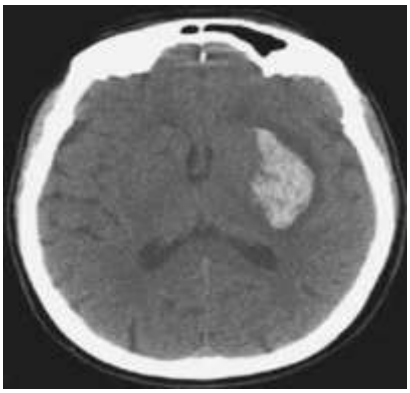


Figure 2: CT scan of brain showing left gangliocapsular bleed Photo

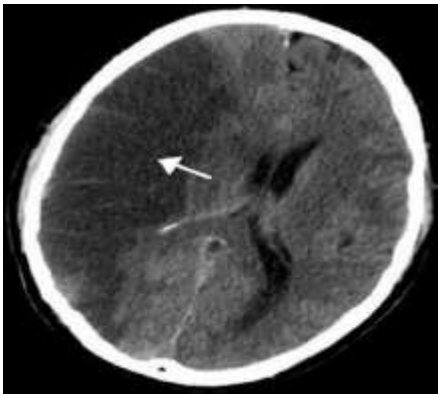


Figure 3: CT scan of brain showing right hemispheric infarct

Conclusion

Our study concluded that encephalopathy can be due to various causes. Organophosphorous poisoning followed by septicemia was found to be the common cause of encephalopathy in our study.

Symptoms and signs of encephalopathy can vary from patient to patient. Altered sensorium was the most common mode of presentation in our patients. Convulsion and unconsciousness was more commonly seen in patients with vascular and infective disorders of the brain. Mechanical ventilation was more commonly required for patients of organophosphorous poisoning and hypoxic encephalopathy. Antibiotics and inotropes were mainly required in patients of septicemia. Prognosis also varied according to the cause of encephalopathy, duration of ICU stay and the need for

mechanical ventilation. Encephalopathy is a serious complication in critically ill patients. Patients should be evaluated early for the cause of encephalopathy to reduce the morbidity and mortality by treating the potentially reversible causes. Seeking medical aid earlier, commencement of altered sensorium along with timely diagnosis could reduce the mortality and improve outcomes.

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