

Short Communication

Pattern of Some Adipokines in Diabetics

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Abstract

Aim: This study was done to determine levels of some adipokines (adiponectin and leptin) in diabetics.

Methods: The study involved 100 diabetics and 100 apparently normal subjects of the same age group 40-70. The levels of adiponectin and leptin were measured with Enzyme Immune Absorbent (ELISA) assay method.

Results: The level of leptin significantly increased in the diabetics when compared to the controls ($p < 0.05$). The level of adiponectin significantly decreased in the diabetics when compared to the controls ($p < 0.05$).

Conclusion: This study probably indicated a significant decrease in serum adiponectin and increased leptin levels in patients with diabetics.

Keywords: Adiponectin; Leptin; Diabetics

Introduction

Adipokines are also called adipocytokines which act as cell signalling protein secreted by adipose tissue. The leptin and adiponectin are two major adipokines. Adipose tissue is an endocrine organ which secretes so many adipokines, which contribute to the crosstalk of adipose tissue with the brain, liver, muscle and other organs [1]. Changes in production of adipokines are a great signal for adipose tissue disorder [2]. This may be associated with obesity to a great extent and risk of insulin resistance and others including diabetes, endothelial dysfunction, atherosclerosis, fatty liver disease, hypertension, dyslipidemia, dementia, airway disease and some cancers [3]. Adipokines could be as biomarkers and as the substrate or target for pharmacotherapeutic management of obesity and its related diseases in the future [4]. Adipose tissue disorder could be linked to an early defect in obesity, in which it's characterized majorly by the secretion of a diabetogenic, proinflammatory and atherogenic adipokine [5]. The circulating adipokines may lead to alterations in glucose metabolism [6]. The adipokines could serve as biomarkers for adipose tissue function and distribution, as well as active therapy of obesity-related ailment [7].

Leptin and adiponectin are cytokines in which adipocytes are responsible for their production. The adipose tissue is the source of the adipocytes. Leptin seems to be responsible for several cardiovascular diseases associated with obesity, while adiponectin is regarded to be cardio protective [8].

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Adiponectin is hormonal protein generated by adipocytes which are fat cells that controls the metabolism of lipids and glucose. It influences the responses of the body to insulin. Additionally, it has anti-inflammatory effects on the cells lining the walls of blood vessels [9]. Adiponectin may improve insulin sensitivity [10].

Leptin is necessary in regulating appetite, food intake and body weight. Some reports have indicated that lack of leptin in the body or leptin resistance may result to uncontrolled feeding and weight gain [11]. Also, leptin treatment improves insulin sensitivity as well as reduces serum concentrations of triglycerides in lipodystrophy patients. It can be used as a replacement treatment for patients with inherited leptin deficiency [12]. It may act as a hormone that modulates the size of the adipose tissues in the body. It regulates food intake and body weight. In other words, it counteracts the effects of a feeding stimulant released in the gut [13]. Researchers have shown that leptin is necessary in the onset of puberty as individuals [14].

In this study, evaluation of the leptin and adiponectin in diabetic patients could be necessary to provide further information for better management.

Materials and Methods

Subjects

This study included 100 confirmed diabetics. Age of the participants ranged from 40 to 70 years. There were 50 males and 50 female. One hundred apparently healthy subjects matched with the age and the sex matched was chosen as controls.

This study was conducted in accordance with the guidelines approved by the Ethics Committee of the hospital. Informed consent was also obtained from all the study participants.

Specimen collection and evaluation

Five milliliters of blood sample was collected by standard venipuncture method from each participant and was dispensed into dry bottle. This was centrifuged to get the serum for the analysis of the leptins and adiponectin. Informed consent of the participants was

obtained Biochemical assay: The serum leptins and adiponectin. Were determined by enzyme link immune sorbent method [15].

Statistical analysis

Student's t-test for independent samples was used to compare different study groups. All data were designated in terms of mean \pm Standard Deviation (SD). A value less than 0.05 were considered to be statistically significant for this study. All the statistical calculations were done using the computer program SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA).

Discussion

In the present study, the serum leptin was observed to have significant increases in diabetic's patients than healthy controls. This is in line with other studies [16]. This increase in leptin among diabetic patients can be linked to imbalance of antioxidants [17] Leptin also promotes the synthesis of an appetite suppressant called α -melanocyte-stimulating hormone. The generation of leptin is tends to increase in female than in men. This indicates that reduced levels of leptin inhibit insulin release, and higher levels have a stimulating effect on this [18] (Table 1).

On the other hand, adiponectin was significantly decreased in diabetes. This is in line with previous studies [19]. Adiponectin tends to have insulin-sensitizing and anti-inflammatory actions. It could partially act by neutralizing this mechanism [20].

In conclusion, low adiponectin levels and high leptin levels may predict the development of diabetes.

Table 1: Mean value of adiponectin and leptin in diabetics and non diabetics.

Biochemical parameters	Diabetics	Non diabetics
Leptin (ng/ml)	13.9 \pm 4.21	51.25 \pm 6.14*
Adiponectin (μ g/mL)	9.3 \pm 4.17*	13.41 \pm 6.03

*significantly decreased when compared with non diabetics at $P < 0.05$.

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