Abstract

Relationship of Plasminogen Activator Inhibitor-1, Oxidized LDL and Malondialdehyde serum level with Coronary Artery Disease and it Extent.

Neda Mahmoodi, Fatemeh khaki-khatibi

Department of Clinical Biochemistry, Faculty of Medicine, Tabriz University of Medical science. Tabriz, Iran.

Introduction:

Coronary artery disease (CAD) is caused by atherosclerosis. Atherosclerosis results in vascular construction and has various causes. Studies suggest numerous factors related to establishment and development of CAD. These include Plasminogen Activator Inhibitor (PAI-1), lipid peroxidation, inflammation and homeostasis molecules. The aim of this study is to evaluate serum levels of PAI-1, oxidized LDL (OX-LDL) and MDA in coronary artery patients and their connection to extent of CAD in order to prevent the development of these disease by measuring these parameters.

Material and Methods:

In this survey 180 people including 160 patients and 20 as control group. Patients were divided into 4 groups according to angiography results comprised of 40 subjects with no vessel disease, 40 subjects with single vessel disease, 40 subjects with double vessel disease, and 40 subjects with triple vessel disease. The control group was selected from people with no heart disease background. Factors like malignancy, liver, kidney and lung disease were excluding elements. Serum lipid parameters were measured by standard method. Serum levels of PAI-1(Boster) and OX-LDL (Glory Science) was analyzed by (ELISA) procedure. MDA Serum level was measured based on reaction with Thiobarbituric Acid (TBA).

Results:

The average age of patients group was 59±9 and 57.5±8 in the control group. There was no significant difference in age and gender between two groups but there was a significant difference between hypertension and family smoking background. Serum PAI-1, Malondialdehyde and OX-LDL levels in control group were significantly lower than all patients ($p < 0.001$, $p = 0.001$, $P=0.01$ respectively). Moreover, serum levels of PAI-1 in patients with triple-vessel and one-vessel disease were found to be significantly higher than control group ($p<0.001$ both of them), normal vessel lower than triple-vessel and one-vessel disease ($p<0.001$ and $p=0.004$, respectively) and double vessel lower than triple-vessel ($p=0.03$). Serum level of MDA in double-vessel and triple-vessel disease were higher than the control ($p<0.001$ both of them) and N-vessel groups ($p=0.001$ both of them) and triple-vessel disease significantly higher as compare with single-vessel disease, and control group ($p=0.01$). Furthermore, serum concentrations of OX-LDL in double-vessel disease were significantly higher as compare with control and no-vessel groups ($p=0.003$ and $p=0.05$, respectively). A Significant correlation between some lipid parameters and OX-LDL was found.

Conclusion:

Elevated serum levels of PAI-1, OX- LDL and MDA indicate a potential role in atherogenesis leading to CAD. These findings suggested serum levels of PAI-1, OX-LDL and MDA can be useful for diagnostic and monitoring markers in patients with CAD and its extent.

Keywords: Plasminogen Activator Inhibitor, Oxidized LDL, Malondialdehyde, coronary artery disease (CAD).