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Original Research Article

To Estimation of Lipoprotein (A) Levels in Patients of Acute Coronary Syndrome

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Conflict of interest: Nil

Abstract:

High levels of lipoprotein(a) [Lp(a)] are associated with increased risk of acute coronary syndrome (ACS). Hospital based cross-sectional study. Was conducted on 100 patients with acute coronary acute coronary syndrome (ACS). The serum lipo-protein(A) level was measure and ECG was done at the time of admission and repeated as necessary. Lp (a) was measure by agglutination. Lipo-a was lipo-a was 52.33±12.06 mg/dl. The association between age and lipo-protein a level was found statistically significant. The association between sex and lipo-protein a level was found statistically Insignificant. Lp(a) seems to be an independent risk factor for acute coronary syndrome (ACS), and high Lp(a) levels increased the risk for acute coronary syndrome (ACS).

Keywords: ACS, Lp(a), HDL.

Introduction

Lipoprotein(a) was described in human plasma by Berg as a genetic variant of βlipoprotein. [1] Lp(a) is an LDL like molecule consisting of an apoprotein (apo) B100 particle attached by a disulphide bridge to apo(a). Apo(a) is a member of a family of "kringle" containing proteins, such as plasminogen, tissue platelet activator (tPA), prothrombin, factor XII, and macrophage stimulating factor (MSF). [2-3] Lp(a) shares a high degree of sequence identity with plasminogen. Lp(a) values can be increased as part of the acute phase response, and in diabetes mellitus, chronic renal failure, nephrotic syndrome, cancer, menopause, and hypothyroidism. Lp(a) values are decreased in liver failure and hyperthyroidism. Furthermore, nicotinic acid, tamoxifen, oestrogens, progesterone, and anabolic steroids might decrease Lp(a) concentrations. Fibrates have been shown, in some studies, to reduce Lp(a) concentrations, whereas statins might increase Lp(a) concentrations. [4]

High levels of lipoprotein(a) [Lp(a)] are associated with increased risk of acute coronary syndrome (ACS). We explored whether Lp(a) exhibits a stronger association with ACS.

Material and Methods

Study design: Hospital based cross-sectional study.

Sampling Method: Simple random sampling

Inclusion Criteria:

- Cases were willing to participate in study.
- Age more than 18 Yrs and less than 80 Yrs.
- All cases presented with symptoms suggestive of ACS.

Exclusion Criteria:

- Cases was not willing to participate in study.
- Those cases with proven noncardiac chest pain
- All patients on drugs those effected the level of lopo-protein (A).
- Patient's age less than 18 years and 80 years was excluded from the study.

Data Collection:

• The serum lipo-protein(A) level was measure and ECG was done at the time of admission and repeated as necessary. Lp (a) was measure by agglutination due to an antigen – antibody reaction between Lp (a) in a sample and anti-Lp (a) antibody absorbed to latex particles.

Results

Table 1: Socio-demographic profile

Mean age in yrs	51.23±6.32 Yrs
Male: Female	52:48
BMI in kg/mt2	26.02±2.15
Lipo-a in mg/dl	52.33±12.06

In present study, lipo-a was 52.33±12.06 mg/dl

Discussion

In present study, lipo-a was 52.33±12.06 mg/dl. Our study has highlighted few important aspects. Firstly, it strengthens that Pakistani patients with CVD have significantly higher mean Lp(a) levels as compared to their counterpart with normal coronary arteries. Our study adds to the already existing similar evidence proven by Pakistani researchers91 but with improved methodology that both cases and controls were exactly classified on the basis of coronary angiography. The 30 mg/ dl cutoff of high Lp(a) we used is consistent with recommendation generated by EPIC-Norfolk data that suggests that Lp(a) level between 24-36 mg/dl should be used to estimate risk of coronary artery disease. [5]

Recently, a large cross-sectional study in seven different ethnicities from INTERHEART project [6] also established that patients with first acute MI have high mean Lp(a) levels. Persons with high Lp(a) levels (>50 mg/dl) had 48% higher odds of having acute MI as compared to controls, and this association was independent from other risk factors of coronary artery disease. South-Asians have high population attributable risk (9-10%) due to high prevalence of elevated Lp(a) in this population. The odds ratio of having an acute MI with Lp(a) >50 mg/dl was 1.48 in whole INTERHEART population, but it was not reported separately for South Asian population. Our study had higher odds of acute coronary syndrome (2.7 in whole study population, and 3.65 in patients younger than 45 years) with Lp(a) cutoff of 30 mg/dl as high. Taking this cutoff at 50 mg/dl also yielded OR 2.08 (not shown in results) that is also higher 52 than collective INTERHEART data. This reflects important association of Lp(a) with acute coronary syndrome in Pakistani population, and more so in patients ≤45 years of age. A large scale cross sectional study PROMIS (Pakistan Risk Of Myocardial Infarction Study) involving 9015 Pakistani patients with acute MI and 8629 matched controls analyzed various biochemical and genetic variants with coronary artery disease, reported that OR of ischemic heart disease increases by 1.10 per 1 SD increase in Lp(a) concentration, even after adjusting for Lp(a) isoform and conventional lipids concentration. [7]

Lipoprotein(a) has been recognised as an important genetically determined risk factor for development of atherosclerotic cardiovascular disease. Recent European and American guidelines have been identified lipoprotein (a) as a risk enhancing factor for development of ASCVD. Lipoprotein(a) is not commonly measured in clinical practice in part because no currently available treatment exist with established benefit of vascular outcome. There are several goal of Lipoprotein(a) study including characteristic of Lipoprotein(a) pattern in a large secondary prevention population and increasing awareness of the importance of Lipoprotein(a) as a risk factor for ASCVD. This study also identify the patients of increased level of Lipoprotein(a) for treatment and secondary prevention of pre-existing of coronary artery disease.

Conclusion

Lp(a) seems to be an independent risk factor for acute coronary syndrome (ACS), and high Lp(a) levels increased the risk for acute coronary syndrome (ACS).

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