

Original Research Article

A hospital-based study on lipid profile in acute myocardial infarction in Goa

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ABSTRACT

Background: Acute myocardial infarction (AMI) is by far the most important form of ischemic heart disease (IHD). Epidemiological surveys have shown that atherosclerosis due to dyslipidemia is directly correlated with risk of IHD.

Methods: A prospective Case series study was conducted among 200 patients who suffered from AMI and admitted at Goa medical college, Bambolim from 1st January 2020 to 31st March 2020. After taking consent, the patient's socio-demographic details were taken from the patients and blood sample for lipid profile and inflammatory markers estimation was obtained within 24 h from the onset of symptoms. IEC approval taken before conducting the study.

Results: The patients were aged between 42 and 80 years (mean 59.51±11.41). They included 140 (70%) males and 60 (30%) females. Most of the patients had suffered from anterior wall MI (51, 25%) inferior (72, 36%) lateral wall (15, 7%) septal 62 (31%). The study found a significant association between longer hospital stay and development of complications post MI among patients with raised serum TG levels and low HDL levels.

Conclusions: Our study revealed that with the increase in TG level and decrease in HDL levels, the rate of complications post MI and hospital stay increased which is suggestive that high TG levels and low HDL levels may be a significant marker for post MI. Hence a preventive approach would go a long way to prevent complications.

Keywords: AMI, Lipid profile, Serum cholesterol, Inflammatory markers

INTRODUCTION

Acute myocardial infarction (AMI) is by far the most important form of IHD.¹⁻² The severity of IHD and its resultant mortality can be reduced by controlling modifiable risk factors. Among the modifiable risk factors of IHD--hypertension (HTN), diabetes mellitus (DM), cigarette smoking, dyslipidemia, and severe obesity--dyslipidemia (hyperlipidemia and hypercholesterolemia) has received greatest attention recently.³

Epidemiological surveys have shown that atherosclerosis due to dyslipidemia is directly correlated with the risk of

IHD. Coronary artery disease (CAD) has been directly linked to hypercholesterolemia, particularly elevated plasma levels of cholesterol in low-density lipoproteins (LDL-C).⁴⁻⁵ Increased risk of AMI has been seen in patients with low plasma levels of high-density lipoprotein (HDL-C) cholesterol.⁶

METHODS

A prospective case series study was conducted among 200 patients who suffered from acute myocardial infarction and admitted at Goa medical college, Bambolim from 1st January 2020 to 31st March 2020,

after taking consent from the patient's socio-demographic details were taken from the patients and blood sample for lipid profile and inflammatory markers estimation was obtained within 24 hours from the onset of symptoms. Data was entered on excel sheet and analyzed using SPSS.

Patients with a previous history of IHD were excluded from the study. Individuals with rheumatic disease, chronic liver diseases, renal disorders, cancer, sepsis and patients critically ill with less than 1 month duration of infectious diseases and surgical procedure in 3-month duration, AMI as well as the stroke within the past six months, severe congestive heart failure or cardiogenic shock, regular or chronic use of the anti-inflammatory drugs in the previous two months were excluded from the study.

AMI was defined as per the fourth universal definition of myocardial infarction. NSTEMI-ACS was defined as per the 2014 American heart association (AHA) NSTEMI-ACS guidelines. ECG diagnosis of STEMI-ACS was made in a patient with new ST-segment elevation at the J point in two contiguous leads of more than equal 0.1 mV in all leads other than leads V2-V3. For leads V2-V3, the criteria taken were more than equal 0.2 mV in men, more than equal 45 years, more than equal to 0.25 mV in men <45-years and or more than equal to 0.15 mV in the women.

The laboratory tests included: Serum cholesterol by CHOD PAP (Enzymatic) method, serum triglycerides by GPO PAP (Glycerol phosphate oxidase) method, serum HDL by accelerate selective detergent method, serum LDL by liquid selection detergent method, serum VLDL by calculation, serum aspartate transaminase (SGOT) by NADH w/o P-5'-P method, serum Tn I by chemiluminescent microparticle immuno assay (CMIA) and serum CK-MB by chemiluminescent microparticle immuno assay (CMIA).

Statistical package for the social sciences 24 (SPSS 24) was used for all statistical analyses. All the descriptive variables were expressed as mean, standard deviation (SD), chi-square test was used for the association between two categorical variables.

Sampling size

All patients who were admitted in ward and giving consent during study period were taken.

Sampling technique

Purposive sampling was used.

A probability value $p < 0.05$ was considered statistically significant.

RESULTS

The patients were aged between 42 and 80 years (mean 59.51 ± 11.41). This included 140 (70%) males and 60 (30%) females. Most of the patients had suffered from anterior wall MI (51, 25%) inferior (72, 36%) lateral wall (15, 7%) septal 62 (31%).

The serum cholesterol values ranged from 136 to 287 with mean 256.56 ± 18.23 mg/dl. The 90% of the patients had serum cholesterol in abnormal range. Serum LDL values ranged from 68 to 171 with mean 94.45 ± 7.98 mg/dl, 48% of the patients had serum LDL more than normal range. Serum VLDL values ranged from 22 to 51 mean 24.55 ± 4.51 mg/dl, 30% of the patients had serum VLDL more than normal range.

Serum triglycerides values ranged from 101 to 212 with mean 167.14 ± 12.34 mg/dl. 67% of the patients had serum triglyceride value over the normal range. Serum HDL values ranged from 39 to 62 mg/dl and mean was 54.15 ± 2.88 , Serum HDL levels were found to be low in 97 (49%) of the patients.

Among the patients 83 (43%) of them had post MI complications and 60 (30%) of the patients had a long hospital stay (>7 days).

The study found a significant association between longer hospital stay and development of complications post MI among patients with raised serum TG levels at $p < 0.05$ as described in Table 1 and 2. HDL is a protective lipoprotein, and in patients with a low level of HDL there was significant association of longer hospital stay and post MI complications at ($p < 0.05$) as described in Table 3 and 4.

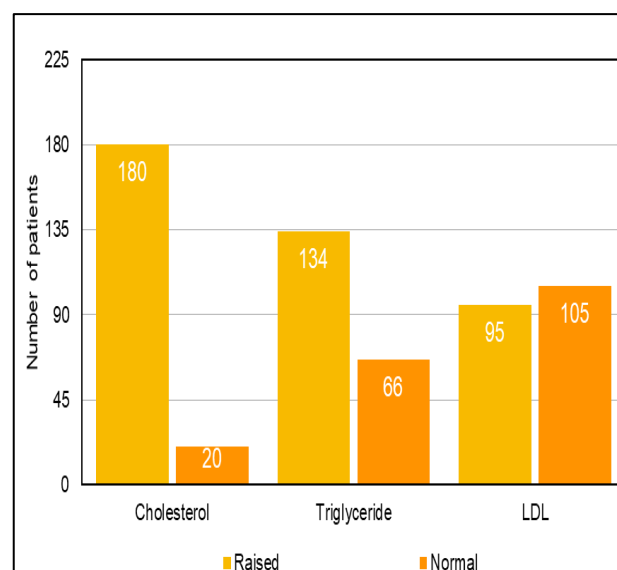


Figure 1: Distribution of patients based on lipid profile.

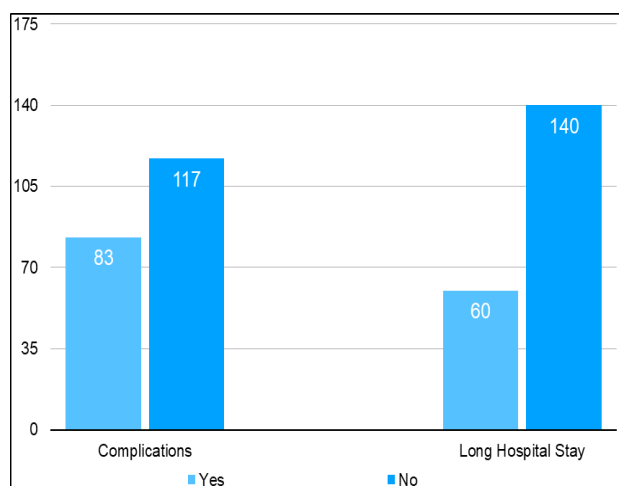


Figure 2: Distribution of patients based on complications and long hospital stay post MI.

Table 1: Association between raised serum TG and longer hospital stay.

Serum TG	Longer hospital stays		Variables
	Increased	Normal	
Raised	55	79	OR=8.4937 (3.2051 to 22.5083), chi=23.5877, df=1, p=0.000
Normal	5	61	

Table 2: Association between raised serum TG and post MI complications.

Serum TG	Post MI complications		Variables
	Yes	No	
Raised	72	62	OR=5.8065 (2.7953 to 12.0612), Chi=25.022, df=1, p=0.000
Normal	11	55	

Table 3: Association between low serum HDL and longer hospital stay.

Serum HDL	Hospital stay		Variables
	Increased	Normal	
Low	57	40	OR=47.5 (14.05 to 160.48, chi=74.20, df=1, p=0.000)
Normal	3	100	

Table 4: Association between low serum HDL and post MI complications.

Serum HDL	Complications post MI		Variables
	Yes	No	
Low	65	32	OR=9.59 (4.94 to 18.58, chi=50.48, df=1, p=0.000)
Normal	18	85	

DISCUSSION

The study conducted by Khan et al found the mean age to be 54.85 ± 10.14 which is similar to our study findings.⁶ Our study found that 70% of the patients that were admitted with MI were males which is similar to study conducted by Shrivastava et al these findings are because males are more prone to develop MI.⁷

The study conducted by Pandey et al showed that anterior wall MI (39, 34.8%), inferior (28, 25%), lateral wall (10, 8.9%), septal (35, 31.3%).⁸ Post MI complications were found in 30% of the participants which is similar to that found by Islam et al at a study conducted in a study conducted in Chittagong which is a port city and is similar to Goa.⁹

We found mean hospital stay to be 6.2 ± 0.7 days which is similar to 7 days found by Khouw et al in his study conducted among south Asian patients.¹⁰ A study conducted among patients admitted with MI in a tertiary care center in Punjab found that mean serum cholesterol, mean serum TG, mean LDL levels, mean HDL levels were 207.5 ± 30.5 , 153.8 ± 10.2 , 149.0 ± 41.2 and 46.6 ± 9.9 respectively.¹¹ Study conducted by Venkateshwarlu et al found a significant association between severity of MI and abnormal lipid profile.¹²

Limitations

Our study is not without limitations as it is a prospective case series study, and we could not compare the findings with a normal population.

CONCLUSION

Our study revealed that with the increase in TG level and decrease in HDL levels, the rate of complications Post MI and hospital stay increased which is suggestive that high TG levels and low HDL levels may be a significant marker for post MI. Hence a preventive approach would go a long way to prevent complications.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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