ORIGINAL ARTICLE

Association between Depression and Cardiovascular Risk Factors in Patients of Acute Coronary Syndrome

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ABSTRACT

Aim: To determine the association of depression with gender, diabetes mellitus, hypertension, smoking, obesity, and physical inactivity

Study design: Comparative study

Place and duration: Department of Cardiology, Bahawal Victoria Hospital, Bahawalpur, from January 2015 to June 2015

Methodology: Two hundred patients with the diagnosis of acute coronary syndrome fulfilling the inclusion criteria were enrolled in the study. The enrolled patients were screened with Patient Health Questionnaire (PHQ 9) for the presence and severity of depression. Patients who had PHQ 9 score ≥ 10 were labeled to have depression. The data was entered and analyzed with SPSS version 17. The patients were divided into two groups: group A, who had depression and Group B, who had no depression. Stratification was done with respect to gender, hypertension, diabetes mellitus, obesity, physical inactivity, and smoking. Chi square test was applied to compare these variables between two groups; *p* value <0.05 was considered to be significant.

Results: Mean age of the population was 56±12 years. Out of 180 patients, 125 (62.5 %) were males. A total of 39 patients had score > 10 on PHQ 9. Female gender (59.0 %), smoking (51.3 %), and physical inactivity (48.7 %) were more prevalent in group A as compared to group B (32.3 %, 16.1 %, 14.9 % respectively: *p* <0.05). There was no significant difference in the frequency of hypertension, diabetes mellitus, or obesity between the two groups (*p* >0.05).

Conclusion: In patients of acute coronary syndrome, the presence of depression was significantly associated with female gender, smoking and physical inactivity but not with diabetes mellitus, hypertension, and obesity.

Keywords: Acute coronary syndrome, depression, Cardiovascular risk factors

INTRODUCTION

According to the Centers for Disease Control and Prevention, 9% of US adults meet the criteria for current depression while 3.4% meet the criteria for major depression[1,2]. The prevalence of major depressive disorder in patients of coronary artery disease has been reported in the range of 15 % to 23%[3,4]. A large number of studies over the past 15 years have confirmed that depression is associated with adverse cardiovascular outcomes, independent of traditional risk factors[5]. Depressed patients are less likely to involve in health-promoting behaviors, including maintenance of a healthy diet[6], regular physical activity[7] compliance with medications[8], stress reduction[5], and completion of cardiac rehabilitation programs[9,10] following acute myocardial infarction. Depression has also been linked to a variety of conventional cardiovascular risk factors including diabetes mellitus, smoking, and hypertension.

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METHODOLOGY

This comparative study was conducted in the department of Cardiology, Bahawal Victoria Hospital, Bahawalpur, from January 2015 to June 2015. Two hundred patients admitted to the Cardiology Department with the diagnosis of acute coronary syndrome fulfilling the inclusion criteria were enrolled in the study. Acute coronary syndrome had three subsets; ST-elevation MI (STEMI), non-ST-elevation MI (NSTEMI), and unstable angina (UA). STEMI was defined as chest pain with ST-segment elevation ≥ 2 mm in precordial leads V_2 and V_3, or ≥ 1 mm in all other leads except aVR in at least two leads of a contiguous lead group. NSTEMI was defined as chest pain and ST-segment depression ≥ 1 mm or T wave inversion with elevated troponin I or T levels. UA has similar features as those of NSTEMI but with normal troponin levels. Patients with cognitive impairment or diagnosed renal or hepatic impairment were excluded from the study. The enrolled patients were screened with Patient Health Questionnaire (PHQ 9) for the presence and severity of depression. Patients who had PHQ 9 score ≥ 10 were labeled to have depression. Hypertension was defined as

systolic blood pressure ≥140mmHg or diastolic blood pressure ≥90mmHg recorded on two occasions or a history of anti-hypertensive medicine use. Diabetes mellitus was defined as fasting serum sugar >126 mg/dl or taking treatment for diabetes. Obesity was defined as BMI >30kg/m^2. Smokers were defined as those patients who had smoked at least 10 cigarettes per day for at least one year. Sedentary life style was defined as no involvement in physical exercise, at least a brisk walk for more than 30 minutes a day and for at least five days per week. The data was entered and analyzed with SPSS version 17. The patients were divided into two groups: group A, who had depression and Group B, who had no depression. Age of the study sample was presented as mean and standard deviation. Categorical variables like gender and the presence or absence of depression were presented as frequency distribution tables. Stratification was done with respect to gender, hypertension, diabetes mellitus, obesity, physical inactivity, and smoking to see any difference of the frequency of these cardiovascular risk factors between the two groups. Chi square test was applied to compare these variables between two groups; *p* value <0.05 was considered to be significant.

RESULTS

A total of 200 patients were included in the study. Mean age of the population was 56±12 years. Out of 180 patients, 125(62.5%) were males. The study population comprised of 102 patients of STEMI, 74 patients with NSTEMI, and 24 patients with UA (Table 1). A total of 39 patients had score >10 on PHQ 9 (Table 2). Female gender (59%), smoking (51.3%), and physical inactivity (48.7%) were more prevalent in group A as compared to group B (32.3%, 16.1%, 14.9% respectively). The differences were found to be statistically significant (*p* <0.05). There was no significant difference in the frequency of hypertension, diabetes mellitus, or obesity between the two groups (*p* >0.05) (Table 3).

Table 1: Characteristics of the study population

Characteristics	Frequency	%age
Mean age (years)	56±12	-
Males	125	62.5
Females	75	37.5
STEMI	102	51.0
NSTEMI	74	37.0
UA	24	12.0

Table 2: Prevalence of depression in acute coronary syndrome

Depression	Frequency	%age
Present	39	19.5
Absent	161	80.5

Table 3: Difference of risk factors between depressed and non-depressed patients of acute coronary syndrome

Characteristics	Group A (n=39)	Group B (n=161)	*p* Value
Male	16 (41%)	109(67.7%)	< 0.05
Female	23 (59%)	52 (32.3%)	< 0.05
Hypertension	11 (28.2%)	45 (27.9%)	> 0.05
Diabetesmellitus	12 (30.8%)	50 (31.1%)	> 0.05
Smoking	20 (51.3%)	26 (16.1%)	< 0.05
Physical inactivity	19 (48.7%)	24 (14.9%)	< 0.05
Obesity	09 (23.1%)	37 (22.9%)	> 0.05

DISCUSSION

Despite the existence of effective and safe treatments for depression in cardiac patients, depression remains under-recognized and under-treated in this population. Depression in patients with cardiovascular disease is linked with higher frequency of certain cardiovascular risk factors as well as adverse cardiovascular outcomes. Our study was designed to determine the association between depression and other cardiovascular risk factors in patients of acute coronary syndrome. We found that female gender, smoking and physical inactivity were more prevalent in patients with depression. Previously, the studies[2,11] have reported the association of depression with smoking, diabetes mellitus, hypertension, obesity, and physical inactivity. However in our study, no association of depression with diabetes mellitus, hypertension, and obesity was found.

CONCLUSION

In patients of acute coronary syndrome, the presence of depression was significantly associated with female gender, smoking and physical inactivity but not with diabetes mellitus, hypertension, and obesity.

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