Depression in Acute Myocardial Infarction

Khalid Mahmood Hayawi[1], Ghada Tareq Najeeb[2], Dhelal Ahmad[3]

[1] F.I.C.M.S (Psych) – M.B.Ch.B .Ibn-Sena Teaching Hospital, IRAQ
[2] F.I.C.M.S (Family Medicine) – M.B.Ch.B .Ibn-Sena Teaching Hospital, IRAQ
[3] F.C.M.S (Family Medicine) – Al- Khansaa Teaching Hospital, IRAQ

ABSTRACT

Case control study was conducted inIbn-Sina teaching hospital in Mosul city to estimate the frequency and severity of depression among acute myocardial infarction patients and to assess several risk factors associated with development of depression in such patients. The present study revealed that depression prevalent 38,67% of study patients .The mean age of depressed patients was(53,9%±7,9) for both female and male patients, female to male ratio was 1,64:1 . A significant association was found between unemployment (P=0.05), low educational status (P= 0.001), residence in urban area (P= 0.001), low socio economic status (P= 0.001), stressful life events (P= 0.01), living alone (P= 0.001), unmarried (P= 0.001) and positive family history of MI (P= 0.05) and the development of depression among Acute Myocardial Infarction patients. Regarding the severity of depression a significant association was found between severity of depression and marital status (P= 0.01) as well as stress (P= 0.05) in the depressed study patients. Regarding the severity of depression a significant association was found between severity of depression and marital status (P= 0.01) as well as stress (P= 0.05) in the depressed study patients.

Key words: depression, myocardial, infarction

INTRODUCTION

Myocardial infarction (MI) is the irreversible necrosis of myocardial muscle secondary to prolonged ischemia[1,2]

This usually results from an imbalance between oxygen supply and demand . As many as 65% of patients with acute myocardial infarction report experiencing symptoms of depression; major depression is present in 15-22% of these patients.[3] During the past two decades, a substantial body of evidence has established a link between depression, cardiovascular disease and mortality.[4,5] Many large, community-based   epidemiologic studies demonstrated a significant relationship between depression and mortality in patients with myocardial infarction.[6,7]

Aim of study

To estimate the prevalence of depression among the study AMI patients.
To categories depressed patients into mild, moderate and severe categories.
To measure the strength of association of assessed risk factors and development of depression among study patients.

MATERIALS AND METHODS

1. Study Setting:
It was decided to collect the study sample from Ibn- Sin teaching hospital
2. Study Samples:
Case definition: study cases are patients admitted to the CCU who meet at least 2 of the following criteria for diagnosis of AMI: [3,38]
Typical ischemic chest pain lasting at least 30 minutes.
Electrocardiogram (ECG) changes.
A peak creatinine phosphokinase level greater than 1.5 times the normal limit.

Data Collection procedure

Interview of the patient was carried out. Assessment of the patient for the presence of depression was done according to the Manual International Neuropsychiatric Interview (M.I.N.I.) which is based on DSM (IV) criteria and translated to Arabic language.

Then positive case for depression by (MINI) was assessed according to the Beck Depression Inventory (BDI) scoresto measure the severity of depression (Mild, Moderate and Severe)[40].

After that, sociodemographic data was collected V) criteria and translated to Arabic language.

RESULTS

A sample of 150 patients suffering from acute myocardial infarction were studied,39 (26%) were females &111 (74%) were males, male to female ratio was 2.85:1. The age range of patients with acute myocardial infarction was 20-70 years with mean age of (50. 96 ± 9.77 years).

From those 150 patients with acute myocardial infarction 58 patients(38.67%) had depression, their mean age was (53.93±791),while the male to female ratio was1:1.64.

Table (1): 65.5% of depressed patients were between the age 51-60 year. Patients in this age group were significantly eleven time more prone to develop depression.

Table (1): Association of age and development of depression among MI patients (Below)

Age (year)	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
≤40*	3	5.2	19	20.7	-	-	-
41-50	11	19.0	38	41.3	1.83	0.46-7.36	NS
51-60	38	65.5	22	23.9	10.94	2.91-42.20	0.001
>60	6	10.3	13	14.1	2.92	0.62-13.84	NS
Total	58	100	92	100			

Table (2): Female patients were at significant risk equal to more than two time for the development of depression (Below)

Gender	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Female	22	37.9	17	18.5	2.70	1.28-5.69	0.01
Male	36	62.1	75	81.5			
Total	58	100	92	100			

Table (3): A statistically significant association is shown between non employment & the development of depression in acute myocardial infarction patients (Below).

Occupation	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Not-employed	31	53.4	26	28.3	3.88	1.13-13.34	0.05
Private work	12	20.7	35	38.0	1.11	0.30-0.41	NS
Retired	11	19.0	16	17.4	2.23	0.57-8.7	NS
Employed *	4	6.9	13	14.1	-	-	-
Student	0	0.0	2	2.2			
Total	58	100	92	100			

Table (4): An association of highly significant value is found between development of depression in AMI patients and residence in urban regions (Below).

Residence	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Urban	56	96.6	57	62.0	17.19	3.95-74.92	0.001
Rural	2	3.4	35	35.9			
Total	58	100	92	100			

Table (5): Association of socioeconomic status and depression among MI patients. BELOW

Socio-economic status	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Low	56	96.6	26	28.3	71.08	16.2-312.8	0.001
High	2	3.4	66	71.7			
Total	58	100	92	100			

Table (6); shows that illiteracy is a significant causative factor played a role in the development of depression among MI patients (Below)

educational background	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Illiterate	27	46.6	12	13.0	7.16	0.08-1.60	0.001
Primary	14	24.1	25	27.2	1.78	0.70-4.57	NS
Secondary	6	10.3	20	21.7	0.96	0.31-2.97	NS
University + *	11	19.0	35	380	-	-	-
Total	58	100	92	100			

Table (7): Marital status also played a well-documented significant role in the development of depression among MI patien (Below)

Marital status	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Single*	18	31.0	4	4.3	9.9	3.15-31.14	0.001
Married	40	69.0	88	95.7			
Total	58	100	92	100			

Table (8): shows that more than one quarter (28.7%) of the depressed patients had stressful life events compared to 19.6% of the non-depressed patients. An association of significant value (Below)

stressful life events	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Present	25	28.7	18	19.6	3.1	1.5-6.5	0.01
Absent	33	71.3	74	80.4			
Total	58	100	92	100			

Table (9): Those who live alone had significantly twelve-time risk to have depression than those who live with their family (Below)

living within a family unit	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
NO	20	34.5	4	4.3	11.6	3.7-36.2	0.001
YES	38	65.5	88	95.7			
Total	58	100	92	100			

Table (10): Association of family history of MI and depression among MI patients. (Below)

MI Family history	MI + Dep.		MI		OR	95% C.I.	p-value
	No.	%	No.	%			
Positive	36	62.1	39	42.4	2.2	1.1-4.4	0.05
Negative	22	37.9	53	57.6			
Total	58	100	92	100			

Table (11): Association of age and the severity of depression among MI patients. (Below)

Age (year)	Moderate & severe		Mild		p-value
	No.	%	No.	%	
≤ 40	0	0.0	3	10.7	NS
41-50	6	20.0	5	17.9	NS
51-60	22	73.3	16	57.1	NS
60 +	2	6.7	4	14.3	NS
Total	30	100	28	100	

Table (12) Occupation also showed no significant association with the severity of depression in AMI patients which is presented in below

Occupation	Moderate & severe		Mild		P value
	No.	%	No.	%	
Non-employed	17	60.7	14	46.7	NS
Private work	5	17.9	7	23.3	NS
Retired	4	14.3	7	23.3	NS
Employed	2	7.1	2	6.7	NS
Total	28	100	30	100	

Table (13): Association of female gender with severity of depression in patients with MI (.Below)

Gender	Moderate & severe		Mild		p-value
	No.	%	No.	%	
Female	14	46.7	8	28.6	NS
Male	16	53.3	20	71.4	
Total	30	100	28	100	

Table (14): Association of education level and severity of depression in patients with MI (Below)

Level of education	Moderate & severe		Mild		p-value
	No.	%	No.	%	
Illiterate	13	43.3	14	50.0	NS
Primary	6	20.0	8	28.6	NS
Secondary	3	10.0	3	10.7	NS
University +	8	26.6	3	10.7	-
Total	30	100	28	100	

Table (15): Just significant association between the presence of stressful life events and development of severe depression in MI patients is shown (Below)

Stress	Moderate & severe		Mild		p-value
	No.	%	No.	%	
Present	8	28.6	17	56.7	0.05
Absent	20	71.4	13	43.3	
Total	30	100	28	100	

Table (16): Association of living within a family unit and severity of depression in patients with MI. (Below)

living within a family unit	Moderate & severe		Mild		p-value
	No.	%	No.	%	
NO	13	56.7	7	25.0	NS
YES	17	43.3	21	75.0	
Total	30	100	28	100	

Table (17): Association of family history of MI and severity of depression in patients with MI (Below)

MI Family history	Moderate & severe		Mild		p-value
	No.	%	No.	%	
Positive	21	70.0	15	53.6	NS
Negative	9	30.0	13	46.4	
Total	30	100	28	100	

Table (18): Association of family history of depression and severity of depression in patients with MI (Below)

Depression Family history	Moderate & severe		Mild		p-value
	No.	%	No.	%	
Positive	1	3.3	3	10.7	NS
Negative	29	96.7	25	89.3	
Total	30	100	28	100	

DISCUSSION

Depression is common phenomenon among patients recovering from acute myocardial infarction [8,9,]. Over the last decade, increasing evidence suggested that, in addition to the effect of depression on the quality of life, it also has an effect on the prognosis of AMI and a reported relation to increased morbidity and mortality [10,11,,12,]. When a depressed mood is severe and accompanied by other symptoms that persist every day for two or more weeks, it can deteriorate the patient's condition and aggravate the damage, increasing the risk of worsening the prognosis of acute coronary syndrome [13,14,15].

Some research has shown that persons who are depressed and have pre-existing cardiovascular disease have a 3.5 times greater risk of dying of a myocardial infarction than patients with cardiac disease who are not depressed. [16,17,18].

This study has examined depressive symptoms in patients after AMI and focused on the rate of depression and the sociodemographic characteristics of study patients. It also determines the relation of the stressful life events and social support with the development of depression in AMI patients.

Similarly, there was significant association between development of depression & the living alone, history of stressful life events & family history of AMI in the patients with AMI.2-Finally a significant association was found between severity of depression & stress together with marital status of AMI study patients [19,20].

CONCLUSIONS

1. There is a high rate of depression in AMI patients (38.7%).
2. Almost tow third of depressed patients were in the age group (51-60) years.
3. A significant association was found between depression & female gender of the AMI patients (P value = 0.05, OR= 2.7)
4. A significant association was found between depression & the sociodemographic characteristics of AMI patients these include occupation, marital status, residence, socioeconomic status & educational level.

5. Similarly there was significant association between development of depression & the living alone, history of stressful life events & family history of AMI in the patients with AMI.
6. Finally a significant association was found between severity of depression and stress together with marital status of AMI study patients.

RECOMMENDATION

According to the results of the present study, the following are recommendation for action:

1. Early recognition of depression in AMI patients which identifies a sizeable subgroup of patient at high risk of poor outcome, so monitoring and early treatment could have substantial benefit.
2. 2-Those patients with depressive symptoms should be educated through a good counseling to help them to understand the effect of depression on prognosis and outcome of MI and importance of treatment.
3. Public education and awareness to reduce barriers to treatment by increasing awareness of the frequency of post MI depression and their treatability, reduce the stigma and discrimihation of the psychiatric illness.
4. Giving care at the community level: need the use of all available resources to limit the stigma of having any psychiatric illness and taking treatment.

REFERENCES

[1] Tully, PJ, Cosh, SM, Baumeister, H. The anxious heart in whose mind? A systematic review and meta-regression of factors associated with anxiety disorder diagnosis, treatment and morbidity risk in coronary heart disease. J Psychosom Res 2014; 77: 439–448

[2] Carney RM, Blumenthal JA, Catellier D. et al. Depression as a risk factor for mortality after acute myocardial infarction. Am J Cardiol. 2003;92(11):1277–81. [PubMed]

[3] Thombs BD, Bass EB, Ford DE, et al. Prevalence of depressionin survivors of acute myocardial infarction. review of the evidence. J Gen Intern Med. 2006; 21(1):30-38.

[4] Martin CR, Lewin RJ, Thompson DR. A confirmatory factor analysis of the Hospital Anxiety and Depression Scale in coronary care patients following acute myocardial infarction. Psychiatry Res. 2003;120(1):85–94. [PubMed]

[5] Post-Myocardial Infarction Depression Clinical Practice Guideline Panel. AAFP guideline for the detection and managementof post-myocardial infarction depression. Ann Fam Med.2009; 7(1):71-79.

[6] Whooley MA. To screen or not to screen? Depression in patients with cardiovascular disease. J Am Coll Cardiol.2009; 54(10):891-893.

[7] Carney RM, Freedland KE, Jaffe AS. Depression screening inpatients with heart disease. JAMA. 2009;301(13):1337; authorreply 1338

[8] Kaufman MW, Fitzgibbons JP, Sussman EJ. Relation between myocardial infarction, depression, hostility, death. Am Heart J 1999;138:549-554.

[9] Joergensen, TSH, Maartensson, S, Ibfelt, EH Depression following acute coronary syndrome: A Danish nationwide study of potential risk factors. Soc Psychiatry Psychiatr Epidemiol 2016; 51: 1509–1523.

[10] Pratt LA, ford DE, Crum RM. Depression, psychotropic medication and risk of myocardial infarction. Circulation 1996; 94:3132-3129.

[11] Blumenthal JA, O'Connor C. No laughing matter. J Am Coll Cardiol. 2010;55(8):836; author reply 836-7

[12] Ryan TJ, Antman EM, Brooks NH. Guidelines for the management of patients with acute myocardial infarction. J Am Coll Cardiol 1999;34: 890-911.

[13] Alexopoulos GS, Meyers BS, Young RC. Vasular depression hypothesis. Arch Gen psychiatry 1997;54: 915-022.

[14] Whyte EM, Pollock BG, Wagner WR. Influence of serotonin-transporter-linked promoter region polymorphism in platelet activation in geriatric depression. Am J Psychiatry 2001; 158: 2074-2076.

[15] Effect of escitalopram vs placebo treatment for depression on long-term cardiac outcomes in patients with acute coronary syndrome: a randomized clinical trial. Kim JM, Stewart R, Lee YS, et al. JAMA. 2018;320:350–358

[16] Severus NE, Littman AB, Stall AL. OmeL:..7a-3 fatty acids, homocysteine, and the increased risk of cardiovascular mortality in major depressive disorder. Harr- Rev Psychiatry 2001; 9:280-293.

[17] Watkins LL, Schneiderman N, Blumenthal JA. Cognitive and somatic symptoms of depression are associa:ed with medical co-morbidity in patients after myocardial infarction. Am Heart J2003; 146:48-54.

[18] Pogosova, N, Saner, H, Pedersen, SS Psychosocial aspects in cardiac rehabilitation: From theory to practice. A position paper from the Cardiac Rehabilitation Section of the European Association of Cardiovascular Prevention and Rehabilitation of the European Society of Cardiology. Eur J Prev Cardiol 2015; 22: 1290–1306

[19] Krishnan MN, Zachariah G, Venugopal K, Mohanan PP, Harikrishnan S, Sanjay G, et al. Prevalence of coronary artery disease and its risk factors in Kerala, South India: A community-based cross-sectional study. BMC Cardiovasc Disord 2016;16:12.

[20] Sattar KA, Qidwai W, Nanji K. Psychosocial risk factors for acute myocardial infarction: Results of a case-control study in a teaching hospital at Karachi, Pakistan. Acta Psychopathol 2015;1:3.