

**STUDY OF SERUM LIPID PROFILE LEVEL IN CORONARY ARTERY DISEASE PATIENTS AT TERTIARY CARE CENTER SHAHJAHANPUR, U.P.**Sandeep Kumar Sharma<sup>1</sup>, Gajendra Singh Dhakad<sup>2</sup>.<sup>1</sup> Associate Professor, <sup>2</sup> Senior Demonstrator<sup>1</sup>Department of Biochemistry Varun Arjun Medical College, Shahjahanpur, U.P., India,<sup>2</sup>Department of Biochemistry, Govt. Medical College, Kota, Rajasthan, India**ABSTRACT**

**Background:** India and other developing countries in South Asia are progressively facing alarming proportions of morbidity and mortality caused by coronary artery disease

**Methods:** 100 subjects aged between 30 to 60 years, comprising of 50 normal control and 50 patients suffering from CAD were studied.

**Result:** The mean total cholesterol level was found to be 174.16±18.14 mg/dl with a range of 150-200 mg/dl present in normal subjects and mean concentration of cholesterol level was increased to 288.92±46.67 mg/dl in CAD patients. The mean HDL level was found to be 46.74±4.48 mg/dl with a range of 30-60 mg/dl present in normal subjects and mean concentration of HDL level was decreased to 40.28±6.44 mg/dl in CAD patients. The mean LDL level was found to be 110.16±18.14 mg/dl with a range of 80-150 mg/dl present in normal subjects and mean concentration of LDL level was increased to 184.34±42.08 mg/dl in CAD patients. The mean Triglyceride level was found to be 114.20±36.12 mg/dl with a range of 75-150 mg/dl present in normal subjects and mean concentration of Triglyceride level was increased to 166.24±66.14 mg/dl in CAD patients.

**Conclusion:** This cross sectional study showed that high serum cholesterol, LDL, triglyceride and low HDL cholesterol were clinically significant in all the age groups.

Key-words: Coronary artery disease (CAD), Cholesterol, Triglyceride, HDL.

**INTRODUCTION**

Cardiovascular disease is the commonest cause of mortality globally, accounting annually for nearly 12 million deaths, with coronary artery disease (CAD) being the major contributor. There is a steady increase in the prevalence of CAD in the Indian subcontinent, due to rapid changes in demography and lifestyle consequent to economic development. The prevalence of CAD is four-fold higher in urban India<sup>3</sup> and two-fold higher in rural India than in the United State<sup>1-4</sup>.

The prevalence of conventional risk factors such as smoking, hypertension, and diabetes mellitus in Indians is the same as in other ethnic groups<sup>6-10</sup>; lipid patterns, however, vary with dietary habits. South Asians are noted to have higher triglyceride

(TG) levels, low concentration of high-density lipoprotein (HDL) cholesterol, increased visceral fat, higher insulin resistance as well as lower total cholesterol (TC) as compared to their western counterparts<sup>2,3</sup>.

**MATERIALS AND METHODS**

This descriptive study was conducted in the department of Biochemistry and Medicine in Varun Arjun Medical College, Shahjahanpur, U.P., India. The study included 100 subjects aged between 30 to 60 years, comprising of 50 normal control and 50 patients suffering from CAD. Required permission for the research methodology was obtained from ethical committee of the institute. Patients with renal disease, liver disease, diabetes mellitus, respiratory disease and heart failure were excluded

from the study.

The blood sample of CAD patients including controls group was taken after fasting for 10-12 hours. 7-10ml of venous blood was drawn from the antecubital vein by aseptic technique in plain vial. Serum was separated from the collected sample for biochemical analysis. Lipid profile investigations that included serum cholesterol, triglyceride, High density lipoprotein cholesterol (HDL-cholesterol)

and Low density lipoprotein cholesterol (LDL-cholesterol) were carried out on a semi automated analyzer using standard kits. Statistical analysis was done using SPSS software (version 20). t-test was used for the comparison of two groups. p-value of <0.05 was considered statistically significant and a p-value of <0.001 was considered to be highly significant.

**RESULTS:**

**Table 1: Distribution of age and sex ratio**

	No. of cases	Age	Sex ratio (Male: Female)	P-VALUE
Control	50	51.4 ±4.16	37:13	>0.05
CAD Patients	50	50.25±8.24	36:14	

**Table 2: The level of lipid profile among the cases of CAD and control group**

Variable	Control Mean±SD n=50	CAD Patients Mean±SD n=50	p-VALUE
Total Cholesterol	174.16 ± 18.14	288.92 ± 46.67	p<0.001
HDL	46.74±4.48	40.28 ± 6.44	p<0.05
LDL	110.16 ± 18.14	184.34± 42.08	p<0.001
Triglycerides	114.20 ± 36.12	166.24 ± 66.14	p<0.001

The mean total cholesterol level was found to be 174.16±18.14 mg/dl with a range of 150-200 mg/dl present in normal subjects and mean concentration of cholesterol level was increased to 288.92±46.67 mg/dl in CAD patients. The mean HDL level was found to be 46.74±4.48 mg/dl with a range of 30-60 mg/dl present in normal subjects and mean concentration of HDL level was decreased to 40.28±6.44 mg/dl in CAD patients. The mean LDL level was found to be 110.16±18.14 mg/dl with a range of 80-150 mg/dl present in normal subjects and mean concentration of LDL level was increased to 184.34±42.08 mg/dl in CAD patients. The mean Triglyceride level was found to be 114.20±36.12 mg/dl with a range of 75-150 mg/dl present in normal subjects and mean concentration of Triglyceride level was increased to 166.24±66.14 mg/dl in CAD patients.

**DISCUSSION**

The mean total cholesterol level was found to be 174.16±18.14 mg/dl with a range of 150-200 mg/dl present in normal subjects and mean concentration of cholesterol level was increased to 288.92±46.67 mg/dl in CAD patients. The increase was statistically highly significant (p<0.001) and the result of present study resembled with the findings of Ambrose et al<sup>5</sup> and Watson et al<sup>6</sup>.

The mean HDL level was found to be 46.74±4.48 mg/dl with a range of 30-60 mg/dl present in normal subjects and mean concentration of HDL level was decreased to 40.28±6.44 mg/dl in CAD patients. The decrease was statistically significant (p<0.05) and the result of present study resembled with the finding of Connor WE et al<sup>7</sup>.

The mean LDL level was found to be 110.16±18.14 mg/dl with a range of 80-150 mg/dl present in normal subjects and mean concentration of LDL

level was increased to  $184.34 \pm 42.08$  mg/dl in CAD patients. The increase was statistically highly significant ( $p < 0.001$ ) and the result of present study resembled with the findings of Tibblin et al<sup>8</sup> and Ritu et al<sup>9</sup>.

The mean Triglyceride level was found to be  $114.20 \pm 36.12$  mg/dl with a range of 75-150 mg/dl present in normal subjects and mean concentration of Triglyceride level was increased to  $166.24 \pm 66.14$  mg/dl in CAD patients. The increase was statistically highly significant ( $p < 0.001$ ) and the result of present study resembled with the findings of Knuiman JT<sup>10</sup> and Ambrose et al<sup>5</sup>.

### CONCLUSION

This cross sectional based study showed that high serum cholesterol and triglyceride and low HDL cholesterol are clinically significant in all the age groups. The importance of this study lies in the fact that it reveals a distinct association of dyslipidemia with CAD and highlights patients with dyslipidemia as potential targets for early intervention. Therefore, early detection of abnormal lipid profile and its proper management by life-style modification and by drugs, if needed may play a key role in preventing the progression of atherosclerotic process in coronary artery disease.

### REFERENCES

1. Reddy KS. Why is preventive cardiology essential in the Indian context? In: Wasir HS. Editor. Preventive Cardiology: An Introduction. New Delhi. Vikas Publishing. 1991:1-14.
2. Rodgers A, Lawes C, MacMohan S. Reducing the global burden of blood pressure related cardiovascular disease. *J Hypertens* 2000;18(suppl 1):S3-S6.
3. Rose G. Ancel Kyes' Lecture. *Circulation* 1991;84:1405-09.
4. Gupta AK, Bharadwaj A, Ashotra S, Gupta BP. Feasibility of training multipurpose workers in detection, prevention and control of coronary artery disease in apple-belt of Shimla hills. *South Asian J. Prev. Cardiol* 2002;6:17-22.
5. Ambrose JA, Barua RS. The pathophysiology of cigarette smoking and cardiovascular disease *J Coll Cardiol.* 2004; 43:1731-37.
6. Watson WC, Buchanan KD, Dickson C. Serum cholesterol levels after myocardial infarction. *Br. Med. J.* 1963;2:709-12.
7. Connor WE, William MD. The plasma lipids, lipoproteins and diet of the Tarahumara Indians of Mexico. *American journal of clinical nutrition.* 1978; 31:1131-42.
8. Tibblin G, Cramer K. Serum lipid during the course of an acute myocardial infarction and one year afterward. *Acta. Med. Scand.* 1963;174:451.
9. Ritu, Mahajan M and Kant R. Comparative account of serum lipid, lipoprotein and apolipoprotein in coronary artery disease patients. *Indian Journal of Clinical Biochemistry.* 2004;19(1):10-13.
10. Knuiman JT. Total cholesterol and high density lipoprotein cholesterol levels in populations differing in fat and carbohydrate intake. *Arteriosclerosis.* 1987;7:612-19.