

Hyperlipidemia as a Risk Factor in Patients with Coronary Heart Disease - a comparative clinical study

AMER SHOAB¹, SHAZIA IRFAN², BUSHRA GOHAR SHAH³, ARSLAN SHUJA⁴

ABSTRACT

The findings of this study showed that hyperlipidemia is directly correlated with coronary heart diseases. Serum Cholesterol (280±17, 270±10, 120±23), triglyceride (185±30, 180±20, 130±21), low density lipoproteins (190±13, 185±11, 115±10) and High density lipoproteins (24±12, 28±14, 42±20) levels of male and female with coronary heart disease were showed a significant changes as compared to the control group. According to the current study rate of cardiac diseases were higher in male than female.

Keywords: Hyperlipidemia, Coronary heart disease, cholesterol

INTRODUCTION

Hyperlipidemia is an ascending order of total cholesterol levels in the body which may or may not be related with hyper condition of triglyceride levels¹. Lipids are insoluble in plasma and these are transported through special type of proteins called lipoproteins. It has seen in different studies that hyperlipidemia is directly proportional to the abnormalities of lipoproteins². High levels of cholesterol in the blood become deposited with the walls of the arteries and causing a process called atherosclerosis, which is a type of heart disease⁴. When the process of atherosclerosis started the arteries compressed, therefore the flow of blood towards heart muscle become slow or blocked¹.

When the supply of oxygen to the heart muscles will be lower than the normal requirements there will be chest pain and ultimate result will be heart attack³. Total cholesterol of a body mainly divided into two types i.e., low-density lipoprotein (LDL) it is called bad cholesterol. While the other type is high-density lipoprotein (HDL) which is considered as good cholesterol⁷. Different studies published in 2016 concluded that high levels of LDL in the blood are the major risk factor for cardiovascular diseases, the researcher also found that low intake of dietary fatty acids play a significant role reducing the chances of heart diseases⁹.

Different researchers concluded through their studies that atherosclerosis is caused by hypercholesterolemia and hypertriglyceridemia⁵. In a study researchers described by genetic analysis of different families with high plasma lipid levels and stated that atherosclerosis has close association with hypercholesterolemia and hypertriglyceridemia⁶. The most common cause of coronary heart disease is narrowing of the lamina of the coronary arteries by atherosclerosis. In early stage mostly saturated fatty acids deposited in the coronary arteries as plaque. The findings of many studies showed high serum cholesterol levels are significant risk factor for coronary heart disease and an increase in the levels of LDL-Cholesterol and a decrease in HDL-Cholesterol especially among the individuals¹⁰.

¹Associate Professor Department of Physiology, FMH College of Medicine and Dentistry, Lahore

²Associate Professor Department of Physiology, FMH College of Medicine and Dentistry, Lahore

³Associate Professor Physiology, Sahara Medical College Narowal

⁴Institute of Molecular Biology & Biotechnology, UOL

Correspondence to Dr. Amer Shoab:

Email: amer.shoab@yahoo.com cell.03349892642

MATERIALS AND METHODS

Current study was conducted in Jinnah Hospital Lahore. In this study 150 individuals were selected and divided them into two groups. In group A, 50 individuals were normal i.e. control group while in group B, 100 male and female individuals were cardiac patients with coronary heart disease. Serum triglyceride, cholesterol, HDL, and LDL levels in both groups were observed as biomarkers. All the parameters were measured by colorimetric methods in which different kits were used. Raw data was expressed bio- statistically by applying the model SPSS.

RESULTS

Group A, Normal and healthy individuals (n=50)

Biomarkers	Units	Mean ± SD	P value
Cholesterol	mg/dl	120±23	0.00
Triglyceride	mg/dl	130±21	0.00
LDL	mg/dl	115±10	0.00
HDL	mg/dl	42±20	0.00

<0.005

Group B, Male patients with coronary heart disease (n=60)

Biomarkers	Units	Mean ± SD	P value
Cholesterol	mg/dl	280±17	0.00
Triglyceride	mg/dl	185±30	0.00
LDL	mg/dl	190±13	0.00
HDL	mg/dl	24±12	0.00

<0.005

Group C, Female patients with coronary heart disease (n=40)

Biomarkers	Units	Mean ± SD	P value
Cholesterol	mg/dl	270±10	0.00
Triglyceride	mg/dl	180±20	0.00
LDL	mg/dl	185±11	0.00
HDL	mg/dl	28±14	0.00

<0.005

Serum Cholesterol (280±17, 270±10, 120±23), triglyceride (185±30, 180±20, 130±21), low density lipoproteins (190±13, 185±11, 115±10) and High density lipoproteins (24±12, 28±14, 42±20) levels of male and female with coronary heart disease were showed a significant changes as compared to the control group.

DISCUSSION

A study stated that atherosclerosis in male and female causes cardiovascular diseases but the rate of cardiac problems in males are higher than females (8). In another research concluded that myocardial infarction and other cardiac complication of atherosclerosis are rare in women as compared with men (6, 3). Different researchers find through their researches that atherosclerosis in women decreased the normal estrogen levels (9). The findings of current study showed very similar results as to the previous studies. In the present study the rate of serum cholesterol (280 ± 17 , 270 ± 10), triglyceride (185 ± 30 , 180 ± 20), low density lipoproteins (190 ± 13 , 185 ± 11) and High density lipoproteins (24 ± 12 , 28 ± 14) levels of male patients with coronary heart disease were higher than female. This study showed a significant change as compared to the control group.

REFERENCES

1. Al-Harbi AM. Frequency of Risk Factors for Coronary Heart Disease Among Diabetic Patients in Al-Rabwah PHC Center in Riyadh. *Journal of Family & Community Medicine*, 2004; 11(2):53-58.
2. American Diabetes Association (ADA). Standards of Medical Care for Patients With Diabetes Mellitus. *Diabetes Care*, 2003; 26(Suppl 1): s33-s50
3. Bambauer R, Bambauer C, Lehmann B, Latza R, Schiel R. Schiel R. LDL-Apheresis: Technical and Clinical Aspects. *Scientific World Journal*, 2012; 2012: 314283.
4. Chaturvedi N. Ethnic Differences in Cardiovascular Disease. *Heart*, 2003; 89(6): 681-686.
5. D'Agostino RB, Russell MW, Huse DM, Ellison RC, Silbershatz H, Wilson PW, Hartz SC. Primary and subsequent coronary risk appraisal: New results from the Framingham study. *Am Heart J*, 2000;139 (2 Pt 1):272-281.
6. Eastern Stroke and Coronary Heart Disease Collaborative Research Group (ESCHDCRG). Blood pressure, cholesterol and stroke in Asia. *Lancet*, 1998; 352 (9143):1801-1807.
7. Ganesh M, Palaneeswari SM, Karthikeyan T. Bio-Markers Assay in Acute Myocardial Infarction- A Cross Sectional Study. *Int J Pharm Bio, Sci* 2013; 4(4): 1139-1142.
8. Syndrome in Malaysia: An Analysis by Risk Factors. *Metab Syndr Relat Disord*, 2011; 9(6): 441-451.
9. Tanna N, Srivastava R, Tanna V, Vaishnani H. The Role of Unknown Risk Factors in Myocardial Infarction. *IJBAR*, 2013; 4 (6): 430-434.
10. Weitz D, Weintraub H, Fisher E, Schwartzbard AZ. Fish Oil for the Treatment of Cardiovascular Disease. *Fish Oil for the Treatment of Cardiovascular Disease. Cardiol Rev*, 2010; 18(5): 258-263.