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THE STUDY ON INCIDENCE OF POST OPERATIVE DELIRIUM IN GERIATRIC PATIENTS WHO HAD INFECTIONS AFTER UNDERGOING CORONARY ARTERY BYPASS GRAFTING SURGERY IN A TERTIARY CARE HOSPITAL IN KERALA

General Medicine

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ABSTRACT

BACKGROUND: Delirium which is 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 occurrence of infections in postoperative period can contribute to delirium.

OBJECTIVE: To assess the incidence of post operative delirium in geriatric patients who had infections after undergoing coronary artery bypass grafting surgery (a major cardiac surgery).

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, 3) In ward after shifting out from ICU. Details from patients, care givers and nursing staff regarding features of delirium are obtained. Patients were classified into two groups, one group who had post operative infections and other with no post operative infections.

RESULTS: Out of total 250 patients included in the study, 43 (17.2%) patients developed post operative delirium. Patients with post operative infection had more chance of development of delirium after undergoing procedure compared to patients with no post operative infections. Out of 77 patients with infections after undergoing procedure 39 (50.6%) patients had post operative delirium (p:<0.001). This suggests that post operative infections should be managed adequately.

KEYWORDS

Infection, Post Operative Delirium

Background

Delirium is an important geriatric syndrome with devastating consequences. It is an acute onset fluctuating disorder of consciousness which is 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 resulting in significant morbidity and mortality. 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, hyponatremia, post operative infections, 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 form[2].

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 life[3]

We decided to study the incidence of post operative delirium in patients with post operative infections since it is one of the most commonly occurring problem in elderly patients after surgery. 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 patents.

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 patient's blood results were retrieved from medical records and history whether they had post operative infections were obtained from nursing staff and from case notes. The patients who had received prolonged course of antibiotics for infection were grouped as those with infection and those who received only short course antibiotic (prophylactic) were grouped as having no infection.

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 al [7] . 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. Patients with post operative infections were found to have more chace for occurence of delirium compared to 4 (2.3%) out of 173 patients who had no post operative infection

Out of 77 patients with post operative infections, 39 (50.6%) patients developed post operative delirium (p:<0.001).

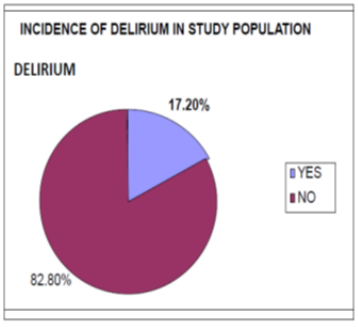

Fig 1: Incidence of Delirium

FACTOR	CATEGORY	DELIRIUM		p Value
		YES	NO	
INFECTIONS	YES	39 **50.6%**	38 49.4%	<0.001
	NO	4 **2.3%**	169 97.7%	

Table 1: incidence of delirium and post operative infections

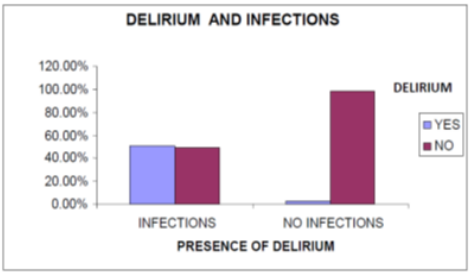

Fig 2: incidence of delirium and post operative infections

Discussion

The incidence of delirium from our study was found to be 17.2%. This is lower than comparable studies. The reasons could be multiple. Our patients, were admitted to the hospital for Coronary artery bypass grafting procedure (CABG) came on a planned basis after stabilization of risk factors and other comorbid conditions. Also, we did not include sick patients or the patients who underwent coronary artery bypass graft surgery on an emergency basis, due to the possibility of confounding factors. The protocol, pre anesthetic work up and better postoperative care all could have minimized incidence of infections and metabolic abnormalities, thereby incidence of post operative delirium.

Delirium is highly prevalent in the cardiac ICU setting and is associated with presence of many modifiable risk factors[8]. Development of delirium increases the mortality risk and is associated with longer cardiac ICU stay[9].Many studies report that post operative infections contribute significantly to occurrence of delirium[10]. A study from India showed that sepsis and metabolic abnormalities were most common etiologies of delirium in elderly patients admitted in hospital medical wards[11].

A recent study shows that identification and management of components like hypoxia, infection and pain contributes to less occurrence of delirium in post operative patients[12]. Post operative delirium is often multifactorial and various factors during peri operative period contribute to its occurrence. Hence a multifaceted approach is necessary in early detection and management of delirium [13,14].

Post operative infections which can contribute to septicemia is a common occurrence in vulnerable elderly patients. Hence early detection and management of infections in peri operative period is a good intervention to reduce morbidity and mortality in elderly patients undergoing major surgical procedures.

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