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Hematological and Biochemical Variations in Myocardial Infarction

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Abstract

Background: The aim of the current study was to assess the hematological and biochemical variations in the serum of myocardial infarction patients and healthy controls.

Method: The case-control study included 200 samples collected from Myocardial infarction patients and controls for the analysis the variations of hematological and biochemical.

Result: WBC and ESR were increased, whereas, hemoglobin and platelet was decreased in patients as compared with the controls. Serum triglyceride, total cholesterol, LDL increased and decreased HDL in patients as compared with the controls. Copper and potassium showed increased levels whereas, decreased serum albumin, and zinc in patients as compared with the controls.

Conclusion: Further detailed investigations on the role of hematological, biochemical, variations in the pathogenesis of acute myocardial infarction are needed.

Keywords: Myocardial infarction; Hematologica; Biochemical;Variations

Introduction

Myocardial infarction, an important sign of CAD may cause mortality and morbidity [1]. Higher incidence of diabetes, hyperlipidemia, hypertension, and smoking, family history, obesity and inactivity have been proposed as possible contributing factors [2]. It has been documented that WBC associate through coronary atherosclerosis and ESR in myocardial infarction. Variations occur in hematological parameters such as hemoglobin, WBC, ESR, and platelet sedimentation rate and fibrinogen in acute myocardial infarction [3-5].

Numerous studies have concerned about abnormal levels of lipid profile which is the main reason for the progression of acute myocardial infarction [6]. It was documented that assessment of hematological and biochemical association in acute myocardial infarction [7,8] therefore, the aim of the current study was to assess the hematological and biochemical variations in the serum of myocardial infarction patients and healthy controls.

Methodology

The case-control study included 200 samples were collected from Myocardial infarction patients and controls for the analysis the variations of hematological and biochemical. Patients were selected from admitted at the Cardiology from City Hospital LUMHS, for angiography or medical treatment. The parameters were done by cardiologist. Blood samples from patients and healthy control subjects were collected and serum analyses for the variations of hematological and biochemical. Excel and SPSS.16 were used for data analysis. These parameters have been evaluated, WBC ESR, Hemoglobin and platelet count by SYSMEX XN-1000. Serum triglyceride, total cholesterol, LDL, HDL and serum albumin by MICROLAB-300, copper, potassium and zinc by AAS, VARIAN in patients as compared with the controls.

Results

WBC and ESR were increased; whereas, hemoglobin and platelet was decreased in patients as compared with the controls. Serum triglyceride, total cholesterol, LDL increased and decreased HDL in patients as compared with the controls. Copper and potassium showed increased whereas, decreased serum albumin, and zinc in patients as compared with the controls (Figures 1-3).

Discussion

An increased level of lipid profile is a risk factor of CAD [9]. Present

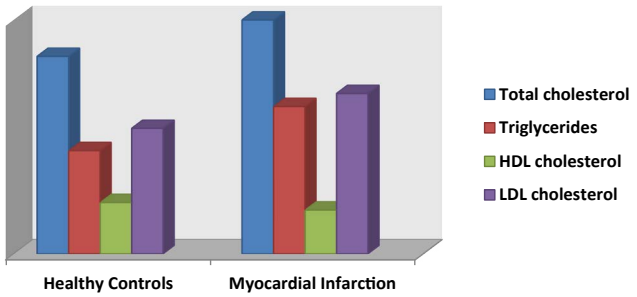

Figure 1: Lipid Profile levels in Myocardial Infarction Patients and Healthy Controls.

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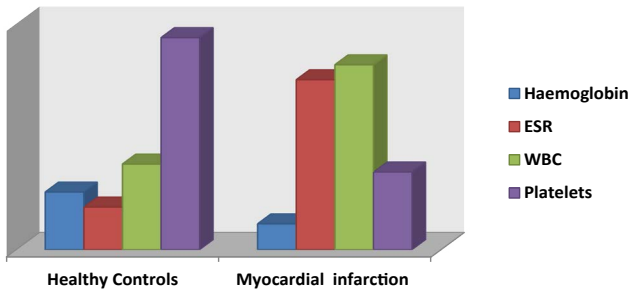

Figure 2: Hematological variations in myocardial infarction patients and healthy controls.

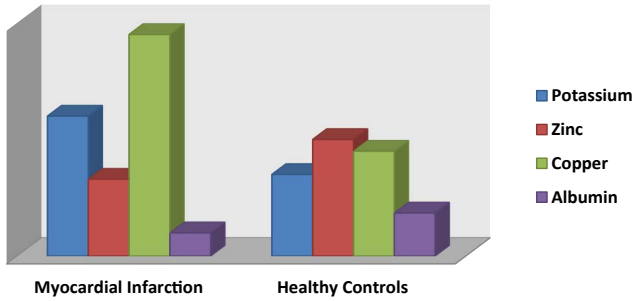

Figure 3: Biochemical variations in myocardial infarction patients and healthy controls.

study showed increase level of cholesterol, triglyceride, and LDL in patients as compared to healthy controls, and HDL decreased. This study reveal with former studies [10,11]. Present study showed the increased levels of WBC and ESR and decreased levels of hemoglobin and platelets that are execute in a diversity of state that lead to inflammation [12,13] Platelets stimulate thrombus progression with activate acute coronary syndromes by various processes, like inducement of inflammatory progression. It was reported that in patients with myocardial infarction showed increased WBC and decreased platelet [14,15]. Potassium levels increased in the present study and also it has been observed that amongst potassium and infarct [16]. A level of copper showed an increase and zinc was decreased. It was reported that copper increased during the acute myocardial infarction [17]. Whereas zinc decrease from first day after attack [18]. Copper associate with absorption of protein such as albumin and globulin, and zinc gambol to albumin merely [19].

It is concluded that the hematological and biochemical variations were observed in myocardial infarction patients as compared with the healthy controls. Consequently, the ultimate levels of these results would be suggested for the variations in blood of myocardial patients. Further studies will be needed to observe the blood variations in myocardial patients and detailed investigations on the role of hematological, biochemical, variations in the pathogenesis of acute myocardial infarction are needed.

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