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THE STUDY OF INCIDENCE OF POST OPERATIVE DELIRIUM IN PATIENTS WITH PRE MORBID DEPRESSIVE ILLNESS UNDERGOING CORONARY ARTERY BYPASS GRAFTING PROCEDURE IN A TERTIARY CARE HOSPITAL

General Medicine

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ABSTRACT

BACKGROUND: 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 existence of premorbid depressive illness and use of psychotropic drugs can contribute to delirium.

OBJECTIVE: To assess the incidence of post operative delirium in elderly patients with pre morbid depressive illness and on psychotropic medications undergoing coronary artery bypass grafting (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.

RESULTS: Out of total 250 patients included in the study, 43 (17.2%) patients developed post operative delirium. Only 6 (20.7%) patients out of 29 who had pre morbid depression, developed post operative delirium compared to 37 (16.7%) patients out of 224 with no pre operative depression (p value: 0.6). Out of 28 patients who were on psychotropic drugs 5 (17.9%) patients developed post operative delirium compared to 38 (17.1%) patients out of 222 who did not use psychotropic drugs (P value: 1). Patients with pre morbid mental illness or those on psychotropic drugs have no increased risk to develop post operative delirium compared to general patients.

KEYWORDS

DEPRESSION, DELIRIUM

Background

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 form[2]. 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 life[3]

We decided to study the incidence of post operative delirium in patients undergoing treatment for depression before 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 details about patient's depressive illness and psychotropic medicati ons, if any were obtained.

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.

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 pre morbid mental illness or those on psychotropic drugs have no increased risk to develop post operative delirium compared to general patients.

Out of 29 patients with pre morbid depression, only 6 (29%) patients developed post operative delirium compared 31 (16.7%) patients out of 224 with no pre operative depression.

Out of 28 patients who were on psychotropic drugs 5 (17.9%) patients developed post operative delirium compared to 38 (19.1%) patients out of 222 who did not use psychotropic drugs (P: 1).

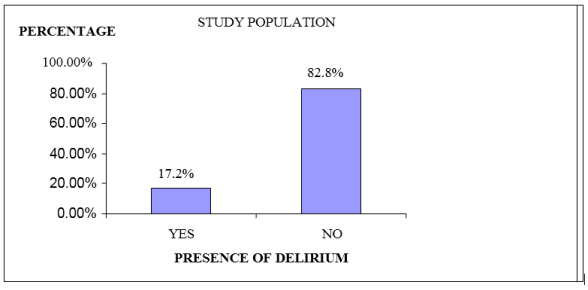

Fig 1: Incidence of Delirium

Factor	Delirium YES	Delirium No
Study Population	43 17.2%	207 82.8%

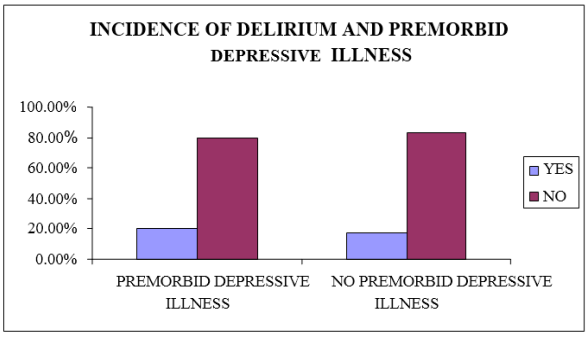

Fig 2: incidence of delirium and premorbid depression

Factor	Category	Delirium Yes	Delirium No	p Value
PREMORBID DEPRESSIVE ILLNESS	YES	6 20.7%	23 79.3%	0.6
PREMORBID DEPRESSIVE ILLNESS	NO	37 16.7%	184 83-3%	

Table 1: incidence of delirium and premorbid depression

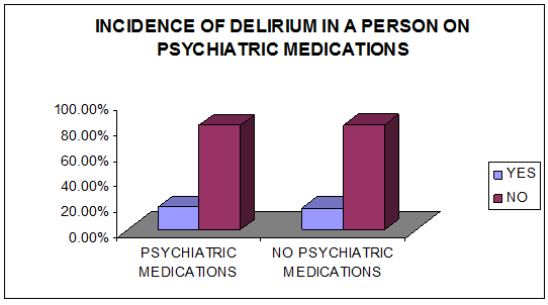

Fig 3: incidence of delirium and use of psychiatric medication

FACTOR	CATEGORY	DELIRIUM YES	DELIRIUM NO	p Value
PATIENT WITH PSYCHIATRIC MEDS	YES	5 17.9%	23 82.1%	1
PATIENT WITH PSYCHIATRIC MEDS	NO	38 17.1%	184 82.9%	

Table 2: incidence of delirium and use of psychiatric medications

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.

Pre operative depression and psychotropic drug use has been noted as a potential predictor of post operative delirium, though results from past studies have been mixed[8]. A study done in non cardiac surgery patients found that patients with higher pre operative depression score had more chance for development of post operative delirium. Number of depressive symptoms as measured by Geriatric depression scale was higher in patients who became delirious than in patients who remained delirium free during the study[9].

Those with pre morbid depression defined as positive geriatric depression score (more than 10) and patients with history of taking antidepressants were found to have no increased risk for development for occurrence of post operative delirium in our study. The reasons could be multiple. The patients were medically stabilized before the procedure and had undergone detailed assessments since the procedure was elective. Also the patients who were on psychotropic drugs might have had adequate control of their depressive symptoms. The planned nature of the procedure, better peri operative care and good quality intensive care all might have contributed to better outcome in patients with underlying depressive illness.

Recognizing delirium is a challenge, but by systematic application of validated tools in at risk patients, it can be better picked up. Geriatricians, Psychiatrists and multidisciplinary teams can help bring about favourable outcomes.

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