ORIGINAL ARTICLE

Evaluation of Plasma Fibrin Degradation Products (FDPs) in patients of type- 2 Diabetes in adult Pakistani population

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ABSTRACT

Current study was tested the hypothesis that process of fibrinolysis become decreased in diabetic individuals.Fibrin degradation products (FDPs) or fibrin split products are produced by clot degeneration in the blood. When body show disability to dissolve a clot than abnormal levels of FDPs produced in the body.The main findings of this study were high serum levels of fibrin degradation products (FDPs) in group A (268±10.06) than individuals of group B (10±11.01) and this difference was significant (p <0.005).
Key words: Diabetes Mellitus; Fibrin, Fibrin Degradation Products,

INTRODUCTION

Diabetes is a genetic disease which is related to pancreatic secretion that is insulin. Insulin helps in the metabolic pathway of carbohydrates*Gaffney et al (1995)*. When biosynthesis of insulin decreased or stopped by external or internal stimulants metabolic pathway of carbohydrates become disturb and an abnormality produced in the bodyYamada et al (2000).Diabetic individuals mainly manage their disease through balanced diet and proper exercise. Diabeties is mainly of two types in type 1 diabetes, beta cells of pancreas does not make insulin while in type 2 diabetes, biological system does not make or use insulin properlyGreen et al (2009).

Researchers claimed that diabetes mellitus represents a powerful independent risk factor for increased cardiovascular mortality associated with coronary artery disease. Fibrinogen is a biomarker of activation of thrombotic system Mellbin et al (2013).The plasma levelof Fibrinogen is a correlated indication of coronary atherosclerotic lesions, risk of myocardial injury in diabetic patients. With the interaction ofplasmin and fibrin platelet aggregation and Fibrin degradation products (FDPs) are generated which is an indication of future risk of death and diabetic vascular complications Muhlestein et al (2014).

Fibrin degradation products (FDPs) or fibrin split products are produced by clot degeneration in the blood. Fibrin threads remain at the place of wound until healing of cut. After wound healing the process of coagulation become slow down. Fragment of protein released in to the blood when clot and fibrin net dissolved. These fragments are fibrin degradation products or FDPs. When body show disability to dissolve a clot the abnormal levels of FDPs will be produced in the bodyFolsom et al (2001). The levels of these FDPs rise after any thrombotic event.

When blood clot dissolved in the biological system some solid substances called Fibrin degradation products (FDPs) remain in your bloodstream. Blood vessels though hemostasis constricts to stop bleeding and promote healingDe Luca et al (2011).It was seen in a study that aggregation of platelets in the blood around injury site to form a plug or clot. The formation of the plug or clot is called the clotting cascade. Fibrin is a plasma protein that helps in coagulation Morange et al (2006).If any biological system is unable to dissolve a blood clot it may have abnormal levels of FDPs. Blood tests can measure FDPs levels which is an indicator of clotting disorder. The fibrin degradation products test is a specific test which finds the amount of FDPs in the blood Green et al (2009).

MATERIALS AND METHODS

In this total 250 individuals were selected and they were divided into two groups. In group A 200 patients were diabetic whereas in group B 50 individuals were normal and healthy.The random glucose levels of individuals were measured through colorimetric method while serum fibrin degradation products(FDPs) levels were measured through ELISA kit method. Statistical analysis of raw data was performed with the SPSS software.

RESULTS

The mean standard deviationsof blood glucose levels of group A patients were 268±10.06 as compared with the normal healthy individuals 118±10.12 whereas mean standard deviations of fibrin degradation products (FDPs) levels of group A and group B were 38±1.06, 10±11.01respectively. The results were significant (p <0.005).

Group A: n=200 random glucose and FDPs levels of diabetic individuals

Parameters	Units	Mean ± SD	P value
Random glucose levels	mg/dl	268±10.06	0.00
Fibrin degradation products (FDPs) levels	mg/L	38±1.06	0.00

<0.005

Group B: n=50 random glucose and FDPs levels of normal and healthy individuals

Parameters	Units	Mean ± SD	P value
Random glucose levels	mg/dl	118±10.12	0.00
Fibrin degradation products (FDPs) levels	mg/L	10±11.01	0.00

<0.005

DISCUSSION

It has seen in different studies that the mechanism of atherosclerosis is very complicated in diabetic individuals as compared with normal*Zhou et al (2011).* In another study reduced fibrinolysis with another biochemical complications are very similar to the findings of this study*Hong et al (2014).* The main findings of this study were high serum levels of fibrin degradation products (FDPs) in group A (268±10.06) than individuals of group B (10±11.01) and this difference wassignificant (p <0.005). A spectrum of researchers found that hyperglycemic setting in different studies caused complications in biological system *Ndrepepa et al (2013).*Fibrinogen is a marker of activation of thrombotic system which is a major risk of myocardial infarction and other cardiac in diabetic patients. The random glucose levels of group A individuals were (268±10.06) than the individuals of group B (118±10.12) respectively. All the findings of this study was very closely similar to the previous studies and all the results were significant (p <0.005).

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