ORIGINAL ARTICLE

A comparative study of plasma Low-Density Lipoproteins and Lipoprotein (a) levels in Patients with acute coronary vascular disease

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ABSTRACT

Main purpose of present study was to find out the relationship betweencoronary heart diseases and lipoprotein (a). In this study the relationship among these parameters were observed in the individuals of Group A and individuals of Group B. SerumLp(a) (56.10±9.11, 7.4±6.10), Cholesterol (298±12.8, 160±10.7), triglyceride (220±5.12,148±8.11) , low density lipoproteins (190±3.10, 120±2.10) and High density lipoproteins (30±12, 120±2.10,45±16) levels of Group A and Group B represented a significant changes.
Keywords: Lipoprotein (a), low density Lipoprotein (LDL), Atherosclerosis.

INTRODUCTION

Lipoproteins are specific and special molecules formed by droplets of fats surrounded by a single layer of phospholipid (Rissanen *et al;* 2003). Lipoproteins moleculehas both polar and non-polar ends. Chylomicrons, intermediate density lipoproteins (IDL), high-density lipoproteins (HDL), low-density lipoproteins (LDL), very low-density lipoproteins (VLDL) are different classes of lipoproteins and this classification is based on density, electrophoretic mobility and nature of Apo protein content. The movement of lipoproteins depends on the size of protein attached, minimum protein content move faster while higher protein content move slower (Weitz *et al;* 2010).

Before 40 years ago Lp(a) was first identified as variant of low density lipoprotein (LDL)and it was considered as biomarker of coronary heart disease (CHD. Pathologically it has proved that like low-density lipoprotein (LDL), Lp(a) also involved in the development of coronary heart diseases (Tanna *et al;* 2013).Lipoprotein (a) [Lp(a)] is a unique lipoprotein that has emerged as an independent risk factor for developing vascular disease. Researchers from the last two decades are conducted research by different angles and providing information about the role of Lp(a) in developing cardiac problems (Aiyer *et al;* 2007).

It has concluded in the light of different studies by many researchers that coronary vascular disease (CVD) is a worldwide case of death in population (Chaturvedi; 2003). It has seen that 6.2% Pakistani people were died with coronary vascular diseases. Current studies claimed that Lipoprotein, [Lp(a)] is a very strong risk factor among patients with coronary vascular disease. Raised serum levels of low-density lipoprotein, high-density lipoproteins and cholesterolare very dangerous and after deposition in the blood vessels caused atherosclerosis (Kountz and Levine; 1998).It has concluded through different studies that lipoprotein Lp(a) is considered as a genetically determined variant of LDL(Kountz and Levine; 1998).

MATERIALS AND METHODS

Present study was conducted in the Medical Units of General Hospital Lahore and in this study controlled cases were considered. In current study one hundred and fifty individuals were selected and divided them into Group A and Group B. 100 individuals were placed in Group A and 50 healthy individuals were placed in Group B. in Group A all the individuals have acute coronary vascular diseases. 3 ml of blood was collected from the antecubital vein of each individual and stored in different vacutainers for different analysis. Different standard kits were used in colorimetric method of parameters analysis. Raw data was analyzed by applying the model (SPSS-20). Raw data represented Bio-statistically through SPSS-20 by standard mean deviations of different variables.

RESULTS

In the results the serum levels of Lp(a) (56.10±9.11, 7.4±6.10), Cholesterol (298±12.8, 160±10.7), triglyceride (220±5.12,148±8.11) , low density lipoproteins (190±3.10, 120±2.10) and High density lipoproteins (30±12, 120±2.10, 45±16) were significant comparatively and a remarkable change was seen in the levels of these variables in individuals of Group A than the individuals of Group B.

Group A: 100 individuals with acute coronary vascular diseases

Parameters	Units	Mean ± SD	P value
Lp(a)	mg/dl	56.10±9.11	0.00
Cholesterol	mg/dl	298±12.8	0.00
Triglycerides	mg/dl	220±5.12	0.00
LDL	mg/dl	190±3.10	0.00
HDL	mg/dl	30±12	0.00

<0.005

Group B: 50 healthy individuals (control group) (n= 50)

Parameters	Units	Mean ± SD	P value
Lp(a)	mg/dl	7.4±6.10	0.00
Cholesterol	mg/dl	160±10.7	0.00
Triglycerides	mg/dl	148±8.11	0.00
LDL	mg/dl	120±2.10	0.00
HDL	mg/dl	45±16	0.00

<0.005

DISCUSSION

Present geographical and epidemiologic evidences represented thatserum lipid profile and lipoprotein (a) levels are directly related with a higher risk for cardiovascular disease (Weitz*et al;* 2010).Different researchers stated that thehigh serum lipid profile and lipoprotein (a) levels are major life threat in coronary vascular diseases (Al-Harbi 2004).Researchers stated in their studies and suggested that the chances of coronary heart diseases become increased with the high levels of lipoprotein (a) and with changed lipid profile(Chaturvedi ; 2003).Present study represented a significant change of different parameters in individuals with acute coronary vascular diseases (Tanna*et al;* 2013). It was seen that SerumLp(a) (56.10±9.11), Cholesterol (298±12.8), triglyceride (220±5.12) , LDL (190±3.10) and HDL (30±12) levels of Group A individuals with coronary heart diseases were represented a significant changes than the Group A. Ganesh *et al*, 2013 represented very similar results in their study as presented in this study.

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