

ORIGINAL PAPER

Lipid Profile of the Patient with Acute Coronary Syndromes Undergoing Coronary Angiography (CAG) in Rural Costal Region of Maharashtra

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Abstract

Background: Coronary Heart Disease (CHD) is widely prevalent across the globe and significantly high level of Cholesterol in circulation is a single major risk factor associated with coronary heart disease. It is well established that cardiovascular disease is associated with hypertension and elevated blood levels of low-density lipoprotein (LDL), total cholesterol, and triglycerides. In disparity, a low level of high-density lipoprotein (HDL) is a risk factor for mortality from cardiovascular disease. **Aim:** The present study was conducted with the aim to assess the lipid profile in patients of Acute Coronary Syndrome (ACS) undergoing coronary angiography (CAG) in rural coastal population. **Patients and Methods:** The present study was done on 62 patients with Acute Coronary Syndrome (ACS) undergoing coronary angiography (CAG) Serum levels of total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides were examined in biochemical laboratory of the hospital. Coronary angiography was performed for the presence of lesions. **Results:** 43.5% of the patients (n=27) were elderly (age>60 years). Approximately 82% of the patients (n=51) aged more than 50 years. Males outnumbered females with a ratio of 2.4:1. 71% of the patients were males. Mean cholesterol levels were 177.86 mg/dl. Approx 3/4th of the patients (n=41) had cholesterol level <200 mg/dl. Mean triglycerides levels in the patients were 158.29 mg/dl. Only 11 patients out of 62 CAD patients had abnormal triglycerides. Mean LDL level was 119.5 mg and Mean HDL level was 34.5 mg %. The high plasma concentration of low-density lipoprotein (LDL-C) in 30% and the low plasma concentration of high-density lipoprotein (HDL-C) n 33% of patients were important abnormal findings in our patients. **Conclusion:** Dyslipidemia as in form of very low levels of HDL cholesterol with comparatively high levels of LDL-c with near normal total Cholesterol and triglyceride levels associated with ACS in our rural costal region of Maharashtra.

Keywords: coronary heart disease, high-density lipoprotein, low-density lipoprotein, acute coronary syndrome.

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INTRODUCTION

Derangements in lipid profile are one of the best established risk-factors for coronary artery disease (CAD). It is a known fact that CAD in Indians occurs at levels of dyslipidemia much lower than western populations and many Indian patients with CAD have lipid profile that is much lower than their western population¹.

Excess intake of saturated fatty acids associated with decreased cereals, fruit and vegetables does not only alter the lipid profile but also increases the risk of coronary disease. An elevated total/HDL cholesterol ratio and the presence of lipoprotein constitute significant risk factors for coronary events. On the other hand, high HDL cholesterol levels (>45 mg/dl) are considered to be protective in women². Diabetes increases the effects of the other risk factors and modifies the protective effect by estrogens². Men and women share some risk factors, including high serum cholesterol levels, adverse lipoprotein profile, smoking, hypertension, diabetes, obesity, advanced age, and according to some studies sedentary lifestyle. Additional factors that may affect women more than men, are elevated serum triglyceride levels, natural or surgical menopause, use of oral contraceptives (OCs), and possibly hormonal substitution therapy³. Average total cholesterol and LDL cholesterol are higher in men than in premenopausal women, but women's levels rise after menopause until they eventually exceed those of men.⁶ Several studies have shown that high serum concentrations of total and LDL cholesterol and relatively low levels of HDL cholesterol are correlated with development of atherosclerotic lesions and increased cardiovascular risk in men, and that lowering cholesterol reduces the risk⁴. Many studies have demonstrated that postmenopausal use of estrogens alone result in a decrease in LDL and an increase in HDL levels⁴. The present was aimed to study Lipid profile of the patients with ACS undergoing CAG.

MATERIALS AND METHODS

A total of 62 patients presented with ACS undergoing CAG during the period of Jan 2019 to June 2019 at B.K.L. Walawalkar Rural Medical College and Hospital were included in the study.

DEFINITIONS

Following investigations were done:

- Total cholesterol-N- ≤220 mg/dL, >220 mg/dL as abnormal level;
- Triglycerides-N- ≤160 mg/dL, >160 mg/dL as abnormal level;
- HDL cholesterol- N- up to 35 mg/dL, <35 mg/dL in men and <40 mg/dL in women as abnormal level;
- LDL cholesterol-N- up to 130 mg/dL, >130 mg/dL as abnormal level in non-diabetics & non hypertensive but abnormal >100 mg% in DM or/and hypertension.

DATA ANALYSIS

Data were presented as frequency, percentage, and mean.

RESULTS

Table 1 shows that 43.5% of the patients (n=27) were elderly (age>60 years). Approximately 82% of the patients (n=51) aged more than 50 years. Males outnumbered females with a ratio of 2.4:1. 71% of the patients were males (Figure 1). Mean cholesterol levels were 177.86 mg/dl. Almost 3/4 of the patients (n=41) had cholesterol level <200 mg/dL (Table 2). Mean triglycerides levels in the patients with CAD were 158.29 mg/dl. Only 11 patients out of 62 CAD patients had abnormal triglycerides (Table 3). Mean LDL level was 119.5 mg and Mean HDL level was 34.5 mg%.

Table 1. Age-based distribution of patients

Age-group (Year)	Number of Patients
21-30	1
31-40	2
41-50	8
51-60	24
61-70	17
71-80	10
Grand Total	62

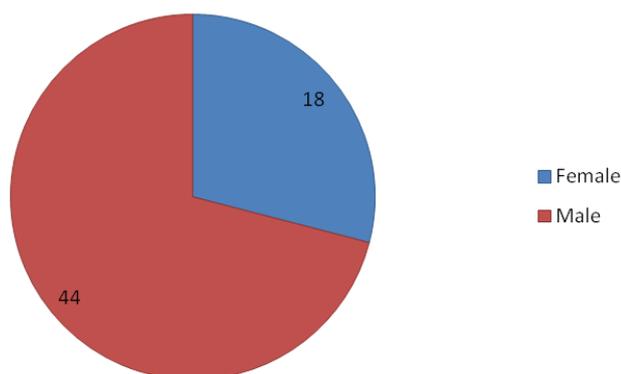


Figure 1. Sex-based distribution of patients

Table 2. Total cholesterol

Cholesterol Level	n	%
Normal	46	74%
Abnormal (>220 mg/dl)	16	26%

Table 3. Serum triglycerides

Triglycerides Level	n	%
Normal	51	82.25%
Abnormal (>160 mg/dl)	11	17.75%

DISCUSSION

Dyslipidemia is an established risk factor for the development of coronary artery disease (CAD), which has been demonstrated through numerous clinical-epidemiological studies⁵⁻⁷. The high plasma concentration of low-density lipoprotein (LDL-C) is directly related to the development of coronary artery disease, and the low plasma concentration of high-density lipoprotein (HDL-C) has been identified as one of the strongest factors risk factors for atherosclerotic coronary disease. New evidence indicates that modest increases in triglycerides increase the risk of coronary events and the progression of coronary artery disease, as well as the formation of new lesions⁸⁻¹⁰. Our study observed that the high plasma concentration of low-density lipoprotein (LDL-C) was seen in 30% of patients and the low plasma concentration of high-density lipoprotein (HDL-C) was detected in 33% of patients.

Table 4. Serum HDL and LDL

Serum HDL and LDL Level	n	%
Abnormal LDL (>130 mg/dl)	19	30%
Abnormal HDL (<35 mg/dl)	21	33%

A study by Gupta et al at found out that total cholesterol levels were not significantly higher in CAD patients compared to healthy age-matched controls¹¹. Patients in our study had similar cholesterol levels i.e. not significantly elevated above normal. However, the above-mentioned comparison is not possible due to absence of healthy subjects in our study.

Another study, of risk factor for CAD in Asian Indians of USA found average LDL cholesterol was 117.8 mg% & 119.08 mg% in our study¹. This study was conducted on 110 Asian Indian physicians residing in United States. Our results are in concordance with the above-mentioned study.

Pant and Pant studied lipid profile in the patients with myocardial infarction (MI). They found that majority of the patients had normal lipid profile¹². Our results are in concordance with the above study.

Korhonen et al reported that high LDL levels are associated with an increased risk of CAD¹³ and our results are in concordance with the above study.

CONCLUSION

Total cholesterol and triglycerides levels were not significantly deranged in our patients but high plasma concentration of low-density lipoprotein (LDL-C) in 30% and the low plasma concentration of high-density lipoprotein (HDL-C) in 33% of patients were important abnormal findings in our patients with CAD. Studies with a larger population are warranted to further validate the association of lipid profile with ACS.

Compliance with ethics requirements: The authors declare no conflict of interest regarding this article. The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5) and the national law. Informed consent was obtained from the patient described in the clinical case and his parents.

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