



STUDY OF DYSLIPIDEMIA IN POSTMENOPAUSAL WOMEN WITH MYOCARDIAL INFARCTION

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ABSTRACT

INTRODUCTION: Coronary artery disease is a leading cause of mortality among postmenopausal women in our country. It has been recognized that women are protected from CAD prior to menopause due to estrogen action. The most common cause of CHD is the development of atherosclerosis. This condition is multifactorial in origin, but dyslipidemia has been identified as a major risk factor. Dyslipidemia is one of the important modifiable risk factors in CHD. **OBJECTIVES:** To study the prevalence of dyslipidemia and type of lipid abnormalities in postmenopausal women with acute myocardial infarction. **METHODS:** 50 postmenopausal women admitted to ICU for acute Myocardial Infarction in Santhiram medical college & General Hospital. **RESULTS:** Out of 50 patients, 30 were already diagnosed with dyslipidemia, 20 were newly diagnosed with dyslipidemia. Twenty-eight patients were having raised Total cholesterol, 20 were having raised triglycerides, 36 patients were having raised LDL-C, and 36 were having HDL-C less than 50mg/dl. **CONCLUSION:** Dyslipidemia was observed in most of the postmenopausal women, in that increased LDL-C levels and decreased HDL-C was the most predominant one. Lifestyle modifications and early initiation of statin therapy in postmenopausal women would increase the cardiovascular benefits.

KEY WORDS : Dyslipidemia, CHD, HDL-C

INTRODUCTION:

Dyslipidemia encompasses patterns often encountered in clinical practice, such as low high-density lipoprotein cholesterol (HDL-C) and elevated triglyceride concentrations but average total plasma cholesterol level.¹

Dyslipidemia also includes elevated lipoprotein(a) and uncommon genetic or acquired disorders of lipoprotein metabolism. Certain rare lipoprotein disorders can cause overt clinical manifestations, but most common dyslipoproteinemias seldom cause symptoms or clinical signs.

In women older than 50 years, atherosclerotic cardiovascular disease (CVD) remains the leading cause of death. Premenopausal women have a much lower risk of cardiovascular events compared with men of their same age.

Reasons for protection in premenopausal women are complex, but a significant contribution is assigned to greater high-density lipoprotein (HDL) levels in younger women, which is an effect of estrogen. Moreover, total cholesterol and LDL levels are lower in premenopausal women than in men^{2,3}.

Favorable lipoprotein profiles in young women are maintained in part by physiologic estrogen levels. Specifically, throughout adulthood, HDL levels are approximately 10 mg/dL higher in women⁴. HDL is inversely associated with ASCVD events⁴. Estrogens can elevate plasma TG and HDL-C levels because of increases in both hepatic VLDL and apo A-I production. Estrogen being an antioxidant, directly inhibits LDL oxidation and decreases the formation of oxidized LDL-C. This antioxidant action helps in the prevention of the formation of foamy macrophages (which play a key role in atherogenesis). This antioxidant action of estrogen protects the coronary endothelium from the deleterious effect that oxidized LDL⁵.

After menopause and with the subsequent declines in estrogen levels, this favorable effect on lipids is lost. The risk of CVD increases exponentially for women as they enter menopause and as estrogen levels decline^{6,7}. Adverse changes in the lipid profile that accompany

menopause include increased levels of total cholesterol, LDL-C, and triglycerides and decreased levels of high-density lipoprotein cholesterol (HDL-C)⁸.

Thus after menopause, the risk of coronary heart disease doubles for women, and at approximately age 60, the atherogenic lipids reach levels higher than those in men. Despite these changes in atherogenic lipids following menopause, total cholesterol and LDL levels can be favorably reduced by dietary modifications, estrogen treatment, and lipid-lowering medications⁶. In postmenopausal women, though estrogens may reduce LDL-C by up to 15% but the use of estrogens for the treatment of lipoprotein disorders is no longer recommended because of the slight increase in CV risk with prolonged use of estrogens in the postmenopausal period^{9,10}.

The risk in a 70-year-old woman to have a CVD would be identical to that of a male of comparable age³.

The usage of nuclear magnetic resonance spectroscopy for lipid profiles, apolipoproteins, particle size, and density has not demonstrated superiority over a standard fasting lipid profile for cardiovascular risk assessment in asymptomatic women¹¹.

METHODOLOGY:

This study was done in 50 postmenopausal women who presented with acute myocardial infarction and got admitted into the ICU of SANTHIRAM MEDICAL COLLEGE AND GENERAL HOSPITAL. The fasting lipid profile of all 50 patients was obtained and analyzed.

INCLUSION CRITERIA:

1. Postmenopausal Women who presented with myocardial infarction.
2. Those who were willing to give informed consent.

Exclusion criteria:

1. Premenopausal women were excluded from the study
2. Those who were not willing to give informed consent.
3. Those patients who had a prior history of diabetes, hypothyroidism, on steroid medications were excluded from the study.

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RESULTS

Among 50 patients with dyslipidemia, 30 were already diagnosed as dyslipidemia, and 20 were newly diagnosed as having dyslipidemia. Out of 30 patients who are already diagnosed with dyslipidemia, only 22 patients were on therapy, while 08 patients, even though diagnosed with dyslipidemia, they were not on any treatment.

Table 1: The mean of lipid parameters.

Lipid parameters	Mean values in mg/dl
Total cholesterol	218± 37.8
triglycerides	146 ± 40.6
LDL-C	136 ± 48.8
HDL-C	48.24 ± 13.2
VLDL	30 ± 18.4

The mean total cholesterol level = 218± 37.8 mg/dl, the mean triglyceride level = 146 ± 40.68 mg/dl, the mean LDL-C level = 136 ± 48.88 mg/dl, the mean HDL-C level = 48.24 ± 13.2 8 mg/dl, the mean VLDL-C = 30 ± 18.48mg/dl.

Mean cholesterol level = 218± 37.8mg/dl. Among 50 patients with dyslipidemia, 28 patients were having total cholesterol level > 200mg/dl, while 22 patients were having total cholesterol < 200mg/dl.

Mean triglyceride levels = 146 ± 40.6mg/dl. Among 50 patients with dyslipidemia, 20 patients were having triglyceride levels > 150mg/dl, while 30 patients were having triglycerides < 150mg/dl.

Mean LDL-C levels = 136 ± 48.8mg/dl. Among 50 patients with dyslipidemia, 36 patients were having an LDL-C level >130mg/dl, while 10 were having LDL-C between 130-100mg/dl, while only 04 were having LDL-C < 100mg/dl.

Mean HDL-C levels = 48.24 ± 13.2 8mg/dl. Among 50 patients with dyslipidemia, 14 were having HDL-C >50mg/dl while only 36 were having HDL-C < 50mg/dl.

Among 50 patients, 20 were having VLDL > 30mg/dl, while 30 were having <30mg/dl

DISCUSSION:

In the present study, 40% were newly diagnosed as having dyslipidemia, while 60% were already diagnosed as having dyslipidemia. Among those who were already diagnosed, only 44% were on treatment, while the rest, 16%, were not on any treatment—thus guiding us in increasing awareness among postmenopausal women for screening regarding dyslipidemia, especially after the onset of menopause and early initiation of treatment.

In present study, rised LDL-C (72%) and low HDL-C (72%) dominated when compared to other altered lipid parameters. Even 20% were having LDL-C between 130-100mg/dl. These 20% form the new target group for starting the statin therapy.

In a study done by Prasad¹², the percentage of post-menopausal women with Total cholesterol >220 mg/dl - 38%, HDL <45 mg/dl - 53%, LDL >140 mg/dl - 38%, Triglycerides > 140 mg/dl - 35%

In a study done by ICMR¹², at Maulana Azad Medical College, New Delhi 2000, the percentage of post-menopausal women with Total cholesterol >220 mg/dl -18%, HDL <45 mg/dl - 75.6%, LDL >140 mg/dl - 24.5%, Triglyceride > 140 mg/dl - 52%:

In the present study, percentage of patients with Total cholesterol >200 mg/dl - 56%, HDL <50 mg/dl - 72%, LDL >130 mg/dl - 72%, Triglyceride > 150 mg/dl - 40%.

When compared to other studies, the percentage of patients with altered Total Cholesterol and LDL-C was more. The altered triglyceride levels was more or less similar to other studies. In case of HDL-C, the percentage of this altered parameter was comparable to study done

by ICMR, but in study done by Prasad the percentage was bit low. However, the cut-off levels for altered lipid parameters were different when compared to the present study.

In the present study, even though only 56% were having raised total cholesterol > 200mg/dl, as many as 72% were having increased LDL-C >130mg/dl, signifying once again that reducing total cholesterol or triglycerides is not sufficient in the treatment of dyslipidemia, as raised LDL-C can independently contribute to atherogenesis thus increase the risk of Coronary artery disease. Both reduced HDL-C and raised LDL-C were prominent in the present study compared to total cholesterol and triglycerides.

Limitations: The influence of other factors like central obesity, physical activity were not taken into account.

CONCLUSION:

Among the dyslipidemics raised LDL-C, and low HDL-C continues to be independent risk factors regardless of raised cholesterol and raised triglycerides in postmenopausal women. Increasing awareness among postmenopausal women regarding the deleterious effect of altered lipid parameters and early identification and early initiation of treatment is warranted.

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