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REVIEW

Delirium: a distressing and disturbing clinical event in a Intensive Care Unit

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ABSTRACT

Background: Every day, 30,000 to 40,000 ICU patients in the United States are suffering from acute brain dysfunction called delirium. This problem is getting larger every year due to the aging of our population. Delirium is a serious acute medical condition. It has been called a medical emergency. A delirium is a serious, high-frequency complication in intensive care unit (ICU) patients. (Incidence: 40–82%) being defined as a transient organic mental syndrome characterised by a disturbance in awareness, cognition and attention.

The **aim** of this study was a review of the international bibliography in the subject of delirium in ICU.

Method and Material: The method of this study included bibliography research from both the review and the research literature. The search was performed using the following key terms: ICU, psychosis, delirium, mortality

Results: The nurses should be aware of all the procedures, which reduce the probabilities of the patients , making vulnerable to life delirium. The understanding of the status of the patient with delirium syndrome and the synthesis of all the available data may lead to a global approach and to a proper treatment. It is important for the nurses to learn the tools to stratify the severity of delirium.

Conclusions: If tools to stratify the severity of delirium were available, nurses could be better able to "recognize patients who are at the highest risk for negative outcomes". This would enable prevention and early treatment of delirium, avoiding debilitating after-effects in patients and unnecessary strains on hospital resources. The findings of the research reveal that "should stimulate future research in the field of delirium prevention and treatment".

Key words: ICU, psychosis, delirium, mortality.

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INTRODUCTION

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Delirium is derived from the Latin word *deliria,* which literally means to "be out of your furrow." Historically, two words were used to describe confused patients. One was the Roman word *delirium,* which referred to an agitated and confused person. The other was from the Greek word *lethargus,* which was used to describe a quietly confused person. The above case demonstrates both of these subtypes of delirium within the same patient.[1]

Every day, 30,000 to 40,000 ICU patients in the United States are suffering from acute brain dysfunction called delirium. This problem is getting larger every year due to the aging of our population. Delirium is a serious acute medical condition. It has been called a medical emergency. It results in such serious adverse outcomes for so many patients – including death – that in any other condition it would have clinicians searching for information with the same fervour given to cancer or HIV. It's a familiar term in and out of hospital describing a distressing experience of disorientation and agitation. The consequences of this complication range from high morbidity and mortality to greater need for nursing care. Despite these, delirium is often not recognized and there for not treated. These disturbances are frequently manifested in expressions of disorientation, memory impairment, disturbance in mental processes, motor unrest, sleep problems, anxiety and agitation. Abrupt onset and fluctuation of the symptoms are characteristic, and onset frequently occurs from within a few hours to a few days of hospital admission.[2]

Numerous studies have described the incidence, prevalence, and costly impact of delirium with regard to patients in nursing homes and hospital wards, but few prospective investigations have focused on cohorts treated specifically within the intensive care unit (ICU).[3] Several studies have now confirmed that delirium occurs in 60% to 80% of mechanically ventilated patients though two investigations found a lower prevalence in an ICU cohort with a lesser severity of illness.[4] Among ventilated patients, this condition is independently associated with untoward clinical outcomes, including higher mortality. In fact, every day spent in delirium was associated with a 10% higher risk of death and worse long-term cognitive function.[5]

Delirium is an important manifestation of CNS dysfunction in the ICU. Any change in mental status should not be attributed to "ICU psychosis". It is important to recognize the problem, appreciate the seriousness and rule out

and treat life-threatening conditions that may result in delirium. Hypoactive delirium is difficult to diagnose, but it may be the initial or sole manifestation of a serious illness, such as sepsis, pneumonia, myocardial infarction or pulmonary embolism, especially in the elderly. Medications are the commonest causes of postoperative delirium. The CAM-ICU is a useful tool in diagnosing and monitoring delirium and should be used frequently in the ICU. Non-pharmacological methods of preventing and treating delirium must be tried and when necessary, hyperactive delirium may be controlled with intravenous haloperidol.

Mortality may exceed twice the six-month mortality rate of nondelirious patients. It may also be associated with longer hospital stay and with a higher rate of cognitive impairment at discharge. The intensivist should think of delirium, or acute central nervous system dysfunction, as the brain's form of "organ dysfunction. This article reviews the international bibliography in the subject of delirium in ICU. [6]

Pathophysiology of Delirium

The exact pathophysiology of delirium is unknown. Mechanisms for the development of delirium that have been proposed include: insufficiency of cerebral metabolism, a central abnormality caused by an imbalance of central cholinergic and adrenergic metabolism, an impairment in cerebral oxidative metabolism, and a stress reaction as evidence by abnormally high circulating corticosteroids. Imbalance of dopamine, GABA, and acetylcholine is also implicated in the pathophysiology of delirium.[7]

Risk factors

These risk factors can be classified as host factors, the acute illness itself and iatrogenic or environmental factors. Most of the risk factors have been described in hospitalized non-ICU patients, but are likely to be applicable to ICU patients as well. Mechanical ventilation increases the risk of delirium three-fold. Increasing age and severity of illness also increase the risk. Use of benzodiazepines, opiates and other psychoactive drugs also significantly increase the risk of delirium. Despite the fact that ICU patients have multiple risk factors for delirium, it is possible to reduce the incidence and severity of delirium.[8,9]

As with sleep, other environmental factors have frequently been cited as being causes of ICU syndrome without

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due scrutiny of the empirical basis for this conclusion. Social isolation, immobilization, unfamiliar surroundings, excessive noise, and sensory monotony or absence of diurnal light variation have all been implicated. The ICU environment is replete with stress-inducing levels of noise, lighting, and movement. Several studies have documented that decibel levels in ICUs exceed the recommended normal levels.[10,11] While these factors may place a degree of stress on a person, they are not documented causes of altered consciousness, delusions, or perceptual disturbances of the quality or severity seen in delirium, nor are these factors necessary conditions for delirium to occur. With sufficient organic problems, a person will develop delirium regardless of the environment.[12] The thesis that psychological distress may cause a confused and delirious state has been tempting because the type and degree of stress on a patient in the ICU is remarkable.

Patients are simultaneously subjected to a threat to life, the awe of medical procedures, an inability to communicate needs, a new and threatening environment, and the loss of personal control. Early researchers studied preoperative psychological characteristics, including personality traits and coping styles. Later research has examined other psychosocial factors, such as marital distress, preoperative anxiety and depression, ambivalence about surgery, and history of psychosis. Dubin and colleagues[14] reviewed the literature on personality and psychological factors predisposing patients to postcardiotomy delirium, and they highlight a number of serious methodological problems before concluding that there are no psychological correlates of delirium. They state that no real personality profile has been developed that would allow one to predict postoperative outcome. The postoperative medical state is the most important determinant in postoperative delirium.

Another review of the literature on postcardiotomy delirium concluded that there were no significant correlations between delirium and any psychological or demographic factor.[14] A number of commentary or educational articles assert the role of sleep deprivation without reference to any primary research other than correlational studies. There are a number of fundamental problems with correlational studies and other arguments that reduce the likelihood that sleep deprivation does significantly contribute to delirium. [15,16] Thus, while any deterioration of mental

state might be the result of sleep deprivation, it is just as likely to be the result of physical illness. No studies have adequately controlled for the severity of physical illness. Not all correlational studies have found a relationship between sleep deprivation and acute confusion.[17] In their review of 80 primary-data studies of postoperative delirium, Dyer et al[18] concluded that lack of sleep was not a predisposing factor.

Longer stay in ICU

A study published today in the journal Critical Care reveals for the first time that nearly half of non-ventilated patients in intensive care units (ICU) experience delirium, which is also an independent predictor of longer hospital stay. It was previously though that this was only an issue for mechanically-ventilated ICU patients. Researchers recommend regular monitoring of all ICU patients to prevent and treat delirium, which is both harmful to patients and costly to hospitals.

Delirium occurs in 60 to 80% of mechanically ventilated patients and is independently associated with more deaths, longer stays in hospital and higher costs: every day spent in delirium is associated with a 10% higher risk of death and decreased long-term cognitive function.[19]

W. Jason Thomason,[20] followed a total of 261 individuals who were patients in the medical centre's intensive care unit for longer than 24 hours and did not require invasive mechanical ventilation. The patients were followed from their admission to either death or discharge from the hospital. Delirium, or a state of changing mental status, inattention and disorganised thinking, was monitored by the nursing staff and assessed using t he Confusion Assessment Method for th e Intensive Care Unit every12 hours.

The results show that 48% of patients experienced delirium. This group of patients had a higher mortality rate: 19% of them died, compared to just 6% of patients who hadn't experienced delirium. Patients who experienced delirium at least once also had a 29% greater risk of remaining in the ICU and a 41% greater risk of remaining in the hospital. Overall, delirium was associated with a one day longer stay in the ICU and two days longer in the hospital.

"Considering the rising overall resource use and economic burden of caring for critically ill patients, our finding that ICU delirium is an independent predictor

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of longer stay in the hospital is of particular relevance" write the authors.

Delirium Assessment

1. The Confusion Assessment Method-Intensive Care Unit (CAM-ICU) Assessment Tool. The CAM-ICU is the best documented method of diagnosing delirium. The 2002 clinical practice guidelines of the Society of Critical Care Medicine (SCCM) for the sustained use of analgesics and sedatives are geared toward the maintenance of optimal comfort in critically ill patients by focusing on 3 central components - pain, anxiety and delirium. The third component of these guidelines, delirium, is an independent predictor of death, length of stay, cost, and cognitive outcomes at discharge. Although, it is experienced by 60-80% of mechanically ventilated patients, it remains unrecognized in 66% to 84% of patients. The SCCM guidelines recommended that the emergence and/or persistence of delirium be regu larly monitored in critically ill patients. [21]

The Confusion Assessment Method for the ICU (CAM-ICU) is a delirium monitoring instrument for ICU patients. The CAM-ICU was adapted for use in nonverbal ICU patients from the original Confusion Assessment Method (CAM) (Inouye, Ann Intern Med 1990). The CAM-ICU is a well validated delirium assessment scale that is widely used and easy to administer. It was shown to be reliable and valid in 2 investigations using geriatric-psychiatric DSM-IV ratings in over 750 patient observations. It performs well even among difficult patient populations (i.e. patients with suspected dementia, patients over 65 years old, and those with very high severity of illness). The CAM-ICU was designed to be a serial assessment tool for use by bedside clinicians (e.g. nurses, physicians, etc). Thus it is easy to use, taking less than 2 minutes to complete and requiring minimal training.[22]
The Intensive Care Delirium Screening Checklist (ICDSC) is an eight item checklist based on DSM-IV Criteria and features of delirium. It is intended to be a bedside screening tool for delirium in the intensive care unit. Raters complete the checklist based on data from the previous 24 hours. The eight items are scored 1 (present) or 0 (absent), for a total of 8 points. A score of 4 or greater is a positive screen for delirium.[23,24]

2. The Intensive Care Delirium Screening Checklist assesses eight features of delirium: altered level of consciousness, inattention, disorientation, hallucinations, psychomotor

agitation/retardation, inappropriate mood/speech, sleep/wake cycle disturbance, and symptom fluctuation. The sensitivity and specificity of this tool were 99% and 64% respectively in one report. [25]

3. The Delirium Screening Checklist is another recent tool that uses a checklist similar to the Intensive Care Delirium Screening Checklist 7.

It is believed that prompt recognition and treatment of ICU delirium is important for patient safety. Use of rapid tools such as CAM-ICU can help identify ICU delirium and are recommended when assessing mental status changes. The benefit of routine use of these screening tools is yet to be tested. [26]

Nurses' assessments and interventions

Once life-threatening complications such as hypoxemia, hypoperfusion, metabolic derangements, severe pain and infection have been excluded, attention should turn to the patient's medications and environment in an attempt to minimize any factor that might exacerbate delirium. Once delirium is identified in ICU patients, management should focus upon identifying potential precipitating factors, providing supportive care and preventing further complications. [27]

For all patients classified "at risk" for delirium, the nurses may immediately implement preventive strategies with the goal of averting any acute confusion state. As delirium is a complex problem, it is important to address the multitude of contributing risk factors.

Nurses are well-positioned to implement preventive strategies for delirium. In the patient with pre-existing dementia or cognitive impairment, frequent orientation to person, place and time, and maintenance of prescribed medication for this problem are necessary.

Nurses may use the prehospitalization condition as a guide to maximizing the patient's functional ability and initiating or maintaining mobility as soon as possible. Using the patient's hearing aids and glasses during wakeful periods minimizes sensory deprivation. Frequent monitoring of intake and output of fluids, as well as caloric intake will serve to maintain adequate hydration and nutrition.

Perhaps most challenging for the critical care nurse is maintaining the patient's normal periods of sleep and wakefulness, avoiding prolonged sleep deprivation. Strategic use of natural and artificial lighting, completing personal care activities during the daytime and

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adjusting medication schedules to minimize nighttime interruptions all contribute to enhancing normal sleep periods in the critically ill patient.

Throughout the day, nurses conduct routine assessments of the patients' physiologic status. Equally important are the frequent, regular assessments for delirium. In a recent survey, critical care nurses described three major limitations to delirium assessments: difficulty conducting assessments with intubated patients, inability to conduct assessment with sedated patients and the complexity of delirium assessment tools.[28]

Incorporating regular delirium assessment is key to timely and effective management and needs to be incorporated into the nursing care activities.

Of note, there are two distinctive presentations of delirium, the hyperactive form and the hypoactive form. Hyperactive delirium is regarded as the typical presentation and is manifested with the behaviors of agitation and combativeness. In contrast, the hypoactive form of delirium may present as psychomotor slowing. In all forms of delirium, inattention is a key presenting symptom. [29]

Discussion - Conclusions

Delirium is a serious acute medical condition. Numerous studies have described the incidence, prevalence, and costly impact of delirium with regard to patients in nursing homes and hospital wards, but few prospective investigations have focused on cohorts treated specifically within the intensive care unit (ICU). It is important to recognize the problem, appreciate the seriousness and rule out and treat life-threatening conditions that may result in delirium.

For all patients classified "at risk" for delirium, the nurses may immediately implement preventive strategies with the goal of averting any acute confusion state. As delirium is a complex problem, it is important to address the multitude of contributing risk factors. If tools to stratify the severity of delirium were available, nurses could be better able to "recognize patients who are at the highest risk for negative outcomes". This would enable prevention and early treatment of delirium, avoiding debilitating after effects in patients and unnecessary

strains on hospital resources.

The nurses should be aware of all the procedures, which reduce the probabilities of the patients, making vulnerable to life delirium. The understanding of the status of the patient with delirium syndrome and the

synthesis of all the available data may lead to a global approach and to a proper treatment. It is important for the nurses to learn the tools to stratify the severity of delirium. The findings of the research reveals that "should stimulate future research in the field of delirium prevention and treatment"

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