

Psychological Correlates of Outcome after Coronary Artery Bypass Graft

Col S Chaudhury (Retd)*, Col S Sharma⁺, Surg Capt AA Pawar[#], BK Kumar^{**}, Mrs K Srivastava⁺⁺, Brig S Sudarsanan^{##}, D Singh^{***}

Abstract

Background: Psychological effects of Coronary Artery Bypass graft (CABG) have been of interest all over the world but there is a paucity of Indian work.

Methods: 30 patients undergoing CABG at a service hospital were included. All patients filled a specially designed proforma. Mini Mental Status Examination, Hospital anxiety and depression scale, Coronary scale, Seattle angina questionnaire and Euro-QOL 5D were performed before and seven days after CABG.

Results: 43.3% had significant anxiety and 30% had significant depression before CABG. Following CABG, 36.67% of the patients had significant anxiety while 40% had significant depression. On the Seattle angina questionnaire, physical limitation reduced from 71.6 ± 7.9 to 53.1 ± 14.6 . There was significant improvement in treatment satisfaction from 37.8 ± 6.1 to 59.4 ± 4.2 following CABG. On the Euro quality of life scale (EQ5D) health status improved from 38.17 ± 9.51 before CABG to 68.5 ± 5.28 after CABG.

Conclusion: There is a significant incidence of anxiety and depression in patients undergoing CABG, both before and after surgery.

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Key Words: CABG; anxiety; depression

Introduction

All over the world Coronary Artery Disease (CAD) remains a major public health problem because of its contribution to total mortality. Patients with stable angina pectoris have a 4-5% risk of death or non-fatal myocardial infarction (MI) each year and 30% of those with recent onset angina will have a significant cardiac event (death, non-stable angina pectoris or coronary revascularisation) within 1-2 years. The treatment is directed towards both the alleviation of symptoms and an improvement in prognosis which may involve lifestyle modification, pharmacological therapy and coronary revascularisation. For many patients, cardiac surgery is seen as life threatening procedure. Failure to adapt to the procedure leads to an increase in anxiety and depression in 25% of patients. This creates a need for evaluating the patient's perception of the procedure and to understand the effects of this perception on recovery. Patients with high pre-surgery levels of anxiety and depression show high levels of postoperative anxiety and depression. Social support seems to be the most important factor related to feelings of well being and long term recovery. Another factor that has shown benefit with coping is when the patient feels in control

of their care.

Psychiatric disorders, often seen in patients who have undergone Coronary Artery Bypass Graft (CABG) include cognitive disorders, depression, anxiety, adjustment disorder, body dysmorphic disorder, substance use and sleep disorders. Numerous studies have shown that the rates of depression following the procedure increases and the patient may also develop certain comorbid disorders like substance use disorders commonly nicotine or alcohol abuse. Fragmented sleep is a problem partly because of psycho-physiological symptoms seen usually one year after CABG, with reduced resilience to stress, increasing vulnerability or diminished coping ability and poorer quality of life. Incidence of psychological dysfunction ranges from 33 to 83 percent in the early postoperative period and persists over one year in 35% of patients. Also, the risk of postoperative psychological dysfunction increases with age [1-13]. Psychiatric disorders independently increase the risk of cardiovascular disease and worsen the prognosis in patients with established cardiovascular lesions [14]. In view of the paucity of Indian work in this field the present study was undertaken.

*Ex- Associate Professor (Psychiatry), **Scientist 'D' (Psychiatry), ***,*** Medical Cadet, AFMC, Pune, *Senior Advisor (Anaesthesia & Cardiovascular Anaesthesia), MH (CTC), Pune-40, #Senior Advisor (Psychiatry) INHS Asvini, Mumbai. ##Consultant (Psychiatry), BH, Delhi Cantt.

Material and Method

The study was conducted at the Department of Psychiatry, Armed Forces Medical College and Military Hospital (Cardio-Thoracic Center), Pune. A total of 30 consecutive patients admitted to the hospital for CABG were included in the study and their consent taken. Patients were interviewed one day prior to the CABG and seven days after the surgery. During the initial interview, demographic and historical data were recorded on a specially designed proforma. Details of physical examination, cardiac evaluation and laboratory investigations were recorded from case notes. All patients underwent the following psychological tests:

1. The Hospital Anxiety and Depression Scale (HADS) [15], a self-report questionnaire to detect adverse anxiety and depressive states.
2. Coronary scale [16] constructed from eight Eysenck Personality Questionnaire items used for detecting a high risk group of emotionally labile subjects.
3. Seattle Angina Questionnaire (SAS) [17] measures five dimensions of coronary stress disease: physical limitation, anginal stability, anginal frequency, treatment satisfaction and disease perception.
4. Mini-Mental State Examination: (MMSE) [18] for assessment of cognitive functions.
5. Euro Quality of Life Scale (EQ5D) [19] comprising five questions on mobility, self-care, pain, usual activities and psychological status, along with a visual analogue scale to indicate the general health status with 100 indicating the best health status.

Seven days after CABG the psychological tests were re-administered to patients. The data, was collected, tabulated and statistically analysed using chi-square test and Wilcoxon test.

Results

A total of 30 patients admitted for CABG were included in the study. The mean ± SD age of the patients was 60 ± 5.5 years. The age of the patients ranged from 51 years to 70 years. The majority of the patients were below 65 years of age. Male to female ratio was 27:3. Demographic characteristics and personal habits of the patients undergoing CABG are given in Table 1. The majority of the patients were non-vegetarians, non smokers and non drinkers. A family history of hypertension, IHD or diabetes mellitus was present in 13 patients. None of the patients had a past or family history of psychiatric disorders. The mean BMI of the patients was 23.8 ± 2.89 kg/m² (range 18.5 kg/m² - 27.2 kg/m²). The mean level of serum cholesterol was 202.7 ± 20.7 mg% (range 178mg% - 240 mg%). Hypertension was present in nine and diabetes mellitus in five patients.

The results of the psychological tests given to the patients before and after CABG are shown in Table 2. On the HADS (43.33%) patients had definite anxiety before CABG. After CABG 11(36.67%) patients had definite anxiety. All patients who were anxious after CABG had high preoperative anxiety. The difference in pre and post-CABG prevalence of anxiety

Table 1

Demographic characteristics and habits of the patients undergoing CABG

Characteristics	No of patients	Percentage
Age distribution		
50 - 59 years	13	43.33
60 - 69 years	15	50.0
70 - 79 years	2	6.67
Martial Status		
Married	29	96.67
Widower	1	3.33
Education		
Up to 10 class	24	80.0
11 - 12 class	1	3.33
Graduates	5	16.67
Food habits		
Vegetarian	5	16.67
Non-vegetarian	25	83.33
Smoking		
Non-smoker	18	60.0
10 cigarettes/day	5	16.67
10-19 cigarettes/day	6	20.0
20/more cigarettes/day	1	3.33
Alcohol		
nondrinker	16	53.33
Occasional drinker	1	3.33
1 peg/week	5	16.67
2-3 peg/week	8	26.67

Table 2

Psychological test results of the patients undergoing CABG

Test	Pre CABG score Mean (± SD)	Post CABG score Mean (± SD)	Wilcoxon test
Anxiety	8.1 (2.9)	8.4 (3.5)	NS
Depression	7.2 (3.6)	7.4 (3.4)	NS
Neuroticism	3.1 (1.3)	-	
SAQ			
Physical limitation	71.6 (7.9)	53.1 (14.6)	S
Angina stability	9.8 (12.7)	8.3 (12.1)	NS
Angina frequency	9.9 (8.9)	5.8 (9.7)	NS
Treatment satisfaction	37.8 (6.1)	59.4 (4.2)	S
Disease perception	22.6 (4.9)	36.1 (5.2)	S
EQ5D			
Mobility	1.7 (0.54)	1.16 (0.38)	NS
Self Care	1.42 (0.56)	1.17 (0.39)	NS
Usual activities	1.48 (0.63)	1.17 (0.38)	NS
Pain	1.93 (0.45)	1.29 (0.64)	NS
Psychological functioning	1.8 (0.66)	1.42 (0.81)	NS
Health status	38.17 (9.51)	68.5 (5.28)	S

were not statistically significant. Similarly, before CABG, nine (30%) patients had definite depression. Even after successful CABG, 12 (40%) patients were found to have definite depression. All patients with preoperative depression

continued to be depressed after CABG. The differences in prevalence of depression in the patients before and after CABG were not statistically significant.

None of the patients suffered any complications following the procedure, which were all technically successful. The mean duration of stay in Intensive Care Unit (ICU) was 3.43 ± 0.94 days, and ranged from 1 to 5 days. The mean duration of hospitalisation was 25.14 ± 7.77 days and ranged from 10 to 40 days.

Discussion

Contemporary cardiology excels at managing life-threatening conditions (e.g. Acute MI and unstable angina) with high-tech methods for diagnosis and treatment such as thrombolysis, percutaneous transcatheter angioplasty (PTCA) and CABG surgery. However, cardiac surgeons have generally been less interested in the day to day support, that is often needed to help patients maintain a heart-healing lifestyle and thus reduce the risk for cardiac events. It is here that mental health practitioners may find their expertise of great benefit, particularly for individuals who develop CAD before the age of 65, when the disease is considered premature and often has a substantial lifestyle component. In the present study we found that over 50% of the patients were below 65 years of age and therefore could benefit from psychological intervention.

Psychological stress, the Type A behaviour pattern, anger and hostility, and social isolation or lack of social support are some of the psychosocial variables that have been linked to the development of CAD in otherwise healthy population. In addition, depression has been shown to increase morbidity and mortality after CABG [20]. Other psychosocial variables that may contribute to CAD risk include job strain, vital exhaustion (lack of energy, demoralisation and increased irritability), anxiety and cardiac denial (ignoring the significance of cardiac symptoms). Psychological intervention with cardiac patients reduces psychological pain, severe anxiety, hostility and depression and thus improves quality of life as well. There is a large database linking behavioural and psychological factors with the onset of CAD as well as with secondary cardiac events in individuals who already have CAD [21]. This direction seems particularly relevant in light of the current economic climate promoting reduced medical costs through prevention.

In the present study also we found that patients did have modifiable factors like high BMI, non-vegetarians, smokers, hypertension, diabetes mellitus and high cholesterol levels. In addition psychological evaluation revealed that 43.3% of the patients had definite anxiety before CABG. This may be indicative of the stress before the procedure. Similarly it was seen that 30%

patients had definite depression before surgery and even after successful CABG 12(40%) patients continued to have definite depression. Our findings are in agreement with a recent study on 53 CABG patients, which reported that approximately 55% of the patients had high level of anxiety preoperatively. Shortly after the surgery, 34% of patients and after 3 months 32% of them had clinically relevant level of anxiety. 32 percent of patients before the surgery, 28% immediately after CABG and 26% at followup were depressed [10]. It is therefore imperative that depression in CABG patients should be identified and treated since this may reduce morbidity and mortality. Though the number of patients in the present study was only 30, but the high prevalence of psychiatric symptoms in patients is a very important finding. Depression has not only been implicated in the pathogenesis of CAD but studies have shown that depressed patients have higher morbidity and mortality after MI.

Duits et al [5], reviewed 17 prospective studies between 1986 and 1996 and reported that psychological factor had predictive value. In particular, preoperative anxiety and depression predicted postoperative psychological maladjustment, while social support, preoperative feelings of control, denial and optimism contributed to psychological adjustment. Furthermore, personality factors including denial, optimism, control and need for support appear to be predictors of psychological outcome. The findings of the present study are in agreement with the above and emphasise the importance of screening patients selected for cardiac intervention for anxiety and depression because this may not only improve the quality of life but also reduce morbidity and mortality after surgery.

The coronary scale was constructed with the aim of measuring proneness to Ischaemic Heart Disease (IHD) [16]. However in this group of patients with IHD, all the subjects scored less than the cut off score. Thus the coronary scale does not seem to be useful in our population to measure proneness to IHD. Of course the present sample consisted of only males who were serving or retired armed forces personnel. Therefore further studies with different populations are indicated. On the Seattle angina questionnaire there was a significant reduction in physical limitation from 71.6 ± 7.9 to 53.1 ± 14.6 . In addition there was a significant improvement in treatment satisfaction from 37.8 ± 6.1 to 59.4 ± 4.2 . Both these findings indicate that the CABG was successful.

The importance of health related quality of life (HRQOL) can be understood from the fact that studies have shown that the risk of dying following cardiac intervention increased with feelings of being disabled.

It is obvious that improvement of HRQOL is associated with better prognosis. In the present study we found that there was also improvement of HRQOL from 38.17 (9.51) to 68.5 (5.28). In addition there was improvement in mobility, self care, usual activities, psychological functioning and reduction in pain. This was probably due to the fact that in the present study all the patients had successful CABG. It shows that the EQ5D is a useful test that can be used in CABG patients.

We conclude from the present study that before undergoing CABG, 13 (43.33%) of the patients had anxiety and 9 (30%) had depression. Even after successful CABG, 11 (36.67%) patients had definite anxiety and 12 (40%) had definite depression.

Conflicts of Interest

None identified

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