

Clinico-Pathological Profile of Delirium in A Tertiary Care Medical Intensive Care Unit (ICU).

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Abstract

Background:-Delirium is a common clinical condition in patients admitted to intensive care unit (ICU).It is also known as acute confusional state, and is an organic cause of decline from a previously baseline level of mental function.It is classified as hyper-active and hypo-active delirium. Hypo-active delirium is characterised by apathy, decreased responsiveness whereas hyper-active delirium is characterised by agitation, restlessness and emotional liability.

Aim:-To assess delirium in patients admitted in a medical ICU.

Material and methods:-This cross-sectional study was carried out in the medical ICU of AVBR hospital, JN medical college of DMIMS(DU). A total of 36 patients with delirium were included in the study. The eligible cases were first subjected to Richmond Agitation– Sedation Scale (RASS).In the RASS assessment, the subjects who attained the score of -3 or more were subjected to CAM-ICU and delirium positive or negative patients were diagnosed.

Results:- Predominant factors causing delirium in patients were old age, sepsis with multi-organ failure, patients who were prescribed with sedatives and other

infectious as well as non-infectious aetiologies.Out of 36 critical care unit patients having delirium, 77.7% of patients were above 60 years of age contributing to the majority. Sepsis along with multi-organ failure is the predominant infective aetiology causing delirium in about 72.2% of the patients followed by other causative factors.

Conclusion: Delirium is commonly encountered acute neurological disturbance in critical care ICUs. It adversely affects short term outcomes and long term sequels. Critical care clinician should be aware of common risk factors like overzealous sedative use, infections and age.

Keywords: delirium, sedatives, analgesia, sepsis

Introduction

Delirium is a common clinical condition in patients admitted to intensive care unit (ICU).It is also known as acute confusional state, and is an organic cause of decline from a previously baseline level of mental function. It often has a fluctuating course. Patients with delirium also have attention deficits, and disorganization of behaviour. It typically involves other cognitive deficits, perceptual deficits, psychotic features such as hallucinations and delusions, changes in activity (hyperactive, hypoactive, or mixed),and altered sleep-wake cycle. Delirium itself is not a disease, but rather a

set of symptoms.^[1-4] Delirium is frequent in patients admitted to medical and surgical ICUs, with prevalence rate ranging from 32.3% to 77% and the incidence rates varying from 45% to 87%. Patients in ICU with delirium also requires much attention as any other organ failures because it is independently associated with long-term ICU stay, increased cost of treatment, higher mortality, and long-term cognitive decline.^[2] These patients are treated with many interventions, such as endotracheal intubation and invasive mechanical ventilation that are perceived to be distressing. Agitation, which is due to delirium, can lead to accidental removal of endotracheal tubes or intravascular catheters which are used for administration of life-sustaining medications.^[5,6] According to some studies, delirium adversely affects the outcome of critically ill patients as far as duration of ICU stay and mortality is concerned.^[2,3]

This study is aimed to assess the proportion and/or frequency of delirium in patients admitted in medical ICU irrespective of their illness.

AIM:

To assess delirium in patients admitted in a medical ICU.

OBJECTIVES:

1. To determine the proportion/frequency of delirium in critically ill patients admitted in medical ICU.
2. To correlate delirium with different co-morbidities.
3. To co-relate delirium with different interventional strategies/drug therapies utilised in ICU.
4. To determine the outcomes (primary outcome: duration of ICU stay, secondary outcome: death) in patients with delirium

Materials and method

Study design: -Cross-sectional study

Study setting: -This study was carried out in the medical ICU of AVBR hospital, JN medical college of DMIMS

(DU). The medical ICU contains 30 beds and is fully equipped.

Ethical consideration: -Institutional ethical committee clearance has been taken before commencing the study.

Sampling

- All the patients who are admitted in the medical ICU irrespective of their illnesses formed the study group.
- Detailed history, physical examination, necessary investigations were done, diagnosis received and modalities of treatment received by the patients were noted.
- The eligible cases were first subjected to Richmond Agitation-Sedation Scale (RASS).
- In the RASS assessment, the subjects who have attained the score of -3 or more were subjected to CAM-ICU^[7-9] and delirium positive or negative patients were diagnosed. (Appendices attached)
- The critically ill patients who are delirious formed the study group.
- Results were determined as per age groups, co-morbidities and outcomes (primary and secondary).

Exclusion criteria

Patients on mechanical ventilation.

Patients with RASS score less than -3.

Where the family members refused to provide written informed consent.

Consent: Written informed consent was taken from the relatives of each patient.

Sample size: -36 cases with delirium

Results

Table 1: According to age group:

Age group	No. of patients in delirium	Percentage
<40	3	8.3%
40-60	5	13.8%
>60	28	77.7%

Table 2: According to aetiology of delirium:-

Aetiology	Percentage
Sepsis with MODS	72.2%
Patients prescribed with sedatives	11.11%
Metabolic encephalopathy	5.5%
Pneumonia	5.5%
Poisoning	2.7%
Cerebrovascular event	2.7%

Table 3: Subgroup analysis- clinical course of Delirium due to infective and non-infective aetiology

Aetiology	No. of patients	Mean duration of patients in delirium	Mean duration of ICU stay	Outcome		Percentage of outcome	
				Death	Recovery	Death	Recovery
Infective	28	>5days	>2 weeks	7	21	25%	75%
Non-infective	8	<3days	<2 weeks	1	7	12.5%	87.5%

Discussion

Delirium is a fairly common occurrence and comorbidity in critically ill patients. It signifies acute brain dysfunction leading to an acute and fluctuating disturbance of consciousness and cognition. Its prevalence can go up to 80%.^[10] It is imperative to screen all ICU patients with higher cerebral dysfunction for delirium.

Though it is a common manifestation of acute brain dysfunction in critically ill patients, it can culminate into both short term and long-term adverse consequences.^[11,12] It is classified as hyper-active and hypo-active delirium. Hypo-active delirium is characterised by apathy, decreased responsiveness whereas hyper-active delirium is characterised by agitation, restlessness and emotional liability.^[13]

The basic pathophysiology of delirium is due to excess of dopamine and/or decrease of acetylcholine in neurotransmitters of brain. Gamma-amino butyric acid (GABA), serotonin and glutamates have also been implicated in causing delirium.^[14-16] Infection and inflammation play significant role in causing delirium by multi-organ failure. In our study sepsis and multi-organ

failure was most prevalent aetiology for delirium. Bacterial endotoxin and inflammatory cytokines contribute to endothelial damage, micro-vascular compromise, damage to the blood brain barrier and encephalopathy.^[17,18] A study concluded that patients with delirium show diffuse flowing of electroencephalogram (EEG) suggesting decrease in brain metabolism. This is a part and parcel of inflammation and sepsis induced multi-organ dysfunction.^[19] Another study which was conducted to assess the risk factors for ICU delirium concluded that severity of illness, older age, exposure to sedatives and analgesics, alcohol contributed to maximum occurrence of delirium.^[21] Our study showed similar results where old age, sepsis with multi-organ failure, drugs like sedatives have been most common aetiological factor contributing to development of delirium. In our study, higher incidence of delirium was found in patients above 60 years of age evincing old age as an important causative factor; the percentage of which comes out to be 77.77%. As it has been already proved by various studies that infection and inflammation are one of the most important factors, in our study also sepsis along with multi-organ failure are the predominant factors causing delirium in about 72.2% of the patients. In patients with infective aetiology, the mean duration of delirium was more than 5 days with considerably longer ICU stay of more than 2 weeks. In terms of outcome, 25% of these patients died during the ICU stay with high recovery rate of 75%.

Metabolic disturbances like hepatic encephalopathy, uremic encephalopathy, hyponatremia, ischaemic strokes are also known risk factors for delirium.^[21,22] In our study 22.2% of patients had non-infective aetiology for delirium. Among these metabolic encephalopathy contributed as a cause in about 5.5% of the patients. Multiple studies have demonstrated that use of sedatives in a critical care unit is a strong predictor for delirium.

Likewise, in our study also sedatives have been shown to cause delirium in 11.1% of the patients.^[20,23,24,25] GABA sparing sedatives may reduce the risk of ICU delirium and drugs like Lorazepam and Midazolam may be replaced by these agents.^[10] In patients with non-infective aetiology, the mean duration of delirium was less than 3 days with considerably shorter ICU stay of less than 2 weeks. In terms of outcome, 12.5% of these patients died during the ICU stay with high recovery rate of 87.5%.

In a landmark trail which studied delirium in elderly patients concluded that cognitively stimulated activity, timely removal of catheters (source of infection), providing hearing aids, correction of dehydration and treatment of infections with appropriate antibiotics decreases the incidence of delirium significantly.^[26]

Conclusion

Delirium is commonly encountered acute neurological disturbance in critical care ICUs. It adversely affects short term outcomes and long term sequels. Critical care clinician should be aware of common risk factors and avoid potential triggers so that the incidence if ICU delirium can be minimised.

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