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ETIOLOGICAL DETERMINANTS OF ALTERED MENTAL STATUS IN MEDICAL EMERGENCIES: A TERTIARY CARE HOSPITAL-BASED CROSS-SECTIONAL STUDY

Dr. Monika S. Thangada[1]*, Dr. Rahul Kasoju[2]

[1]Attending Psychiatrist, Department of Psychiatry, Harry S. Truman Veterans Hospital, Columbia, Missouri, USA.

[2]General Practitioner, Department of General Medicine, Eeshan Hospital, Hyderabad, Telangana, India.

Corresponding Author: Dr. Monika S. Thangada

Abstract

Introduction: Altered mental status (AMS) encompasses a range of clinical symptoms, not a specific diagnosis. These symptoms include cognitive disorders, attention disorders, arousal disorders, and decreased levels of consciousness. AMS is a commonly observed condition in the emergency department, especially among older adults. However, the term is not specific and is known by various names, such as lethargy, disorientation, and altered behavior.

Materials and Methods: A cross-sectional observational study was conducted from January to December 2022 at Eeshan Hospital's Department of General Medicine in Hyderabad, Telangana. All adult patients presenting with AMS were enrolled and screened. AMS criteria included any of the following: a Glasgow Coma Scale (GCS) score below 15, RASS readings other than 0, inappropriate behavior, or hallucinations. Excluded were: a) patients readmitted with the same symptoms during the study and had previously been enrolled, and b) known dementia or irreversible brain damage cases.

Results: 67 patients with AMS were enrolled from January to December 2022. They were prospectively evaluated two weeks after admission. The mean age was 49.76 ± 18.72 years (range 18 - 91 years). Of these, 39 (58.20%) had at least one co-morbid condition. Hypertension was the most common, followed by diabetes mellitus and chronic liver disease. Diabetes mellitus patients had a poorer prognosis compared to others ($P < 0.037$). Additionally, 20 patients (34.2%) consumed alcohol, six (11.9%) used tobacco in smoked or chewable forms, and three (5%) took opium derivatives. Three patients (5%) had a suspected poisoning history.

Conclusion: AMS presentations vary, with aetiologies spanning primary CNS causes and systemic conditions leading to secondary AMS. Meningoencephalitis has a more favorable outcome than strokes for primary AMS, while poisoning-related cases tend to fare better among secondary AMS cases. Relying on subjective AMS descriptions could be more optimal. Standardized scoring systems can provide uniform assessments and insights into prognosis. Dedicated objective tools tailored for emergency scenarios are needed.

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Keywords: Altered mental status, lethargy, disorientation, altered behavior.

INTRODUCTION

Altered mental status (AMS) encompasses a range of clinical symptoms rather than a singular diagnosis, incorporating cognitive disorders, attention disorders, arousal disorders, and a decreased level of consciousness.[1]

AMS is a frequently observed condition in the emergency department, particularly among elderly patients. However, the term "AMS" lacks specificity and is often referred to by various terms such as lethargy, disorientation, and altered behavior.[2] This ambiguity in terminology can hinder proper documentation, thereby impeding focused research on the condition. The course and severity of AMS vary: Acute fluctuations often manifest within days or hours, generally stemming from medical conditions that can be life-threatening.[3] In contrast, chronic changes develop over months or years and typically pose less immediate risk to patients.[4]

MATERIALS AND METHODS

Study design: A cross-sectional observational study.

Study Location: Department of General Medicine, Eeshan Hospital, Hyderabad, Telangana.

Study duration: January 2022 to December 2022.

Sample size: 67 patients.

From January to December 2022, a cross-sectional observational study was undertaken in the emergency medicine department of Eeshan Hospital, a tertiary care facility in Hyderabad, Telangana. All adult patients presenting with AMS symptoms were enrolled and screened. For this study, AMS was characterized by any one of the following: a GCS score below 15, non-zero RASS readings, inappropriate behavior, or hallucinations. Exclusions comprised: a) patients readmitted with identical or similar symptoms during the study period who had been previously enrolled and b) known cases of dementia or irreversible brain damage.

A cohort of 67 patients was incorporated into the study. Following standard clinical examinations and assessment scales, the patients were managed by resident clinicians according to existing institutional protocols. Comprehensive patient data were meticulously documented, including current illness history, past medical records, familial history, personal background, socio-economic standing, admission vitals, general physical and neurological examination findings, and other systemic examinations. RASS and the Glasgow Coma Scale were employed to gauge consciousness levels upon admission, with initial scores factored into the study

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outcomes. The GCS methodically assesses consciousness levels by measuring eye, verbal, and motor responses to diverse stimuli, such as voice, touch, and pain, culminating in a maximum possible score of 15. On this scale, altered consciousness has been categorized into mild (GCS: 13-14), moderate (GCS: 9-12), and severe (GCS: 3-8) levels.

Standard initial blood tests were administered to all patients, including a complete haemogram, renal and liver function tests, serum electrolytes, blood glucose levels, arterial blood gas analysis, chest X-rays, ECGs, and urinalysis. The need for lumbar punctures and CT scans of the head were determined at the treating physician's discretion. Patient progress was monitored for two weeks post-admission, with outcomes delineated as recovered, improved, deteriorated, or deceased. Comprehensive data sets incorporating demographic profiles, clinical details, and investigative results were captured on a pre-structured research form during hospitalization.

Statistical Analysis: Quantitative data was analyzed descriptively using means and standard deviations, while qualitative data was represented through proportions or percentages. Clinical presentations across diverse subgroups were assessed using standard proportion tests for qualitative parameters and the student’s 't-test for mean comparisons in dual groups.

RESULTS

From January to December 2022, 67 AMS patients were enlisted and prospectively appraised for outcomes two weeks post-admission. The average age of participants was 49.76 ± 18.72 years, from 18 to 91 years.

Of the study's participants, 39 (58.20%) reported at least one co-morbid condition. Hypertension emerged as the predominant co-morbidity, trailed by diabetes mellitus and chronic liver diseases. Patients with diabetes mellitus as a co-morbidity exhibited a less favorable prognosis than their counterparts ($P < 0.037$). Observations also revealed that 20 patients (34.2%) consumed alcohol, 6 (11.9%) either smoked or used chewable tobacco products, and 3 (5%) ingested opium derivatives. An alleged poisoning history was discerned in 3 patients (5%).

S.NO	Gender	N (%)
1	Male	44 (65.67%)
2	Female	23 (34.32%)

Table 1: Gender distribution

S.No	Co-morbidities	N (%)
1	With at least one co-morbidity	39 (58.20%)
2	Hypertension	18 (26.86%)
3	Diabetes mellitus	14 (20.89%)

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4	Chronic liver disease	11 (16.41%)

Table 2: Co-morbidities

S.No	Substance abuse	N (%)
1	Alcohol	20 (34%)
2	Tobacco	6 (10%)
3	Opium	3 (5%)
4	Poisoning / drug overdose	3 (5%)

Table 3: Substance abuse

Outcome	Frequency (%)	RASS		GCS	
		Positive Score (+ 1 to + 4)	Negative Score (- 1 to - 5)	> 8	≤ 8
Recovered	21 (30%)	3	15	12	5
Improved	20 (30%)	5	13	15	3
Deteriorated	2 (1.7%)	0	1	1	1
Died	24 (38.3%)	2	21	13	11
Total	67	10	60	41	19

Table 4: Outcomes of Patients and Co-Relation with RASS & GCS Score

DISCUSSION

The mean age of the patients was 49.76 ± 18.72 years. Most of the patients were 18-45 years old, constituting 43.3% of the total sample. Males made up 66.66% of the patients. Interestingly, male patients had statistically significantly better outcomes than females ($P < 0.05$), possibly due to delayed hospital visits for women, potentially resulting from societal neglect.[5]

In our study, 58.20% of patients had at least one co-morbidity. These were most prevalent in the age brackets of 45-60 years and > 60 years. Hypertension was the leading co-morbidity, identified in 26.86% of patients, followed by diabetes mellitus, which was present in 20.89%. Notably, patients with hypertension or diabetes mellitus demonstrated poorer outcomes than their counterparts without these conditions, and this difference was statistically significant ($P < 0.05$). Furthermore, the presence of hyponatremia emerged as an independent prognostic marker. Patients with hyponatremia, constituting 17.5% of the sample, exhibited worse outcomes, which was statistically significant ($P < 0.05$).[6] Therefore, addressing and correcting such electrolyte imbalances is critical to reducing mortality and morbidity.

The nature of the study setting—a general medicine emergency room—likely influenced the diversity of patient diagnoses. The general medicine room handles a broader spectrum of conditions unlike specialized neurology settings. Since India is a developing nation where

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infections remain a leading cause of mortality and morbidity, promptly identifying and treating infectious conditions can significantly improve patient outcomes.[7,8]

Reversible and treatable causes of altered sensorium, such as infections, metabolic disorders, toxic exposures, and seizures, were more prevalent in younger and middle-aged groups. In contrast, cerebrovascular incidents like hemorrhagic and non-hemorrhagic strokes were the primary cause in the > 60 age group.[9] As anticipated, patients diagnosed with infectious, metabolic, and toxicological reasons for their altered sensorium had better prognoses than those with cerebrovascular incidents, accounting for 37.5% of total mortality.[10]

CONCLUSION

Altered mental status (AMS) manifests with varied presentations. The causes for AMS are distributed among primary CNS-related and systemic-induced secondary AMS. Patients with meningoencephalitis fare better than those with strokes in primary AMS cases. In contrast, individuals with poisoning-related AMS exhibit a more favorable prognosis among secondary AMS patients. Relying solely on subjective descriptions for AMS may not be optimal. Instead, standardized scoring systems can provide a more consistent assessment and clearer prognostic insights. There is a pressing need to develop dedicated, objective tools for emergency room settings.

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