

Serum Adiponectin Levels in Patients of Type 2 Diabetes Mellitus

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ABSTRACT

Aim: To find out the serum adiponectin levels in patients of type 2 diabetes and non diabetics.

Methods: A cross-sectional, comparative study included 88 subjects. Out of 88 cases, 68 were diagnosed cases of T2DM. In 68 diagnosed cases, 34 were newly diagnosed cases of T2DM without any treatment and 34 were on oral hypoglycemic medicine. 20 subjects were controls which were age and sex matched. Serum adiponectin levels were estimated by using ELISA procedure. Total cases were divided into Group A: 34 newly diagnosed patients of T2DM without any treatment. Group B: 34 patients of T2DM on oral hypoglycemic medicine and Group C: 20 subjects of normal controls.

Results: In our study, mean \pm SD values of adiponectin levels in non-diabetics in Group C were 1560 \pm 1044.6 ng/ml. In group A, mean \pm SD values of adiponectin levels were 1153 \pm 792.6ng/ml and in group B, mean \pm SD values of adiponectin levels were 1601 \pm 1210.5ng/ml. The adiponectin levels were lower in diabetics without medication (A) as compared to the control group (C). The difference was statistically significant between groups A vs B and A vs C while the difference was statistically non significant between groups B vs C.

Conclusion: The adiponectin levels were lower in diabetics without medication (group A) as compared to the diabetics with drugs (group B) and control group (C). The difference was statistically significant between groups A vs B and A vs C while the difference was statistically insignificant between groups B vs C.

Keywords: Adiponectin level, Lipids, Type-2 diabetes mellitus

INTRODUCTION

Adiponectin is newly described secretory proteins. It has significant metabolic and anti-inflammatory functions. These functions put forward a defending function in the progress of T2DM^{1,2}. One of the study by Lindsay et al (2002)³ reported to date favor this case, as they describe a lower prevalence of diabetes for those with elevated adiponectin levels.

T2DM and the impaired fasting glucose (IFG) are frequent along with Jordanian residents. The predictable age regularized frequency rate of (IFG) and T2DM were 7.8% and 17.1% respectively with insignificant sex differences according to a current research⁴. To make matters worse, there are shocking rates of obesity and its related co-morbidities between populations of Jordanians, particularly amongst females⁵.

The objective of the study was to find out the serum adiponectin levels in patients of type 2 diabetes and non diabetics.

METHODOLOGY

After IRB permission, this cross sectional and comparative study was conducted in the Department of Medicine & Pathology, Lahore General Hospital/PGMI, Lahore from February 2012 to August 2012. Sampling method used was non probability sampling.

Inclusion Criteria: Non- obese patients with diagnosis of T2DM, both genders were included and age of 30--50 years.

Exclusion Criteria: Patients with diagnosis of T1DM, patients with H/o endocrine disorders, renal or hepatic diseases, cerebrovascular diseases and hypertension

Grouping of the study: A total of 88 subjects were studied and were divided into three groups i.e. A, B and C.

Group A: 34 newly diagnosed patients of T2DM without any treatment.

Group B: 34 patients of T2DM on oral hypoglycemic medicine

Group C: 20 subjects of normal controls.

Sample collection: Five ml of blood was taken in gel vial. An informed consent was taken. The data was collected and analyzed in SPSS- 15 Mean \pm SD values are given for quantitative variables. Comparison was done among the groups. P value of < 0.05 was considered statistically significant.

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RESULTS

Table 1: Age distribution in different groups

| | Groups | | |
|---------------|----------------|----------------|----------------|
| | A | B | C |
| Mean \pm SD | 45.9 \pm 5.8 | 45.6 \pm 5.9 | 39.2 \pm 7.8 |
| Ranges | 30—50 | 30—50 | 30—50 |
| Total | 34 | 34 | 20 |

Group A= Diabetic group without medication

Group B= Diabetic Group with medication

Group C= Control group i.e. Non diabetics

Table 2: Adiponectin levels in different groups

| Groups | Adiponectin levels (ng/ml) | P value |
|--------|----------------------------|-------------------|
| | Mean \pm SD | |
| A | 1153.8 \pm 792.6 | A vs B 0.056 (S) |
| B | 1601.5 \pm 1210.5 | A vs C 0.039 (S) |
| C | 1560.00 \pm 1044.6 | B vs C 0.631 (NS) |

Group A= Diabetic group without medication

Group B= Diabetic Group with medication

Group C= Control group (Non diabetics)

DISCUSSION

In our study, mean \pm SD values of adiponectin levels in non-diabetics in Group C were 1560 \pm 1044.6 ng/ml. In group A, mean \pm SD values of adiponectin levels were 1153 \pm 792.6 and in group B, mean \pm SD values of adiponectin levels were 1601 \pm 1210.5

It is observed that adiponectin levels in diabetics taking medication was higher than diabetics who were newly diagnosed and were not taking any anti diabetic medication. The comparison between these groups i.e. A vs B (group A newly diagnosed T2DM and group B T2DM on oral hypoglycemic drugs) showed significant difference statistically i.e. p value (A vs B) = 0.056 which is significant. The comparison between A vs C also showed significant difference and P value (group A and group C) is 0.039 which is significant also. The comparison between groups B vs C showed non significant difference with P value (group B and group C) 0.631 (Non significant).

Our results are consistent with the results of Tsou et al (2004)⁶ that also showed similar observations regarding adiponectin levels in their study. Another study was done in

subjects having insulin as a medicine between ages 26 to 56 years and their results are consistent with the results of our study. (Hanley et al. 2007)⁷.

CONCLUSION

The adiponectin levels were lower in newly diagnosed T2DM without medication when comparing with the control group (C) and diabetic group with oral therapy (B). The difference was statistically significant between groups A vs B and A vs C.

Conflict of interest: Nothing to declare

REFERENCES

1. Pajvani UB, Scherer PE: Adiponectin: systemic contributor to insulin sensitivity. *Curr Diab Rep* :207–213, 2003
2. Maeda N, Shimomura I, Kishida K et al. Diet-induced insulin resistance in mice lacking adiponectin/ACRP30. *Nat Med* 8 : 731–737, 2002
3. Lindsay RS, Funahashi T, Hanson RL et al. Adiponectin and development of type 2 diabetes in the Pima Indian population. *Lancet* 36 : 57–58, 2002
4. Ajlouni KYS, Khader, A, Batieha, H et al. An increase in prevalence of diabetes mellitus in Jordan over 10 years. *J. Diabetes Complications*, 22 (2008), pp. 317-324
5. Khader Y, Batieha A, Ajlouni H et al. Obesity in Jordan: prevalence, associated factors, co morbidities, and change in prevalence over ten years. *Metab. Syndr. Relat. Disord.*, 6 (2008), pp. 113-120
6. Tsou, PL., Jiang, YD., Chang, CC et al. 2004. Sex-related differences between adiponectin and insulin resistance in schoolchildren. *Diabetes Care*, 27, 308-13.
7. Hanley, AJ., Bowden, D., Wagenknecht, LE et al. 2007. Associations of adiponectin with body fat distribution and insulin sensitivity in non diabetic Hispanics and African-Americans. *J Clin Endocrinol Metab*, 92, 2665-71.