ORIGINAL ARTICLE

Relationship Between Resistin and Lipid Profile among Type 2 Diabetics

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ABSTRACT

Background: An adipokine, Resistin, is a cystein rich protein that is secreted by adipose tissue. **Aim:** To evaluate the relation between resistin and lipid profile among control and diabetic groups. **Study design:** Cross-sectional study.

Methodology: Patients (n=100) each group were enrolled to carry-out present study at Ayub Medical Complex (AMC) Abbotabad. All the analytical work was performed for 6 months by keeping confidence interval 95%. Informed consent was taken from all of them. Student's-t test was applied with P-value < 0.05 as significant.

Results: The mean ages of patients in group-A and group-B were 61.7±11.26 and 60.1±12.06 years respectively. The lipid profile was deranged among diabetics when compared with control having significant P-value. The diabetic group showed significantly higher levels of BMI as compared to the control group.

Conclusion: It was concluded that resistin has a strong positive association (p < 0.001) with lipid profile among diabetics while positively associated only with LDL-C (R .358) among non-diabetics.

Keywords: Type-2 Diabetes, Resistin, Lipid Profile and BMI.

INTRODUCTION

Diabetes is a global health issue affecting 285 million people worldwide. Majority diabetic victims (85-95%) have type 2 diabetes mellitus¹. There are several factors like obesity, genetics, sedentary lifestyle that contribute to its development as reported by various studies².

Pakistan is among the high burden countries for diabetes mellitus and unfortunately ranked 7th with diabetes globally. Literature review revealed that approximately 6.9 million Pakistanis had type-2 diabetes in 2007³. Number of reasons like lack of resources, poor medical facilities, illiteracy and delayed diagnosis as well as treatment lead to its complications^{4,5}.

Resistin is secreted by adipose tissue. In humans, normal resistin levels (7-22 ng/mL) were documented⁶. It is secreted as a pro-peptide having 108 amino acids. As a result, it either becomes a dimer or a hexamer having disulphide bridges⁴.

Recently a study depicted a receptor, Toll-like receptor 4 (TLR-4) for resistin that may be involved in the production of insulin resistance and obesity⁷. One of the function of resistin include the enhancement of insulin resistance in adipocytes. Thus its levels are supposed to be high among diabetics⁸.

Due to the high incidence of diabetes among Pakistani population with limited local data available regarding its causes, we planned the current study to evaluate the relation between resistin and lipid profile among control and diabetic groups.

The objective of the study was to evaluate the relation between resistin and lipid profile among control and diabetic groups.

METHODOLOGY

Patients (n=100) each group were enrolled. This study was done at Ayub Medical Complex (AMC) Abbotabad. It included diabetics as well as healthy individuals with both genders having age range (40 yrs and above). BMI (body mass index) was calculated for all enrolled subjects using formula Kg/m². Blood samples were collected using aseptic methods. Serum was obtained by centrifuging it. Fasting blood glucose and lipid profile were analyzed by colorimetric method. Serum resistin was measured by ELISA⁹.

Statistical analysis: Data analyzed by SPSS 19.0v. Parameters like gender, educational and financial status were represented as mean±SD. Student's-t test was applied with P-value < 0.05 as significant. Pearson's correlation co-efficient was applied in-order to see corelation between resistin and lipid profile.

RESULTS

Among 100 enrolled patients in each group, general parameters like gender, education status and financial status were summarized in Table-1. Various biomedical parameters were presented as mean \pm SD in Table-2. The level of resistin among diabetics was high when compared with control group. Mean \pm SD of age among both groups (A & B) was 61.7 \pm 11.26 years and 60.1 \pm 12.06 years respectively. Mean \pm SD of BMI among both groups (A & B) was 25.9 \pm 3.18 (kg/m²) and 23.4 \pm 2.53 (kg/m²) respectively. Table 3 showed that it has a strong positive association with total cholesterol, serum triglyceride and LDL levels among diabetics when compared with control group having significant P-value.

| Variables | Categories | MALES (n) | FEMALES(n) | MALES (%) | FEMALES(%) |
|--------------------|------------|------------|------------|------------|------------|
| Gender | Group A | 59 | 41 | 59 | 41 |
| | Group B | 52 | 48 | 52 | 48 |
| Financial Status | Group A | LOW | HIGH | LOW | HIGH |
| | | 30 | 70 | 30 | 70 |
| | Group B | 24 | 66 | 24 | 66 |
| Educational Status | Group A | Illiterate | Literate | Illiterate | Literate |
| | | 61 | 39 | 61 | 39 |
| | Group B | 71 | 29 | 71 | 29 |

Table-1: Baseline parameters

*Statistically Significant

| Table-2. Diomedical parameters Among Dom groups | Table-2: Biomedical | parameters Among Both groups |
|---|---------------------|------------------------------|
|---|---------------------|------------------------------|

| Variables | Group A (mean ± SD) | Group B (mean ± SD) | P- value |
|-----------------------|------------------------|---------------------------|-------------|
| Fasting Sugar(mg/dL | 158.5±28.30 | 84.9±20.01 | 0.05* |
| T. Cholesterol(mg/dl) | 187.5±34.99 | 169.4±15.60 | 0.05* |
| TG (mg/dl) | 225.9±136.22 | 145.3±58.64 | 0.05* |
| HDL (mg/dl) | 32.5±7.75 | 48.1±8.43 | 0.05* |
| LDL (mg/dl) | 110.63±36.80 | 92.1±19.24 | 0.05* |
| Resistin (ng/mL) | 30.4±8.50 | 18.9±2.31 | 0.05* |

*Statistically Significant

Table-3: Correlation of resistin with different parameters

| Parameters | Group A (Diabetic) | | Group B (Non-Diabetic) | | |
|------------|--------------------|---------|------------------------|----------|--|
| | R | Р | R | Р | |
| BMI | 131 | .194 | .045 | .653 | |
| FBS | .156 | .122 | 056 | .582 | |
| тс | .320 | .001** | .045 | .658 | |
| TG | .275 | .006** | 002 | .986 | |
| HDL | 804 | <0.01** | 728 | <0.01** | |
| LDL | .269 | .007** | .358 | < 0.01** | |

** Correlation is significant at the 0.01 level

DISCUSSION

Results of the current study showed higher levels of resistin among diabetics while lower levels in healthy individuals. Our findings were supported by various previous studies that reported raised level of resistin among diabetics^{10,11}.

In current project, majority of diabetics were overweight and obese while most of the controls had normal weight. Our findings were in line with one study who reported that diabetes is a result of over-weight and obesity¹².

Literature review revealed that dyslipidemias are the most important risk factor for developing diabetes. If remained uncontrolled than this dearranged lipid profile results into atherosclerosis as well as other complications. Complications can be prevented by keeping a strict diabetic control that can even reverse these lipid abnormalities among them¹³. Our findings showed that controls (majority) had normal lipid profile while diabetics showed de-arranged lipid profile. One previous study by Vadivelan et al showed similar findings that patients had dearranged lipid profile¹⁴.

In current project, diabetics had positive correlation of resist in was found with parameters like serum triglycerides, total cholesterol and LDL-C while a negative relation was reported with HDL-C. Our findings were in line with many previous studies that showed similar co-relation. (15,16)

CONCLUSION

It was concluded that resistin has a strong positive association (p < 0.001) with lipid profile among diabetics while positively associated only with LDL-C (R .358) among non-diabetics. It has a significant negative association with HDL-C among both diabetic (R -.804; p < 0.01) and non-diabetic groups (R -.728; p < 0.01).

Limitations: Our study had several limitations including time constrain, financial support and human resources. It was single centre study.

Conflict of interest: None

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