

ORIGINAL ARTICLE

An Evaluation of Lipid Abnormalities in Patients of Acute Myocardial Infarction at Tertiary Care Hospital

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ABSTRACT

Objective: To evaluate the lipid abnormalities in cases with acute myocardial infarction at tertiary care hospital.**Material and methods:** Between May 2020 to November 2020, total 100 patients of acute myocardial infarction having age 20-40 years of both gender (male/female) were recruited from Department of Cardiology, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan. Lipid abnormalities were evaluated in this study.**Results:** Total 100 patients with myocardial infarction were selected and lipid abnormalities were evaluated. Age range was 20-40 years with mean age 29.90 ± 6.08 years. In this study total 100 patients with acute myocardial infarction were evaluated for lipid abnormalities. Raised serum total cholesterol was noted in 38 (38%) patients followed by raised serum triglycerides in 47 (47%) patients, raised serum LDL in 26 (26%) patients and decreased serum HDL was seen in 14 (14%) patients.**Conclusion:** Results of this study showed that raised Triglycerides and Raised Total Cholesterol were most common lipid abnormalities in cases with acute myocardial infarction. Most of the patients were males. Obese patients were more common as compared to non-obese.**Keywords:** Dyslipidemia, acute myocardial infarction, Non-ST-elevation, ST elevation

INTRODUCTION

The thrombus is composed of fibrin and platelets by which the occlusion of atherosclerotic blood vessels occur causing a common cardiac disease called Myocardial infarction (MI).¹ Majority of the complications occur within few minutes or days of initial attack in acute MI which is very common presentation of acute coronary syndrome.²

ST elevation (STEMI) and Non-ST-elevation MI are classifications of acute MI.³ The utility classification of MI as ST-elevation MI and non-ST elevation MI has difference on management and prognosis.⁴ About 12% hospitals in USA short term patients of STEMI have a remarkably high mortality rate.⁵ Intracardiac thrombi or masses, cocaine abuse, collagen vascular disease, unstable angina and hypercoagulability are the multiple risk factors which the patients of STEMI can develop.⁶ The greatest risk is faced by patients with combinations of risk factors like Dyslipidemia, smoking, hypertension and diabetes.⁷

A major common factor for CAD is Dyslipidemia which is the abnormal quantity of lipids like triglycerides, cholesterol and/or fat phospholipids in the blood.⁸ An often impact of diet and lifestyle most of the dyslipidemias are hyperlipidemias which is the elevation of lipids in the blood.⁹ There are two types of Dyslipidemia, the Primary dyslipidemia is inherited and Secondary dyslipidemia is an acquired.¹⁰

Operational definitions:

Young: A patient was considered young if his/her age was 20- 40 years.

Lipid profile will be considered deranged if any one of the followings:

- Total Cholesterol level $>200\text{mg/dl}$.
- Triglyceride level $>150\text{mg/dl}$.
- High density lipoprotein (HDL) $<40\text{mg/dl}$ in males and $<50\text{mg/dl}$ in females.
- Low density lipoprotein (LDL) $>130\text{mg/dl}$

Myocardial infarction: A patient was diagnosed as a case of acute myocardial infarction if he/she was presented with all of the following i.e. an acute (within 24 hours) onset of typical chest pain (+nausea, vomiting, sweating) and ST elevation in at least 2 contiguous leads of $\geq 2\text{mm}$ in men and $\geq 1.5\text{mm}$ in women in leads V2-V3 and of $\geq 1\text{mm}$ in other contiguous chest leads and limb leads on 12 leads ECG and/or R wave in lead V1-V3 with $\geq 1\text{mm}$ ST depression and upright T wave and ST elevation $\geq 1\text{mm}$ in posterior chest leads V7-V9.

MATERIAL AND METHODS

Between May 2020 to November 2020, total 100 patients of acute myocardial infarction having age 20-40 years of both gender (male/female) were recruited from Department of Cardiology, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan. Patients taking stain treatment, patients of hypothyroidism, diabetic patients, patients with chronic kidney disease (CKD) and smokers were excluded from the study.

Study was approved by the ethical committee and written informed consent was taken from every patients.

Approval of the ethical committee was taken before starting the study and written informed consent was taken from every patient.

All patients were clinically evaluated. Weight and height was taken to calculate the BMI.

Five ml blood sample was drawn from all patients and send to laboratory of analysis of lipid profile. Findings were noted on pre-designed Performa along with demographic profile of the patients.

Numerical data was presented as mean and SD while categorical variables were presented as frequency and percentage.

RESULTS

Total 100 patients with myocardial infarction were selected and lipid abnormalities were evaluated. Age range was 20-40 years with mean age 29.90 ± 6.08 years.

In this study total 100 patients with acute myocardial infarction were evaluated for lipid abnormalities. Raised serum total cholesterol was noted in 38 (38%) patients followed by raised serum triglycerides in 47 (47%) patients, raised serum LDL in 26 (26%) patients and decreased serum HDL was seen in 14 (14%) patients. (Table 1)

Male patients were 66 (66%) and female patients were 34 (34%). Raised Total Cholesterol was noted in 37 (56.06%) male patients while in 1 (2.94%) female patients. Significant ($P = 0.000$) association between raised total cholesterol and gender was seen.

Raised Triglycerides was noted in 35 (53.03%) male patients and in 12 (35.29%) female patients. Insignificant ($P = 0.138$) association between Raised Triglycerides and gender was noted.

Raised LDL was noted in 16 (24.24%) male patients and 10 (29.41%) female patients respectively. Association of raised LDL with gender was not significant ($P = 0.633$)

Decreased HDL was noted in 10 (15.15%) male patients and 4 (11.76%) female patients. Insignificant ($P = 0.767$) association between decreased HDL and gender was noted. (Table 2)

Two age groups were created i.e. age group 20-30 years and age group 31-40 years. Total 51 (51%) patients belonged to age group 20-30 years while 49 (49%) patients belonged to age group 31-40 years. Raised Total Cholesterol was found in 14 (27.45%) patients of age group 20-30 years in 24 (48.98%) patients of age group 31-40 years. Significant ($P = 0.038$) association between raised total cholesterol and age group was noted.

Total 23 (45.09%) patients of age group 20-30 years and 24 (48.98%) patients of age group 31-40 years were found with Raised Triglycerides. Insignificant ($P = 0.841$) association of Raised Triglycerides with age group was noted.

Raised LDL was seen in 16 (31.37%) patients and 10 (20.41%) patients respectively age group 20-30 years and age group 31-40 years. Association between raised LDL and age group was not significant ($P = 0.257$).

Decrease HDL was found in 9 (17.65%) patients of age group 20-30 years while 5 (10.20%) patients of age group 31-40 years. Association between decreased HDL and age group was not significant ($P = 0.389$). (Table 3)

Table 1: Lipid abnormalities in Acute MI patients (n=100)

Lipid abnormality	Frequency	%
Raised Total Cholesterol	38	38%
Raised Triglycerides	47	47%
Raised Low density Lipoprotein (LDL)	26	26%
Low High density Lipoprotein (HDL)	14	14%

Table 2: Association of lipid abnormalities with gender

Gender	Yes	No	Total	P value
	Raised Total Cholesterol			
Male	37 (56.06%)	29 (43.94%)	66 (66%)	0.000
Female	1 (2.94%)	33 (97.06%)	34 (34%)	
	Raised Triglycerides			
Male	35 (53.03%)	31 (46.97%)	66 (66%)	0.138
Female	12 (35.29%)	22 (64.71%)	34 (34%)	
	Raised LDL			
Male	16 (24.24%)	50 (75.76%)	66 (66%)	0.633
Female	10 (29.41%)	24 (70.58%)	34 (34%)	
	Decreased HDL			
Male	10 (15.15%)	56 (84.15%)	66 (66%)	0.767
Female	4 (11.76%)	30 (88.24%)	34 (34%)	

Table 3: Association of lipid abnormalities with age group

Age Group	Yes	No	Total	P value
	Raised Total Cholesterol			
20-30 Years	14 (27.45%)	37 (72.55%)	51 (51%)	0.038
31-40 Years	24 (48.98%)	25 (51.02%)	49 (49%)	
	Raised Triglycerides			
20-30 Years	23 (45.09%)	28 (54.90%)	51 (51%)	0.841
31-40 Years	24 (48.98%)	25 (51.02%)	49 (49%)	
	Raised LDL			
20-30 Years	16 (31.37%)	35 (68.63%)	51 (51%)	0.257
31-40 Years	10 (20.41%)	39 (79.59%)	49 (49%)	
	Decreased HDL			
20-30 Years	9 (17.65%)	42 (82.35%)	51 (51%)	0.389
31-40 Years	5 (10.20%)	44 (89.80%)	49 (49%)	

Non-obese patients were 22 (22%) while obese patients were 78 (78%). No non-obese patient was found with raised total cholesterol while 38 (48.72%) obese patients were found with raised total cholesterol. Association of raised total cholesterol with obesity was significant ($P = 0.000$).

Raised Triglycerides were found in 6 (27.27%) non-obese patients and in 41 (52.56%) obese patients. Association of Raised Triglycerides with obesity was significant ($P = 0.052$).

Raised LDL was seen in 8 (36.36%) non-obese patients while in 18 (23.08%) obese patients but association between raised LDL and obesity was not significant ($P = 0.271$).

Total 2 (9.09%) non-obese patients and 12 (15.38%) obese patients found with decreased HDL levels. Association between decreased HDL and obesity was not significant ($P = 0.728$). (Table 4)

Table 4: Association of lipid abnormalities with obesity

Table 4. Association of lipid abnormalities with obesity				
Obesity	Yes	No	Total	P value
	Raised Total Cholesterol			
Non-obese	0	22 (100%)	22 (22%)	0.000
Obese	38 (48.72%)	40 (51.28%)	78 (78%)	
	Raised Triglycerides			
Non-obese	6 (27.27%)	16 (72.73%)	22 (22%)	0.052
Obese	41 (52.56%)	37 (47.44%)	78 (78%)	
	Raised LDL			
Non-obese	8 (36.36%)	14 (63.64%)	22 (22%)	0.271
Obese	18 (23.08%)	60 (76.92%)	78 (78%)	
	Decreased HDL			
Non-obese	2 (9.09%)	20 (90.91%)	22 (22%)	0.728
Obese	12 (15.38%)	66 (84.62%)	78 (78%)	

DISCUSSION

Purpose of present study was to evaluate the lipid abnormalities in cases of acute myocardial infarction at tertiary care hospital. Total 100 patients with myocardial infarction were selected and lipid abnormalities were evaluated. Age range was 20-40 years with mean age 29.90 ± 6.08 years.

In study of Kumar et al,¹¹ mean age of the patients of acute myocardial infarction was 53.8 ± 10.2 years which is higher than our study because age range in this study was 25-70 years. In another study by Ali et al,¹² mean age of the patients was 34.13 ± 4.57 years and age range was 20-40 years. Zaman et al¹³ reported mean age as 35 years, Tamrakar et al¹⁴ as 34 years and Alizadehas et al¹⁵ as 31 years which are comparable with our findings.

In present study raised serum total cholesterol was noted in 38 (38%) patients followed by raised serum triglycerides in 47 (47%) patients, raised serum LDL in 26 (26%) patients and decreased serum HDL was seen in 14 (14%) patients.

In study of Kumar et al,¹¹ serum total cholesterol were raised in 32% patients, Serum triglyceride were raised in 65.6% patients, raised serum LDL was noted in 28% patients while decreased serum HDL was noted in 33.2% patients which is comparable with our findings. In study of Kabir et al,¹⁶ raised cholesterol was noted 49% patient followed by increased triglycerides (36%), increased LDL (28%) and decreased HDL (12%) patients. In study of Ali et al,¹² Among 120 patients of acute myocardial infarction, hypertriglyceridemia was noted 45% patients, hypercholesterolemia in 36.67% patients, raised LDL in 25.83% patients and decreased HDL was present in 10.83% patients. Zaman et al¹³ found hypertriglyceridaemia in 68.1% patients followed by increased serum VLDL 53.2%, hypercholesterolemia 34.0%, raised serum LDL 8.5% and decreased HDL in 4.3% patients. Iqbal et al¹⁷ found hypercholesterolemia in 30.6% patients followed by hypertriglyceridemia 30.1% patients and decreased HDL 48.6% patients. In one study by Rao et al¹⁸ frequency of hypercholesterolemia was 82.4%, hypertriglyceridemia 77% and decreased HDL 78%.

In our study male patients were 66 (66%) and female patients were 34 (34%).

In study of Kumar et al,¹¹ male patients were 75.6% while female patients were 24.4%. This male to female ratio is comparable with our study. In study of Ali et al,¹² male patients were 80.83% while female patients were 19.17%. Non-obese patients were 22 (22%) while obese patients were 78 (78%). In study of Kumar et al¹¹ obese patients were 45.2% and rest of the patients were non-obese.

CONCLUSION

Results of this study showed that raised Triglycerides and Raised Total Cholesterol were most common lipid abnormalities in cases

with acute myocardial infarction. Most of the patients were males. Obese patients were more common as compared to non-obese.

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