
Research Article

The study of incidence of post operative delirium in geriatric patients who needed prolonged ICU stay after undergoing a major cardiac surgery in a tertiary care hospital

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ABSTRACT:

INTRODUCTION: Delirium, defined as an acute disorder of attention and global cognitive function is a common, serious and potentially preventable source of morbidity and mortality in hospitalized elderly patients. Different studies have shown that prolonged post operative ICU stay contributes to occurrence of delirium

OBJECTIVE: To assess the incidence of post operative delirium in elderly patients who needed prolonged ICU stay after undergoing a major cardiac surgery (coronary artery bypass grafting).

MATERIALS AND METHODS: Prospective cohort study, Study Period: 1 ½ years. Using a prepared questionnaire after obtaining fully informed written consent. 3 visits for each patient: 1) before surgery, 2) in the ICU: 48 hours after surgery and 3) In ward after shifting out from ICU. Prolonged ICU stay was defined as admission more than 3 days in ICU. The details from nursing staff and care givers were taken.

RESULTS: Out of total 250 patients included in the study, 43 (17.2%) patients developed post operative delirium. 32 (26%) out of 19 patients who needed prolonged ICU stay developed post operative delirium compared to 11 (8.7%) out of 116 patients who spent less than 3 days in ICU in post operative period. (p Value: <0.001). Prolonged ICU stay contributes to post operative delirium and measures have to be instituted to shift out the patient from ICU at the earliest after stabilization.

Key words: DELIRIUM, GERIATRIC, ICU.

Introduction

Delirium is an important geriatric syndrome with devastating consequences. It is a fluctuating disorder of consciousness of acute onset characterized by profound alteration in the mental state of the affected person and manifests as impairments in arousal, attention, orientation, thinking, perception and memory. It commonly occurs in the setting of multiple physical illnesses and affects the person's normal function so that there is increased risk for susceptibility to adverse events, increased functional dependence, impairment of mobility, occurrence of falls, fractures and development of pressure sores. Certain risk factors that predispose to delirium have been identified. These include older age, male gender, visual and hearing impairment, pre-existing cognitive impairment, depression, functional dependence, dehydration, drugs, alcoholism, existence of multiple comorbid conditions and previous stroke.¹

Based on state of arousal, three types of delirium has been described which include hyperactive, hypoactive and a mixed

form². Morbidity and mortality associated with delirium can be minimized by prevention or early detection and management of the condition.

Coronary artery bypass grafting surgery (CABG) is being increasingly performed in elderly patients for management of coronary artery disease in recent years with successful revascularization. Improved surgical techniques and perioperative care has resulted in better outcomes from the procedure and has resulted in increased longevity in such patients. But postoperative delirium continues to be one of the grey areas in surgical field due to under recognition of its occurrence especially in elderly patients. It was found to be mainly due to lack of preoperative mental status assessment and delay in detection of development of delirium. Delirium has been found to be associated with increased hospital stay, morbidity, poor functional outcomes and increased mortality. It is also one of the preventable complication, if detected and managed early which can improve the outcome from procedure and the patient's quality of life³

We decided to study the incidence of post operative delirium in patients with prolonged ICU stay since all of the patients who underwent CABG needed a period of ICU stay for medical stabilization after procedure. The literature on post operative delirium with prolonged ICU stay in our set up was scarce. Coronary artery bypass graft surgery patients were chosen since it is mostly a planned procedure which is increasingly being done in elderly population.

Materials and Methods

The study was a prospective cohort study, which was done over a period of 1 ½ years. All patients ≥ 65 years getting admitted for coronary artery bypass graft surgery in the hospital were included in the study.

But patients taken up for surgery on emergency basis, those who were too sick to undergo assessment or in whom the assessment could not be completed in full due to death or any adverse events in perioperative period were excluded from the study.

The study was conducted in 5-3 ward and 6-1 (CVTS-SURGICAL ICU) in Amrita institute of Medical Sciences, Kochi, Kerala, India. A total of 250 patients who underwent coronary artery bypass graft surgery fulfilling the above mentioned criteria were included in the study

Method of study

Prior approval from the hospital ethics committee was obtained.

Three visits were conducted for each patient during the hospital stay for assessment. During the first visit which was conducted after admission at bedside of the patient, a pre-operative mental status assessment using mini mental state assessment (MMSE)⁴, delirium screening using confusion assessment method (CAM)⁵ and depression assessment using geriatric depression scale (GDS)⁶ were done.

The second visit was conducted 48-72 hours after the surgery in the intensive care unit. Assessment was done to detect presence of delirium by using the modified version of confusion assessment method (CAM-ICU), which can be used to detect delirium even in intubated patients.

The third visit was conducted in the ward after the patient was shifted out from the ICU. CAM and MMSE were done. Details of mental state of patient, its fluctuations during different periods of the day, episodes of agitation, abnormal behaviour, sleep disturbance which could point to development of delirium were obtained from reliable reporters such as nursing staff and patient care givers. The total number of days spent in the ICU was documented and for analysis categorized as ≤ 3 days and >3 days.

Statistical methods

Sample size was calculated based on incidence rate of delirium in geriatric patients from an earlier Indian publication from CMC, Vellore by Anugrah Chrispal et al⁷. Taking average incidence rate (REF) and with 20% allowable error

and 95% confidence, minimum sample size came to 225.

A total of 250 cases were studied during the time period of 1 ½ years.

Statistical Analysis

Percentage incidence rate of delirium was computed. Chi square test was applied to test the statistical significance of various factors (variables) associated with development of post operative delirium.

Results

43 (17.2%) patients out of total 250 developed post operative delirium.

32 patients out of 123 (26%) with prolonged ICU stay (>3 days) developed post operative delirium compared to 11 out of 127 patients (8.7%) who had ICU stay ≤ 3 days. (p: <0.001)

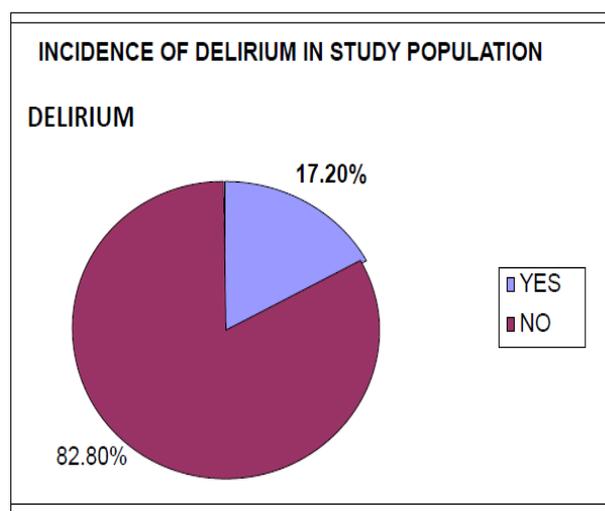


Fig 1: Incidence of Delirium

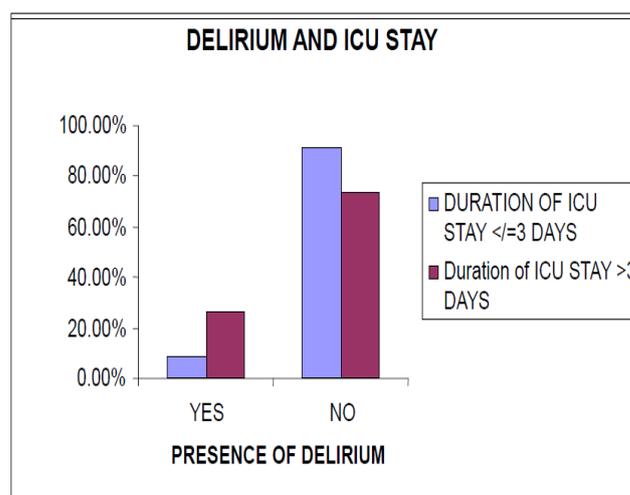


Fig 2: Incidence of delirium and duration of ICU stay

CATEGORY	DELIRIUM		p Value
	YES	NO	
ICU STAY < /= 3DAYS	11 8.7%	116 91.3%	<0.001
ICU STAY > 3 DAYS	32 26%	91 74%	

Table 1: incidence of delirium and duration of ICU stay

Discussion

Patients who undergo a major cardiac surgery has to spend considerable time in the ICU in post operative period for close observation and monitoring. The ICU environment which is stressful is found to contribute to occurrence of delirium especially in vulnerable elderly patients. Various factors like dyselectrolytemias, infections and worsening of comorbid conditions post operatively resulting in multi organ dysfunctions can contribute to delirium. (8)

The incidence of post operative delirium in patients who had prolonged ICU stay from our study was found to be 26%. Various studies shows the incidence of post operative delirium to be in range of 30-50% (9). According to a study done in post cardiac surgery patients, it was reported that patients had highest incidence of delirium in first post operative day in ICU (39.4%) followed by 12.1% on second day(10). It was also reported that the patients who developed delirium had longer hospital stay and increased hospital expenses compared to those who did not had delirium. (10)

The exact mechanism behind occurrence of delirium in patients in ICUs is unknown. Certain studies has shown that absence of natural lighting, alteration in normal sleep wake cycle, unaddressed pain, infections, usage of psychotropic drugs and various other patient factors contribute to delirium. (11)

This study shows the importance of recognizing and managing post operative delirium in elderly patients to reduce the adverse outcomes. Recognizing delirium is a challenge, but by systematic application of validated tools in at risk patients, it can be better picked up and intervened.

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