Depression in Myocardial Infarction

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ABSTRACT : One hundred patients of myocardial infarction admitted at three urban teaching hospitals were studied to determine the prevalence of depression. By using DSM-IV criteria, 26 patients were found to have major depressive disorder. Among them 10 were severe, 13 were moderate and 3 were mild according to HRSD score. Another 26 patients showed evidence of depressive symptoms which may be due to extreme subjective distress. There was no significant difference of demographic variables between patients with major depressive disorder and non-major depressive disorder. Mean frequency of life events was significantly higher in major depressive disorder group. Except type A behaviour, depression was not associatied with duration, type, risk factors, treatment and complications of myocardial infarction. Past and family history of depression were identifed as risk factors for major depressive disorder after infarction. Among the patients with myocardial infarction, subsyndromal depression is suggestive of self limited reaction while treatment of major depressive disorder may reduce overall distress of the patients.

INTRODUCTION

Depression is a common feature in myocardial infarction (MI). Several studies on depression in ischaemic heart disease (IHD) reported the rate of depression ranging from 18-60%[1]. In an earlier follow-up study, when found 40% prevalence of depression in 400 patients with IHD[2]. Wishnie et al3 describing treatment[1,7,8]. In contrast, it is less likely that untreated or poorly treated major themselves as anxious and/or depressed in the first month after discharge. Likewise, Cay and colleagues[4] found a predominance of symptoms of axiety and depression among 65% of their patients hospitalized for IHD and MI. In more than half of these patients, the symptoms were present before admission. Kavanagh et al[6], using the MMPI depression scale, found that 33% of patients seen at their center were severely depressed when evaluated 18 months after MI. Among patients with IHD, a psychiatric morbidity of nearly 45% has been reported with almost a 20% prevalence of depressive neurosis6. Using a standardized interview, Lloyd and Cowley[7] found evidence of psychiatric illness in 35% of patients 1 week after MI but noted that in nearly half of these cases the psychiatric symptoms predated the MI. Of those without previous symptoms, 14% were felt clinically to have depressive neurosis. Carney et al[1] evaluated 50 patients with coronary artery disease (CAD) and found 18% met DSM-III criteria for major depressive episode. Schleifer and colleague[8] studied 283 admitted patients, 8-10 days after MI and found 45% met diagnostic criteria for minor or major depression including 18% with major depressive disorder (MDD). The variability of these estimates due to the pattern of sample studied, the criteria used to establish diagnosis of depression. This difference may be due to the fact that symptoms such as fatigue and dysphoric mood are often regarded synonymous with depression, are also common in patients with medical illnesses[9] and may be similar to normal grief[8].

Distinguishing between transitory mood disturbances and clinical depressive syndrome has important clinical implication. Dysphoric mood and psychological distress associated with MI may improve in a relatively short time with or without treatment1[7,8]. In contrast, it is less likely that untreated or poorly treated major depression will remit without relapse[8,10]. Depression is not consistently associated with severity of cardiac illness and severity of cardiac illness in not found to be a risk factor for clinical depression1[6,8,10]. Because depression is a significant source of morbidity and mortality in patients with IHD and has a direct impact on

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the outcome of IHD[3,6,10,11] the ability to predict a favourable therapeutic response may have important prognostic implications. The present study was undertaken to assess the prevalence of depression in the patients with MI and to determine whether depression was related to any allied variables in comparison with major depressive disorder group and non-major depressive disorder group of MI patients. It is likely that major depressive disorder will require and be responsive to psychiatric treatment in patients with MI.

MATERIALS AND METHODS

The study was carried out in the Institute of Postgraduate Medicine & Research, National Institute of Cardiovascular Diseases and Dhaka Medical College Hospital of Dhaka city. A consecutive series of 100 admitted patients of first acute myocardial infarction from May 1995 to June 1996 were selected for the study. Patients older than 75 years of age, cognitive impairment, MI completed with CVD were excluded. Diagnosis of MI was based on WHO criteria i.e. presence of any two of the three criterias e.g. typical clinical features, classical electrocardiographic (ECG) changes and supportive enzymatic evidences12.

Subjects were interviewed at least 2 weeks after having first attack of MI by pretested questionnaire after informed consent. The questionnaire consisted of sociodemographic parameters, relevant informations about MI and depression. Medical history, risk factors, clinical features with particular emphasis on complications, laboratory findings, treatment given and outcome were recocded. Type of MI was considered according to ECG findings. The risk factors were hypertension (if the distolic blood pressure was persistently more than 95 mm Hg), diabetes mellitus (if blood sugar level 2 hours after 75 gm of glucose was more than 180 mg%), hypercholesterolaemia (if fasting serum cholesterol level was more than 25mg%), smoking (if consuming for more than 3 months), consumption of contraceptive oral pills (if taken for more than 6 months), family history of Ischaemic heart diseases (if present in any of the first degree relatives) and type A behaviour (identified by diagnostic indicators of type A behaviour[13]).

Recent life events were measured on Social Readjustment Rating Scale (SRRS) of Holmes and Rahe 14 with considerable modification. The time period for which events were recorded for the MI patients was one year immediately prior to the onset of MI.

Major depressive disorder was assessed clinically by DSM-IV criteria for Major Depressive Episode (MDE)[15] Those patients who did not fulfill the criteria of MDE but had depressed mood with or without other symptoms of MDE were considered as patients with depression as symptom. The Hamilton Rating Scale for Depression (HRSD)[16] was used to test and quantify it.

The collected data were processed and comparison was made between major Depressive Disorder (MDD) and Non-major Depressive Disorder (Non-MDD) group of MI patients. Statistical analysis was involved two tailed t-tests and x^2 test to interpret the data.

RESULTS

Among the 100 patients of first attack of MI, 26 patients were diagnosed as having MDD by DSM-IV criteria. Another 26 patients had depression as symptom. The total 53% of the MI patients were found to be suffering from depression.

On the basis of DSM-IV diagnostic criteria of MDE, patients classified as currently either having or not having MDD and comparison was made between two groups. The baseline characteristics of these patients are presented in Table-I. Their age ranged between 28 and 74 years with a mean of 49.20 (SD = 10.06) years. Majority of the patients were in age group of 46-55 years and 6 cases were aged below 35 years. Mean age of MDD group was 48.96 (SD = 9.88) years and that for Non-MDD group was 49.29 (SD = 10.11) years. The difference was not statistically significant (t -0.28, df = 98, P >0.05). Among the subjects 70 were male and 30 were female with a male-female ratio 1:0.45. Male-female ratio for MDD patients was 1:0.53 insignificantly differed from that for Non-MDD patients, which was 1:0.40. The differences in other demographic variables between MDD and Non-MDD patients were not statistically significant.

Table-I : CHARACTERISTICS OF MAJOR DEPRESSED VERSUS ON-MAJOR DEPRESSED PATIENTS

Characteristics	MDD (n=26)	Non-MDD (N=74)	Significance
Age (year)	48.96 ± 9.88	49.29 ± 10.11	NS
Sex (Male : Female)	17 : 9	53 : 21	NS
Duration of MI	2.31±1.69	2.30±1.72	NS
Types of MI			
Anterior	14 (53.85%)	45 (60.81%)	NS
Inferior	7 (26.92%)	24 (32.43%)	NS
Mixed anterior & inferior	3(11.54%)	7 (9.46%)	NS
Risk factors			
Smoking	12 (46.15%)	33 (44.59%	NS
Hypertension	14 (53.85%)	31 (41.89%)	NS
Diabetes Mellitus	8 (30.77%)	22 (29.73%)	NS
Hypercholesterolaemia	10 (38.46%)	25 (33.78%)	NS
Family history of MI	5 (19.23%)	14 (18.92%)	NS
Type A behaviour	5 (19.23%)	3(4.05%)	P <0.01
Complications			
Arrhythmias	12 (46.15%)	38 (51.35%)	NS
Left ventricular failure	3 (11.54%)	12 (16.22%)	NS
Both ventricular failure	5 (19.23%)	11 (14.86%)	NS
Cardiogenic shock	1 (3.85%)	2 (2.70%)	NS
Conduction defects	4(15.38%)	7 (9.46%)	NS
Left events			
Mean total event	3.31±1.21	2.35±1.58	P<0.01
Mean duration (month)	4.85±3.62	4.95±3.53	NS
Mean L.C.U.	85±48.37	74±42.59	NS
Mean HRSD score	27.23±4.88	10.45±3.03	P<0.001
Past history of depression	8 (30.77%)	3 (4.05%)	P<0.001
Family history of depression	5 (19.23%)	2 (2.70%)	P<0.001

Duration of MI in majority of the cases were below one month. The mean duration of MI in MDD group was 2.31 (SD = 1.69) months and that was 2.30 (SD=1.77) months in Non-MDD group. The difference was not statistically significant (t=0.03), df = 98, P>0.05). Among the 100 patients, 59 had anterior MI. 31 had inferior MI and 10 had mixed anterior & inferior MI. No significant difference of types of MI was found between MDD and Non-MDD patients. Smoking and hypertension were two major risk factors with 45 cases for each. As smoking was found only in the male patients therefore it was single largest risk factor (64.29% among the male

patients. Eight patients were found type A behaviour and all were males. Consumption of oral contraceptive pills, a particular factor to women observed in [7] cases. With the cexception of type A behaviour there were no statistical difference of risk factor between MDD and Non-MDD group. Type A behaviour was 19.23% of the patients with depression compared with 4.05% without depression (P<0.01). Analysis of medications of MI used in our subjects revealed no significant differences between two groups. Among the subjects, arrhythmias (50%) were the commonest complication. The differences of complications of MI between depressed and non-depressed group was not significant (all P values were > 0.05)

The MDD patients reported a total of 86 events, with a mean of 3.31 (SD = 1.21) for each patient. The Non-MDD patients reported a total of 174 events, with a mean of 2.35 (SD = 1.58). This revealed that depressed MI patients reported excess of life events than non-depressed MI patients which was statistically significant (t=2.94, df = 98, P 0.>01). Mean score of life events was 85 (SD=84.37) for depressed patients and that was 74 (SD = 42.59) for non depressed patients which was not statistically significant (t = 1.09, df = 98, p >0.05). The mean duration of life events 12 months before the onset of MI was found to be 4.85 (SD =3.62) months in depressed patients and was 4.95 (SD = 3.53) months for Non-MDD patients. This difference was also not significant (t=0.12, df = 98, P>0.05). Of the 34 events higher level of increased frequency was found for serious personal illness, serious financial problem or loss, family arguments, serious chronic illness diagnosed and marital discord . The significance of difference between MDD and Non-MDD patients was tested by x^2, using Yetes' correction when appropriate for each event. This analysis indicated that there was no significant difference of frequency of any life event between two groups. To further explore the implications of these results, the events were categorized into the area of activity. For each category, frequencies were again calculated and significance of differences were

tested. Eight categories were so derived. Findings for this categorization revealed that only in two of the categrories- occupational and conjugal, the differences were significantly higher in depressed patients than non depressed patients at 5% level or more.

Among the subjects, past history of depression was present in 11 cases. Of these 8 cases were of MDD group and 3 cases were of Non-MDD group. The difference was statistically significant (P<0.001). First degree family history of depressive disorder was absent in most of the cases. Of the 7 cases of positive family history of depressive disorder, 5 cases were found in nondepressed group and 2 cases were found in depressed group. This difference was also significant (P<0.001).

Of the 26 cases of MDD, mean duration of depression after MI was 2.11 (SD=1.84) months and for most of the cases (38.46%) duration of MDD were within one month after MI.

Of the total sample, mean HRSD score for MDD patients was 27.23 (SD=4.88) and that for Non-MDD patients was 10.45 (SD = 3.03). The difference was highly significant (t = 20.42, df = 28, P <0.001). Considering the severity of 26 MDD patients on the basis of HRSD score, 10 were severe, 13 were moderate and 3 were mild. This result was tested and compared with the clinical assessment of severity of MDD according to DSM-IV by which severe, moderate and mild type of depression were found 13, 10 and 3 cases respectively. This comparison of severity of depression is shown in Figure-1.
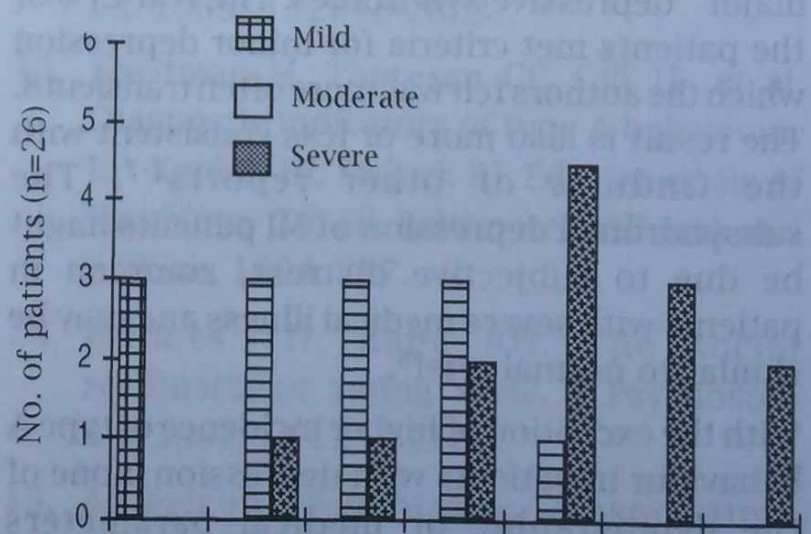

Fig. -1 : *Severity of major depressive disorder on the basis of HRSD score in relation with DSM-IV*

Analysis of frequency of depressive symptoms according to DSM-IV revealed that all the 26 cases had depressed mood, insomnia. Loss of interest & fatigue were found 24 cases of each. Suicidal thought was found in 15 cases. Feeling of worthlessness or guilt was found in 12 cases. Psychomotor agitation was seen in 14 cases and retardation in 12 cases. Only one case had associated mood congruent psychotic features. These were delusion of guilt, persecutory delusion and auditory hallucination.

The frequency distribution of symptoms of depression in the 26 MDD patients on the basis of HRSD was found more or less similar as found in SDM-IV criteria. In addition, almost all, the depressed MI patients had both psychic-somatic anxiety and somatic symptoms. Hypochondriasis was found in 23 cases.

Among the 26 MDD patients, 9 (34.62%) patients were receiving antidepressants.

DISCUSSION

In the present study, 26% the MI patients were diagnosed as MDD and another 26% of the subjects were depression ass symptom. This result corresponds closely to the prevalence of depression reported in a recent study carried out by Schleifer et al[8] where 283 patients admitted to cardiac care units of two urban teaching hospitals were interviewed 8 to 10 days after MI and 45% met diagnostic criteria for minor or major depression including 18% with major depressive syndromes. The rest 27% of the patients met criteria for minor depression which the authors felt was more often transient8. The result is also more or less consistent with the findings of other reports[1-7]. The subsyndromal depression of MI patients might be due to subjective distress, common in patients with severe medical illness and may be similar to normal grief[8].

With the exception of higher incidence of type A behaviour in patients with depression, none of the demographic or medical parameters assessed, were significantly different between MDD and Non-MDD patients. Thus depression was not related to the medical status of patients. Our findings of these comparison between two groups are almost similar with the reports of Carney et al[1] and Schleifer et al[8].

In our study, patients with MDD had significantly higher mean frequency on total life events than Non-MDD patients. Our findings is in favour of high degree of correlation between MI and recent life events in causation of depressive disorder. Again category analysis report indicates that greater relationship and occupational problems are the main stressful events significantly associated with depressive disorder in MI.

In the present study, personal and family history of depression both significant higher in MDD than Non-MDD patients which are consistent with the report of Carney et al[11] and could be identified as risk factors for depressive disorder after MI.

In our study, the severity of depression assessed by HRSD score were well consistent with DSM-IV which indicated reliability and validity of the assessment, though moderate was little excess and severe was slightly less than that of DSM-IV. This might be due to some artifacts or limitation in applying rating scale in our set-up.

In the present study, the profile of depressive symptoms according to DSM-IV criteria revealed that depressed MI patients had elevated levels of depressed mood, insomnia, psychomotor agitation or retardation, loss of interest fatigue suicadal thought, considerable feelings of guiltl but relative lack of psychotic feature. The result was found almost similar with the analysis of HRDS score, in additional characteristics of psychic-somatic anxiety, somatic symptoms and hypochondriasis. The good quantitative and qualitative concordance between the HRSD and DSM-IV criteria suggests that this simple screening device could be used but physicians to detect clinical depression in patients with MI.

Because of the predictive validity of the diagnostic criteria, appropriate treatment for depression in patients who meet DSM-IV criteria can be expected to be successful. It is likely that

depression defined by this criteria will require and be responsive to psychiatric treatment in patients with MI. Major depression has a direct negative impact in the outcome of cardiovascular disease which was reported in several studies[3,11,17]. Therefore, in would be especially desirable to treat depressive disorder in patients with preexisting MI. Multiple sutudies[18-21] have documented that depressed patients after MI with or without complications can be, for the most of the part, safely and effectively treated with antidepressants, although orthostatic hypotension is a frequent problem and patients with bundle branch block are at risk for potentially fatal conduction complication if treated with tricyclics.

Here, in this study, 34.62% MDD patients were getting antidepressants. This indicates growing awareness about the existence of depression among the patients with MI.

Our findings suggests that among the patients with MI, subsyndromal depression are a frequent and self limited reaction to onset of MI but major depressive disorder is a distinct illness and need psychiatric treatment, leading to an overall reduction in morbidity.

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