ORIGINAL ARTICLE

Assessment of serum adiponectin levels in diabetic patients with microvascular complications

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ABSTRACT:

Background: This study was conducted to assess serum adiponectin levels in diabetic patients with microvascular complications. **Material and methods**: This study comprised of 100 subjects of which 50 subjects had diabetes mellitus and 50 subjects were controls. The subjects had been informed about the procedure and were asked to give consent. The patients who were willing to give consent and participate in the study were included in the study and those who were unwilling to participate in the study and were not willing to give consent had been excluded from the study. The adiponectin levels were measure in both diabetic subjects as well as controls. Statistical analysis was conducted using SPSS software. **Results**: In diabetic subjects, adiponectin levels were 265.59 mg/l and among controls, they were 19.28 mg/l; on comparing statistically, significant results were obtained. **Conclusion**: Adiponectin levels in diabetic subjects were more as compared to controls.
Keywords: diabetes, adiponectin

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INTRODUCTION

Diabetes mellitus (DM) is probably one of the oldest diseases known to man. It was first reported in Egyptian manuscript about 3000 years ago.[1] In 1936, the distinction between type 1 and type 2 DM was clearly made.[2] Type 2 DM was first described as a component of metabolic syndrome in 1988.[3]

Type 2 DM (formerly known as non-insulin dependent DM) is the most common form of DM characterized by hyperglycemia, insulin resistance, and relative insulin deficiency.[4] Type 2 DM results from interaction between genetic, environmental and behavioral risk factors.[5,6]

People living with type 2 DM are more vulnerable to various forms of both short- and long-term complications, which often lead to their premature death. This tendency of increased morbidity and mortality is seen in patients with type 2 DM because of the commonness of this type of DM, its insidious onset and late recognition, especially in resource-poor developing countries like Africa.[7]This study was conducted to assess adiponectin levels in diabetic subjects.

MATERIAL AND METHODS

This study comprised of 100 subjects of which 50 subjects had diabetes mellitus and 50 subjects were controls. The subjects had been informed about the procedure and were asked to give consent. The patients who were willing to give consent and participate in the study were included in the study and those who were unwilling to participate in the study and were not willing to give consent had been excluded from the study. The adiponectin levels were measure in both diabetic subjects as well as controls. Statistical analysis was conducted using SPSS software.

RESULTS

Mean age of diabetic patients and controls was 43.8 years and 49.3 years. Majority proportion of patients of both the study groups were males. In diabetic subjects, adiponectin levels were 265.59 mg/l and among controls, they were 19.28 mg/l; on comparing statistically, significant results were obtained.

Table 1: Adiponectin levels in diabetic patients and controls.

Groups	Adiponectin levels (mg/l)
Group 1 (diabetic patients)	265.59
Group 2 (controls)	19.28

DISCUSSION

Adiponectin (ADPN) is a polypeptide hormone that was discovered 10 years ago by four independent research groups.[8-11] ADPN is produced exclusively in adipocytes and circulates at very high levels in the bloodstream, where several isoforms have been characterised.[12,13] Full-length (30 kDa) ADPN undergoes post-translational modification by hydroxylation and glycosylation, resulting in trimers and higher-order polymers. Proteolytic cleavage products containing a globular domain of ADPN have

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also been detected.[14] Interestingly, the ability of ADPN to polymerise appears to be important for its biological activity. Recently, two cell surface receptors for ADPN (ADPN-R1 and -R2) were cloned: the receptors were detectable in most tissues, but liver and muscle showed by far the most prominent expression.[15]ADPN-R activation has been shown to stimulate AMP-activated protein kinase and peroxisome proliferator-activated receptor-γ ligand activity, fatty-acid oxidation and glucose uptake[16], and these actions may explain the suggested role of ADPN as an endogenous insulin sensitiser.[17,18]

This study was conducted to assess adiponectin levels in diabetic subjects.

In this study, in diabetic subjects, adiponectin levels were 265.59 mg/l and among controls, they were 19.28 mg/l.Frystyk, J (2005)[19] investigated the relationship between serum ADPN and the presence of retinopathy, nephropathy and CVD in patients with type 1 diabetes, divided into matched groups with normoalbuminuria and no retinopathy (n=67), simplex retinopathy (n=106) or proliferative retinopathy (n=19), and nephropathy with simplex (n=62) or proliferative retinopathy (n=137). Healthy control subjects (n=25) were included.Serum ADPN was increased in subjects with type 1 diabetes compared with control subjects (p<0.0001). Further, serum ADPN was higher in patients with than in those without nephropathy (p<0.0001). It was also higher in normoalbuminuric patients with than in those without proliferative retinopathy (p<0.0001). These differences remained significant after adjustment for known risk factors (p<0.03). CVD was also associated with elevated ADPN levels (p<0.05), but this difference became insignificant after risk factor adjustment. The most important predictor of serum ADPN was sex (r 2=19%) in normoalbuminuric patients and GFR in patients with nephropathy (r 2=18%).Patients with type 1 diabetes and microvascular complications have higher serum levels of ADPN than patients without complications. It remains to be clarified whether elevated levels of ADPN are pathogenically related to the development of microvascular complications or represent a beneficial counter-regulatory response.

CONCLUSION
Adiponectin levels in diabetic subjects were more as compared to controls.

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