Editorial

Indian Journal of Anesthesia and Analgesia
2019; 6(1): 5-14

Delirium in the Intensive Care Unit

K. K. Mubarak
Professor & Head of Anesthesiology,
Govt. Medical College,
Kozhikode, Kerala - 673078, India.

Delirium in the critically ill patients admitted in the Intensive Care Unit (ICU) is a challenge to the treating clinician. For most ICU patients, maintaining light sedation is associated with improved clinical outcomes including shorter duration of mechanical ventilation and shorter ICU stay. Ensuring critically ill patients free from pain, agitation, and delirium should not compromise with their clinical management goals, like cardiopulmonary stability and preserving adequate organ perfusion and function [1].

Delirium is a neuropsychiatric syndrome with acute onset of cerebral dysfunction characterized by fluctuating levels of cognition and inattention with disorganized thinking or an altered level of consciousness. It is usually triggered by underlying medical disorder and is more common in the elderly. The onset is usually rapid, occurring within hours or days and is often accompanied by sleep disturbances like daytime sleepiness and nighttime wakefulness. As the diagnosis of delirium is frequently missed, a high index of suspicion is required. Physiologically, delirium is characterized by derangement of cerebral metabolism with cerebral dysfunction and is usually caused by general medical illness, intoxication, or substance withdrawal [2]. In extreme cases, physical restraints may be needed for the patient to prevent harm to himself/herself or others.

DSM-V [3] (Diagnostic and statistical manual of mental disorders, 5th ed.) criteria for the diagnosis of delirium is.

A) A disturbance in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment).

B) The disturbance develops over a short period of time (usually hours to a few days), represents a change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.

C) An additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability, or perception).

D) The disturbances in Criteria A and C are not better explained by another preexisting, established, or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal, such as coma.

E) There is evidence from the history, physical examination, or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal (i.e., due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies.

Delirium is common in the ICU especially in those on mechanical ventilation, ranging from 45% to 87%. It increases the length of hospital stay with higher risk of hospital acquired complications such as pressure sores and falls, causing increased morbidity and mortality. The one-year mortality rate associated with delirium is 35-40% [4]. Up to 60% of these patients have continued cognitive impairment with increased risk to develop dementia later [5].

Three clinical subtypes of delirium are described [6]: Hyperactive (restlessness, agitation, vigilance and aggression); Hypoactive (sleepiness, lethargy, reduced appetite and withdrawn state) and Mixed forms (move between two subtypes). Hypoactive and mixed delirium which are more difficult to recognize are common in the ICU. Hypoactive delirium occurs more frequently in older patients and has a worse prognosis.

Predisposing factors for delirium are age above

65 years, preexisting cognitive impairment or dementia, severe medical illness (renal or hepatic impairment, stroke, HIV infection), psychoactive drugs or alcohol/recreational drug dependency, decreased oral intake with dehydration or malnutrition and hip fracture. Precipitating factors include altered body chemistry, defective oxygenation and use of drugs affecting the central nervous system. Urinary / faecal retention and acute / chronic pain are other contributing factors.

Drugs (withdrawal/toxicity, anticholinergics)/ Dehydration

Electrolyte imbalance

Level of pain

Infection/Inflammation (post-operative)

Respiratory failure (hypoxia, hypercapnia)

Impaction of faeces Urinary retention

Metabolic disorder (liver/renal failure, hypoglycemia)/Myocardial infarction

ICU patients should be evaluated for the above risk factors for prompt interventions. Recent (hours or days) changes or fluctuations in behavior in a person at risk should alert the clinician for the diagnosis. Global or multiple deficits in cognition, disorientation, memory deficits and language impairment are common. There is usually inattention with difficulty in conversation and disorganised or incoherent speech. Altered behavior and level of consciousness with labile changes in mood with fear, paranoia, anxiety, depression, irritability, apathy, anger or euphoria are common. Altered sleep-wake cycle with daytime drowsiness, night insomnia, fragmented sleep is usual. Symptoms may have a fluctuating course of severity with lucid intervals in between with relatively normal behavior may occur.

The Confusion Assessment Method for the ICU (CAM-ICU) is a commonly used delirium monitoring tool in the ICU. It requires point 1 and 2 and either 3 or 4 of the following

1) Acute onset and fluctuating course

2) Inattention

3) Disorganised thinking

4) Altered level of consciousness (vigilant, lethargic / drowsy, stupor, coma)

Changeable course

Acute onset + Attention poor

Muddled thinking

Shifting consciousness

Differential diagnosis of delirium includes dementia, depression, mania, schizophrenia and hysteria. However, organic causes should be sought for and delirium excluded before making other diagnoses.

Benzodiazepine withdrawal usually manifests as anxiety, agitation, tremors, headache, sweating, insomnia, nausea, vomiting, myoclonus, muscle cramps, hyperactive delirium, and seizures. Stoppage of dexmedetomidine infusions after a few days can develop withdrawal symptoms with nausea, vomiting, and agitation. Withdrawal symptoms may result from abrupt discontinuation of illicit drugs, sedatives or opioids or chronic alcohol use.

Delirium due to drug or alcohol withdrawal usually manifests as hyperactive type. Symptoms of range from mild irritability and insomnia to life-threatening conditions such as Delirium Tremens (DT). It is characterized by central nervous system excitation (agitation, delirium, and seizures) and hyperadrenergic symptoms (hypertension, tachycardia, arrhythmias). Benzodiazepines and symptomatic support are the mainstay of treatment.

As delirium is often associated with severe underlying medical illness, identification and prompt treatment of the cause is important along with symptomatic and supportive care including psychological support and calm atmosphere. Pharmacological management is needed for patients whose symptoms are uncontrollable and harmful to themselves or others. Oral route is usually preferred and all medications have to be reviewed every 24 hours. The starting dose is based upon the age, body size and degree of agitation and titrated until the desired sedation achieved up to the maximum daily dose, preferably with the help of a psychiatrist.

Oral haloperidol 0.5-1mg up to a maximum of 5 mg in 24 hrs is usually preferred in the elderly. Younger and healthy patients may require higher doses, daily maximum of 30 mg [7]. In those who cannot take orally and those requiring quick control of symptoms, haloperidol is given intramuscularly daily max 5 mg in the elderly and upto 18 mg in the younger patients. Peak effect of haloperidol by oral and intramuscular routes are 4-6 hrs. and 20-40 mins respectively.

Haloperidol should not be given in those with elongated QTc (>470 ms) in ECG. Patients should be monitored with respiratory rate, pulse oximetry, BP, and Temperature. Haloperidol may cause acute dystonic reactions which may require treatment with benzodiazepines or procyclidine.

Olanzapine 2.5 - 5 mg orally 2 hourly, daily max 20mg (10mg in elderly) can be used in patients with dystonia. Benzodiazepines are preferred in those with Parkinson's disease/parkinsonism, seizures, elongated QTc and alcohol withdrawal states. Lorazepam 0.5 – 1 mg oral/IM 1-2 hourly, max 4 mg daily is often prescribed.

Continuous IV infusions of dexmedetomidine is a valuable adjunctive for patients with delirium in the ICU unrelated to alcohol or benzodiazepine withdrawal.

Delirium may be a disease-induced syndrome (e.g., organ dysfunction in severe sepsis), for which timely management of the cause or causes is essential in order to reduce the incidence, severity, and duration of delirium. Iatrogenic (e.g., exposure to sedative and opioid medications) or environmental (e.g., prolonged physical restraints or immobilization) factors may also contribute to delirium in ICU patients. ICU patients should be evaluated for identifiable and avoidable risk factors, and therapeutic interventions should be assessed in terms of their likelihood of either causing or exacerbating delirium in individual patients. Delirium prevention strategies can be categorized as nonpharmacologic (e.g., early mobilization), pharmacologic, and combined pharmacologic/ nonpharmacologic approaches. Monitoring critically ill patients for delirium with valid and reliable delirium assessment tools enables clinicians to potentially detect and treat delirium sooner, and possibly improve outcomes.

Up to one third of cases of delirium is preventable. Delirium prevention strategies can be nonpharmacologic (early mobilization), pharmacologic, and combined approaches Patients at risk of delirium should be assessed for factors that may contribute to delirium within 24 hours of admission and treated promptly [8].

References

1. Milbrandt EB, Angus DC. Bench-to-bedside review: Critical illness associated cognitive dysfunction—Mechanisms, markers, and emerging therapeutics. Crit Care 2006;10:238.
2. Engel GL, Romano J. Delirium, a syndrome of cerebral insufficiency 1959. J Neuropsychiatry Clin Neurosci. 2004;16(4):526-38.
3. Diagnostic and statistical manual of mental disorders (5th ed.), American Psychiatric Association, 2013.
4. Potter J, George J. The prevention, diagnosis and management of delirium in older people: concise guidelines. Clinical Medicine 2006;6:303-08.
5. Van Zyl LT and Seitz DP. Delirium: Concisey Condition is associated with increased morbidity, mortality and length of hospitalization. Geriatrics 2006;61:18-22.
6. Peterson JF, Pun BT, Dittus RS, Thomason JW, Jackson JC, Shintani AK, Ely EW. Delirium and its motoric subtypes: a study of 614 critically ill patients. J Am Geriatr Soc. 2006 Mar;54(3):479-84.
7. The Prevention, diagnosis and management of delirium in older people, National guidelines, The Royal College of Physicians and British Geriatrics Society, Royal College of Physicians, www. rcplondon.ac.uk, June 2006.
8. Delirium: diagnosis, Prevention and Management. National Institute of Health and Clinical Excellence, NICE Guideline 103. July 2010.