Psychiatric comorbidities in acute coronary syndromes: Six-month follow-up study

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ABSTRACT

Introduction: Acute coronary syndrome (ACS) caused by coronary atherosclerosis include ST-segment elevation myocardial infarction (STEMI), non-STEMI, and unstable angina. The relation between psychiatric disorders and coronary artery disease is a complex one which includes the effect of the psychosocial factors on heart and vice versa. Point prevalence studies have been reported, but there is paucity of follow-up studies from India.

Materials and Methods: The study is a follow-up evaluation at discharge of 248 consecutive patients presented with ACS at JSS Hospital, Mysuru, Karnataka, over a period of 6 months to assess the psychiatric comorbidities. The patients were assessed on a structured and validated pro forma before discharge, at 3 months, and at 6 months. Screening of psychiatric disorders was done using Mini International Neuropsychiatric Interview PLUS 5.0.0 and assessment of depression was done using Hamilton Depression Rating Scale. ANOVA, Student’s t-test, and SPSS 21 were used for statistical analysis.

Results: The most common psychiatric comorbidities include major depressive disorder (44%), it persisted at the end of 3 ($P<0.001$) and 6 ($P<0.001$) months. A spectrum of anxiety disorders including panic disorder (12.10%), dysthymia (3.60%), agoraphobia (2.40%), social phobia (2%), obsessive-compulsive disorder (1.6%), specific phobia (1.2%), and posttraumatic stress disorder (0.8%) in descending order at the end of 6 months were found. Significant reduction in substance use of nicotine (66.1%) and alcohol (56.0%) was reported on follow-up.

Conclusion: Depression, anxiety, and substance use occur in patients with ACS which persist on follow-up. Early recognition at discharge and appropriate counseling on follow-up improve the clinical outcomes.

Key words: Acute coronary syndrome, coronary artery disease, depression, psychiatric comorbidities

INTRODUCTION

The World Health Organization (WHO) reports that cardiovascular diseases contribute to 17.5 million deaths per year and depressive disorders are the fourth leading cause of the global disease burden. By 2020, it is estimated that depression would be the second most common cause of death worldwide surpassing the other conditions.[1] A bidirectional relationship has been noted between cardiovascular diseases and psychiatric comorbidities. Acute rupture of plaque in the coronary artery resulting in flow-limiting lesion is one of the important mechanisms of acute coronary syndrome (ACS) which

Access this article online

Website:
www.indianjpsychiatry.org

DOI:
10.4103/psychiatry.IndianJPsychiatry_94_18

How to cite this article: Shruthi DR, Kumar SS, Desai N, Raman R, Sathyanarayana Rao TS. Psychiatric comorbidities in acute coronary syndromes: Six-month follow-up study. Indian J Psychiatry 2018;60:60-4.
include ST-segment elevation myocardial infarction (STEMI), non-STEMI (NSTEMI), and unstable angina (USA). The INTER HEART study conducted across 52 countries found higher prevalence of four stress factors – stress at work and home, financial stress, and major life events in the past year, along with eight other risk factors of history of hypertension or diabetes, waist/hip ratio, dietary patterns, physical activity, smoking, consumption of alcohol, and blood apolipoprotein association with the increased risk of ACS.

The American Heart Association (AHA) in association with the American Psychiatric Association (APA) in a science advisory consider depression as a major risk factor. Anxiety, type A behavior, hostility, and stress are also considered as risk factors for cardiac disease. Anxiety may be associated with a negative outcome of an illness. Furthermore, considering the fact that cardiac diseases are psycho-somatic conditions, psychological factors play an important role. Acute psychological distress is associated with a greater than two-fold risk as a precipitating factor. These psychosocial components are important in the secondary prevention of ischemic heart disease (IHD) apart from their role in primary and primordial prevention.

The follow-up evaluation of psychiatric comorbidities in the setting of ACS is not well studied in Indian population. We report our experience.

MATERIALS AND METHODS

A study sample consisting of 248 consecutive patients presenting with ACS was selected from the Department of Cardiovascular and Thoracic sciences of JSS Medical College Hospital, affiliated to JSS University, Mysuru, Karnataka. It is a tertiary care hospital drawing patients from the surrounding rural and urban areas. The diagnosis of ACS was done according to the standard WHO criteria of (i) presence of typical myocardial ischemic pain, (ii) electrocardiographic changes, and (iii) cardiac biomarkers. The individuals who fulfilled the inclusion criteria were included in the study after obtaining an informed consent. The patients were explained in detail about the nature, importance, and the type of study being conducted. The evaluation was conducted by a psychiatrist before discharge and at 3- and 6-month follow-up. The patients were assessed on a structured and validated pro forma for the sociodemographic details. Screening for the psychiatric disorders was done using Mini International Neuropsychiatric Interview (MINI) PLUS 5.0.0, and Hamilton Depression Rating Scale-21 item scale (HDRS) was further used to grade the severity of depression. This study was approved by the ethical committee of JSS Medical College, Mysuru.

Statistical analysis
Interpretation of results was done using ANOVA, Student’s t-test, and SPSS 21 (IBM Corp, Armonk, NY).

RESULTS

Sociodemographic details
The total study sample was 248 patients including both males and females. Males were the predominant sex constituting about 80.2% of the total sample. Patients in the age group of 50–59 years were the maximum constituting about 30.6% followed by those in the age group of 60–69 years (26.6%) and of 40–49 years (21.0%). Nearly 94% were married, 5.2% were widow/widowers, and 0.8% were unmarried. Almost 67.7% were hailing from a rural background. Majority had attended high school (29.8%) and working as unskilled labourers (47.2%). Nuclear family (68.1%) was on the rise and the number of family members constituted 3–4 in 45.6% of patients. Lower middle socioeconomic class constituted 54.0% followed by upper lower 29.0% depicted in [Table 1].

Risk factor profile
Diabetes mellitus and hypertension were the most common comorbidities associated constituting 67.3% and 65.3%, respectively. Nicotine consumption in the form of smoking was seen in 66.1% and alcohol use was found in 56.0% of patients [Table 2].

Profile of acute coronary syndrome
STEMI constituted the major part of the study sample (64.1%) followed by NSTEMI (25%) and USA (10.9%).

Psychiatric comorbidities
MINI questionnaire at the end of 6 months showed that substance use (nicotine 66% and alcohol 56.0%) continued in most of the patients followed by major depressive disorder (44%), attempt on life (16.5%), panic disorder (12.10%), dysthymia (3.60%), manic episode (3.20%), agoraphobia (2.40%), social phobia (2%), obsessive-compulsive disorder (OCD) (1.6%), specific phobia (1.2%), and posttraumatic stress disorder (0.8%) in descending order.

Depression
HDRS-21 item scale was administered (partial η² = 0.65, P < 0.0001), all combinations were significant. Severity of depression was significant at the duration of 3 months compared to 6 months. Its trend persisted at the end of 6 months [Table 3].

DISCUSSION
The principal findings of our study are that major depressive disorder (44%) and spectrum of anxiety disorders including panic disorder (12.10%), dysthymia (3.60%), agoraphobia (2.40%), social phobia (2%), OCD (1.6%), and specific phobia (1.2%) in this cohort. Substance use (nicotine 66% and alcohol 56.0%) was also prevalent [Figure 1]. These findings persist on follow-up over and up to 6 months in a significant number of patients. It was also found that...
26% had resumed consumption of alcohol and 17.7% had restarted nicotine. This raises an important clinical issue of poor adherence to healthy lifestyle demanding more attention. A study conducted on chronic IHD patients by Shiny John (2013) in India has shown a prevalence of 34.6% of major depressive disorder, 36.9% had anxiety due to a general medical condition, and 95.4% of patients reported psychiatric symptoms, either depression or anxiety. It was, however, a point prevalence study. Himar and Bhagabati evaluating in a cohort of fifty patients with acute MI (AMI) found depression to be highly prevalent (34%). On literature search, it was found that very few follow-up studies have been reported from India to date. From the West, several reports document that psychosocial factors play an important role in the prognosis of the condition and prognostic role for depression and anxiety (6/6 studies), psychosocial work characteristics (1/2 studies), and social support (9/10 studies).

Depression persisted in a significant number of patients during the study. The severity of depression was more during the 3-month follow-up time compared to the end of 6 months [Figure 2]. Studies have shown that the presence of a depressive episode during the first 3 months was a significant predictor of impairment of work. Physicians often attribute somatic complaints of fatigue, lethargy, insomnia, and loss of appetite to the underlying physical condition and medications and also interpret it to be a “normal” reaction to a stressful event. It may be a myth held by some that this is temporary. However, in many cases, depression may occur before and continue after an acute cardiac event. In our study, 29% had somatic complaints. Depression is seen in about 20% of the patients hospitalized with ACS either at admission or in the immediate period following recovery from congenital heart disease. The persistence of depression may affect ACS negatively. Noncompliance to medical treatment, overweight/obesity, smoking and alcohol consumption, and sedentary lifestyle have been recognized as factors contributing to this situation. A study conducted by Davidson et al. using the concept of enhanced depressive care for patients with persistent depression in 237 post-ACS patients showed a significant reduction in depressive symptoms and modest improvement in cardiac prognosis. Sertraline Antidepressant Heart-Attack Randomized Trial has shown that use of sertraline as a prophylactic agent has shown a two-third reduction of incidence of depression when compared with placebo. Furthermore, depression and low perceived Social support during recovery from ACS by treatment with cognitive behavior therapy (CBT), supplemented with a selective serotonin reuptake inhibitor antidepressant when indicated has shown that the intervention improved depression and social isolation. These trials show the importance of the appropriate interventions for a person with ACS during admission and follow-up.

| Table 1: Sociodemographic details of the study population |
|---------------------------------------------------------|
| Age (years)                                             | Count (%) |
| 20-29                                                   | 1 (0.4)   |
| 30-39                                                   | 19 (7.7)  |
| 40-49                                                   | 52 (21.0) |
| 50-59                                                   | 76 (30.6) |
| 60-69                                                   | 66 (26.6) |
| 70-79                                                   | 34 (13.7) |
| Gender                                                  |           |
| Male                                                    | 199 (80.2) |
| Female                                                  | 49 (19.8)  |
| Marital                                                 |           |
| Married                                                 | 233 (94.0) |
| Unmarried                                               | 2 (0.8)   |
| Widow/widower                                           | 13 (5.2)  |
| Domicile                                                |           |
| Rural                                                   | 168 (67.7) |
| Urban                                                   | 80 (32.3)  |
| Education                                               |           |
| Illiterate                                              | 44 (17.7) |
| Primary school                                          | 59 (23.8) |
| Middle school                                           | 44 (17.7) |
| High school                                             | 74 (29.8) |
| Degree                                                  | 25 (10.1) |
| Postgraduation                                          | 2 (0.8)   |
| Higher education                                        | 0         |
| Occupation                                              |           |
| Student                                                 | 0         |
| Unskilled                                               | 117 (47.2) |
| Semi-skilled                                            | 20 (8.1)  |
| Skilled                                                 | 18 (7.3)  |
| Business                                                | 37 (14.9) |
| Unemployed                                              | 56 (22.6) |
| Family structure                                        |           |
| Nuclear                                                 | 169 (68.1) |
| Joint                                                   | 57 (23.0) |
| Extended                                                | 21 (8.9)  |
| Family size                                             |           |
| No children                                             | 7 (2.8)   |
| 1-2                                                     | 75 (30.2) |
| 3-4                                                     | 113 (45.6) |
| 5-6                                                     | 33 (13.3) |
| >6                                                      | 20 (8.1)  |
| SES                                                      |           |
| Upper                                                   | 62 (0.4)  |
| Upper middle                                            | 29 (11.7) |
| Lower middle                                            | 134 (54.0) |
| Upper lower                                             | 72 (29.0) |
| Lower                                                   | 7 (2.8)   |

SES - Socioeconomic status

Anxiety disorders were the next prevalent condition, which included panic disorder (12.10%), agoraphobia (2.40%), social phobia (2%), OCD (1.6%), and specific phobia (1.2%). A study conducted by Feng et al. has shown that anxiety among post-MI patients was associated with a 9.37-fold increase in the recurrence of MI. Northwick Park’s study has shown that high levels of phobic anxiety were associated with an almost fourfold increase in the relative risk for fatal IHD. One more study reveals the association between phobic anxiety and coronary artery disease mortality. A study...
conducted by Mittleman et al., assessing a wide range of activities including physical exercise, drug use, and emotions, found important relationship between these and the index event of AMI. Less than 3% were triggered by anger and 20% of infarctions were triggered by exogenous activities.

The findings of the current study are similar to that of the studies conducted in the West which shows that depression is the most common comorbidity following ACS and these associated conditions may be a manifestation of the premorbid condition of the patient which in our study has shown prevalence of about 30.2% before the onset of ACS.

Antidepressants along with CBT and physical activity such as aerobic exercise and cardiac rehabilitation are the mainstay of treatment of depression in post-ACS. The AHA in association with the APA in 2008 made recommendation of the following things for the better outcome of the patients: (i) Routine screening for depression should be done as effective treatment of depression improves the outcome, (ii) Patients with positive screening results should be evaluated by a psychiatrist, (iii) Patients with cardiac disease who are under treatment for depression should be carefully monitored for adherence to their medical care, drug efficacy, and safety with respect to their cardiovascular as well as mental health, and (iv) Coordination of care between health-care providers is essential in patients with combined medical and mental health diagnoses.

The strength of the current study is the availability of prospective data over intermediate term.

Study limitations

It is a single-center experience with a short-term follow-up of a small cohort. The limited pharmacological intervention was not done in a randomized fashion. A single psychiatrist evaluated the patients, hence bias could not be completely removed.

CONCLUSION

The principal finding of the study is the persistence of psychiatric comorbidities including depression, anxiety, and substance use in a significant proportion of cohort of ACS on follow-up. The somatic symptoms may masquerade the underlying psychiatric comorbidities. Persistence of these conditions necessitates proper evaluation, review, and management time to time.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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