ORIGINAL ARTICLE

Adiponectin as a Predictor of T2dm in the Asymptomatic Offspring of Patients with Type 2 Diabetes

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ABSTRACT

Aim: Study of adiponectin and Blood glucose in children of T2DM subjects with that of children of normal subjects. This study was conducted in Pathology deptt. PGMI, Lahore and Lab. of UVAS, Lahore.
Duration of study: For nine months.
Methods: Healthy children of T2DM subjects with both gender of age <30 yrs with normal fasting glucose without clinical presentation of diabetes.
Results: Adiponectin and glucose were tested in 100 subjects. Adiponectin in group A (Control) was 5.2 and in group B (experimental) was 4.4 and difference was non significant statistically. Glucose in group A (control) was 80.8 and in group B (experimental) was 80.9 and difference was non significant statistically.
Conclusion: Adiponectin and glucose values were in normal limits non significantly without any relationship.
Keywords: ELISA, T2DM, T2DM, adiponectin, glucose.

INTRODUCTION

In type 2 diabetic patients, plasma adiponectin is decreased[1]. Adiponectin is a peptide oligomer of 30 kDa sub units. Suppression of glucose formation and increase of fatty acid oxidation in liver and muscle are principal actions of adiponectin. Adiponectin is secreted from adipose tissues into the bloodstream and its level is approximately 5-10 µg/ml[2]. Plasma adiponectin are decreased in T2DM and showing protective effects with high levels. Small adipocytes in lean subjects promote metabolic homeostasis, while large adipocytes in obese persons promote inflammatory process and release factors that predispose insulin resistance[3].

METHODOLOGY

A research performed in Pathology deptt. PGMI, Lahore and UVAS, Lahore. The study duration was from Oct.2009 to June 2010. 100 subjects were included. These were divided into two groups A & B. Group A included 50 children of non diabetic parents as controls. Group B included 50 children of T2DM parents. The data was processed by SPSS version 15

RESULTS

The detail of results is given in tables 1, 2, 3. A total of 100 subjects, 64 males and 36 females were included in the study..

Table 1: Age distribution

Ages (yrs)	Group A	Group B
Mean ± SD	22.2±3.4	14.0 ±3.5
Total Subjects	50	50

Statistical analysis: A Vs B = P>0.05(NS)
Group A= Children of non-diabetic parents.
Group B= Children of T2DM parents.

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Table-2: Adiponectin Levels in A and B

Adiponectin (µg/ml)	Group A (Control)	Group B (Experimental)
Mean± SD	5.2±2.2	4.4±1.4
95% CI	4.56-5.83	3.99-4.77
Ranges	2.27-12.52-	1.69- 6.77
Males	5.6±2.5	4.5±1.4
Females	4.5±1.4	4.4±1.5
Total subjects	50	50

Statistical analysis: A vs B=p>0.05(NS)
Group A= Children of non-diabetic parents.
Group B= Children of T2DM parents.

Table-3: Glucose Levels in A and B

Glucose (mg/dl)	Group A (Control)	Group B (Experimental)
Mean± SD	80.8±14.2	80.9±13.4
Ranges	60-110	65-112
Males	80.9±14.3	79.8±22.4
Females	78.9±14.4	85.1±15.0
Total subjects	50	50

Statistical analysis: A vs B=p>0.05(NS)
Group A= Children of non-diabetic parents.
Group B= Children of T2DM parents.

DISCUSSION

In our study, Control group A showed mean ± SD values of ages are 22.2±3.4 years and in experimental group B, mean ± SD values of ages are 14.0±3.5 years and difference between two groups showed non significant difference statistically (p>0.05). This study was in accordance with the study of Petersen et al (2004)[4].

In this study when gender is concerned, out of 50 subjects, 19(38%) were females and 31(62%) were males in group A. In Group B, 33(66%) were males and 17(34%) were females. When comparing two groups, this showed non-significant difference statistically (p>0.05). This study was not in accordance with Nishizawa et al (2002)[5]. It may be due to ethnic differences in other countries. This study was in favor of Yokoyama et al who showed no difference in gender in their study[6].

Regarding adiponectin levels, when comparing two groups, difference is non significant (p>0.05). Fasting

serum adiponectin in males was found to be 4.5±1.4 µg/ml as compared to the fasting adiponectin of male controls (5.6±2.5 µg/ml).

Similarly, fasting adiponectin level in female subjects was 4.4±1.5 µg/ml and in the female controls was 4.5±1.4 µg/ml. Adiponectin distribution in group A showed 44 (88%) cases with adiponectin 2.3-7.8 µg/ml and 6 (12%) with adiponectin 7.8-12.5 µg/ml. Adiponectin in group B showed 30(60%) subjects having adiponectin level between 1.7-4.8 µg/ml while 20(40%) subjects having adiponectin level between 4.8-6.8 µg/ml respectively. Our study was not in favor of Yamamoto et al who observed adiponectin in women (13.5±7.9 µg/ml) i.e. significantly higher than that in men (7.2±4.6 µg/ml).[7]

CONCLUSION

The adiponectin levels were slightly lower in group B children having T2DM as compared to the control group A. Glucose level was lower in control group as compared to experimental group.

REFERENCES

1. Pollack, J., Kovacova, Z., Jacek, M et al. 2007. An increase in plasma adiponectin multimeric complexes follows hypocaloric diet-induced weight loss in obese and overweight pre-menopausal women. Clinical Science, 112: 557–565.
2. Kleerekoper, M., 2006. Hormones. In: Burits C.A., Ashood, E.R., Bruns, D.E., 4th Ed. Tietz Textbook of clinical Chemistry and Molecular Diagnostics. New Delhi, Saunders, 1019-1032.
3. Fruebis, J., Tsao, T.S., Javorschi, S et al. 2001. Proteolytic cleavage product of 30-kDa adipocyte complement-related protein increases fatty acid oxidation in muscle and causes weight loss in mice. Proc. Natl. Acad. Sci., USA, 98 (4): 2005–2010.
4. Petersen, K.F., Dufour, S., Befroy, D et al. 2004. Impaired mitochondrial activity in the insulin-resistant offspring of patients with type 2 diabetes. N. Engl. J. Med., 350 (7): 664-671.
5. Nishizawa, H., Shimomura, I., Kishida, K et al. 2002. Androgens decrease plasma Adiponectin, an insulin-sensitizing adipocyte-derived protein. Diabetes, 51: 2734–2741.
6. Yokoyama, h., Emoto, M., Mori, K et al. 2006 . Plasma adiponectin level is associated with insulin-stimulated nonoxidative glucose disposal. J. Clin. Endocrinol. Met., 91 (1): 290-294.
7. Yamamoto, Y., Hirose, H., Saito, I et al. 2002. Correlation of the adipocyte−derived protein adiponectin with insulin resistance index and serum high−density lipoprotein−cholesterol, independent of body mass index, in the Japanese population. *Clin. Sci.,* 103:137–142.