Original Article

Dyslipidemia and Resistin in Obese Diabetic and Non-diabetic Subjects

Syeda Ijlal Zehra Zaidi[1], Naghmana Lateef[2], Sadia Islam[1]

ABSTRACT

Objective: .This study was planned to compare and correlate the potential role of resistin in obese patients with T2DM and obese non-diabetic controls and also to evaluate the correlation between resistin and marker of obesity and lipid profile.

Study Design: Comparative study

Place and Duration of Study: This study was conducted at the Department of Medicine at Lahore General Hospital; Lahore affiliated with Postgraduate Medical Institute, Lahore from January 2016 to March 2017.

Materials and Methods: This study was conducted in Physiology Department of Postgraduate Medical Institute Lahore. In this study we also collaborate with Medicine department of General Hospital of Lahore. In this study we had taken 80 (Eighty) male and female obese patients. The patients have not taken any medicine during study. We have not considered pregnant women. The range of age was thirty to fifty five (35 to 55) years.

Results: In type 2 diabetic patients we found high level of Serum resistin i.e (38±8 n/ml) as compare to controls. Serum cholesterol (208 ± 70 mg/dl), serum triglycerides(188 ± 74 mg/dl), serum LDL(160 ± 37 mg/dl) was significantly higher in diabetic obese Patients. Serum HDL (38 ± 15) mg/dl was significantly low in diabetic subjects. Pearson's analysis revealed significant correlation between serum resistin and serum triglycerides in both groups. A negative correlation was seen between serum resistin and serum HDL in both groups.

Conclusion: Resistin may have a role in disrupting lipid parameters thus leading to insulin resistance in diabetes mellitus in obese subjects or vice versa. We should try to control hormone such as resistin it will be helpful to control diabetic obese patients with dyslipidemia

Key Words: Diabetes mellitus, Dyslipidemia, Resistin, Obesity

Citation of articles: Zaidi SIZ, Lateef N, Islam S. Dyslipidemia and Resistin in Obese Diabetic and Non-diabetic Subjects. Med Forum 2017;28(8):111-114.

INTRODUCTION

Lipotoxicity is result of accumulation of fat in pancreas, muscle and liver cells it is due to defects in lipid metabolism. Increased lipid anabolism and uptake of fatty acids involved in above mentioned abnormalities [1] Uptake of fatty acids and oxidation of fatty acids abnormality caused accumulation of diacylglycerols, ceramide and acyl-CoA (metabolites of fatty acids) and fatty acids in cells of specified organs.[2] The metabolites inhibit the phosphorylation process of receptors (insulin receptor substrates) and tyrosine (IRS-1 and IRS-2) caused insulin resistance by inhibiting insulin-mediated glucose uptake.[3] Type 2 diabetes mellitus one of many reason is abnormal lipid metabolism which caused increased serum FFA.[4]

When in serum HDL (high density lipoprotein cholesterol) is high in combination of LDL (low density lipoproteins) ,FFA(free fatty acids) and TG (triglycerides) ultimately caused Dyslipidemia.[5] Hormonal abnormality affects the lipid metabolism enzyme which caused excess circulation of FFA ultimately TG is accumulated in cells of (liver and muscle) which is the main reason of to insulin resistance.[6] The abnormality of Lipoprotein such as (HDL) caused decreased level of HDL-C which is also link with decreased level of Apo-A.[7]

Apo-A production is decreased in liver cells due to high supply of TG and HDL particles with breakdown of HDL particles.[8,9] One hormone which is found in adipose tissue of rodents and also in human beings Resistin (polypeptide cysteine-rich). [10] It is said that this hormone which is protein in nature caused enhancement of FFA by different mechanism. It is also decreased the absorption of FFA from muscle cells and also affect fatty acid re-esterification in adipose tissuse.[11,12] The one of reason in many that AMPK i.e phosphorylation reduction decreased lipogenesis ultimately increased FFA.[13]

The aim of our study is to measure correlation, between serum resistin, insulin resistance, and dyslipidemia in obese non-diabetics and obese type 2 diabetics.

1. Department of Physiology, Avicenna Medical College Lahore.
3. Department of Physiology, Ameer ud din Medical College/PGMI Lahore.

Correspondence: Dr Syeda Ijlal Zehra Zaidi, Assistant Professor, Department of Physiology, Avicenna Medical College Lahore.
Contact No: 0332-3698204
Email: drasnadkhan@gmail.com

Received: May 19, 2017; Accepted: June 22, 2017

MATERIALS AND METHODS

This study was conducted in Physiology Department of Postgraduate Medical Institute Lahore. In this study we also collaborate with Medicine department of General Hospital of Lahore. In this study we had taken 80 (Eighty) male and female obese patients. The patients have not taken any medicine during study. We have not considered pregnant women. The range of age was thirty to fifty five (35 to 55) years.

Three ml fasting blood was taken in test tube with anticoagulant (sodium fluoride) was used. After taking blood, we centrifuged it for 20 mints. Take the serum and analysed the sample on Micro lab 300.We used all the kits of Merck.. We perform the test of Total Cholesterol, HDL, LDL, serum triglycerides, Serum Cholesterol

RESULTS

In type 2 diabetic patients we found high level of Serum resistin i.e (38±8 ng/ml) as compare to controls. Serum cholesterol (208 ± 70 mg/dl), serum triglycerides(188 ± 74 mg/dl), serum LDL(160 ± 37 mg/dl) was significantly higher in diabetic obese Patients. Serum HDL (38 ± 15) mg/dl) was significantly low in diabetic subjects. Pearson's analysis revealed significant correlation between serum resistin and serum triglycerides in both groups. A negative correlation was seen between serum resistin and serum HDL in both groups.

In our study we found that in obese diabetic patients highly level of low density lipoprotein (LDL), triglyceride (TG) and cholesterol as compared to obese controls. The correlation was not exist significantly between LDL-cholesterol and total cholesterol and resistin in obese diabetic patients as compared to obese controls. However TG(triglycerides) and serum resistin showed significant positive correlation in obese diabetic patients as compared to obese controls. While HDL- cholesterol showed significant negative correlation in obese diabetic patients as compared to obese controls.

Table No.1: Lipid profile in the diabetic and non diabetic groups

Variables	Diabetics n= 40 Mean ±SD	Non Diabetics n=40 Mean ± SD	p value
Cholesterol mg/dl	208 ± 70	151 ± 36	**0.000
Triglycerides mg/dl	188 ± 74	124 ± 39	**0.0001
LDL mg/dl	160 ± 37	141 ± 35	*0.0229
HDL mg/dl	38 ± 15	54 ± 15	**0.000

n = number of subjects * = significant

** = highly significant

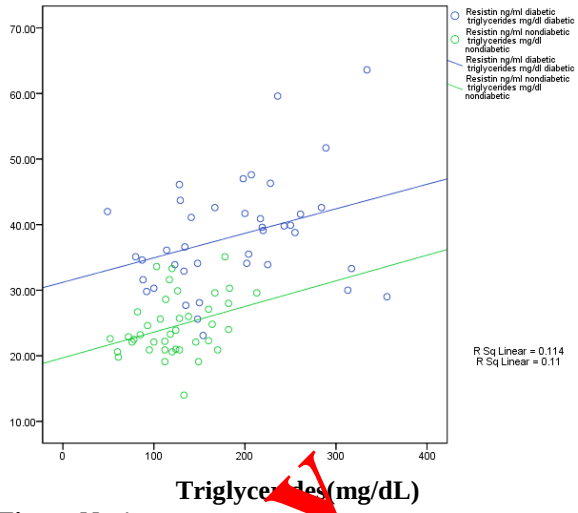

Figure No.1:

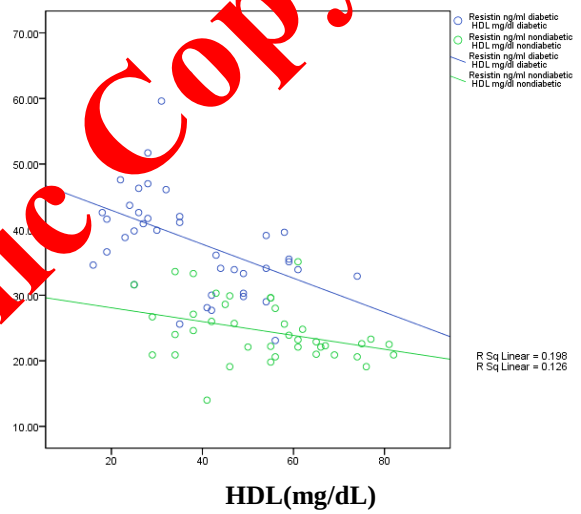

Figure No.2:

DISCUSSION

Dyslipidemia link is exist with obesity and also type 2 diabetes and insulin resistance metabolic abnormality are found worldwide as an epidemic.[14] One reason of diabetes is lipid metabolism Abnormalities and also Insulin resistance cause T2DM and obesity .[15]

In our study we found that in obese diabetic patients highly level of low density lipoprotein (LDL), triglyceride (TG) and cholesterol as compared to obese controls. The correlation was not exist significantly between LDL-cholesterol and total cholesterol and resistin in obese diabetic patients as compared to obese controls. However TG(triglycerides) and serum resistin showed significant positive correlation in obese diabetic patients as compared to obese controls. While HDL- cholesterol showed significant negative correlation in obese diabetic patients as compared to obese controls.

The result is also supported with other studies such as Asano et al. (2010) which showed . The correlation was not exist significantly between LDL-cholesterol and total cholesterol and resistin in obese diabetic patients as compared to obese controls. However TG(triglycerides) and serum resistin showed significant positive correlation in obese diabetic patients as compared to obese controls.

Hoseen et al. (2010) study also supported he study in rodent that The correlation was not exist significantly between LDL-cholesterol and total cholesterol and resistin in obese diabetic patients as compared to obese controls. However TG(triglycerides) and serum resistin showed significant positive correlation in obese diabetic patients as compared to obese controls. While HDL- cholesterol showed significant negative correlation in obese diabetic patients as compared to obese controls in rodent

Contrary to this Qi et al. (2008) study also supported he study in in patients with metabolic syndrome his results showed no significant correlation between lipid and resistin level. Mohammadzadeh et al. (2008) study also supported he study in Metabolic syndrome he found that insulin resistance, dyslipidemia and obesity are linked with resistin concentration.

CONCLUSION

Resistin may have a role in disrupting lipid parameters thus leading to insulin resistance in diabetes mellitus in obese subjects or vice versa. . The correlation was not exist significantly between LDL-cholesterol and total cholesterol and resistin in obese diabetic patients as compared to obese controls. However TG (triglycerides) and serum resistin showed significant positive correlation in obese diabetic patients as compared to obese controls. While HDL cholesterol showed significant negative correlation in obese diabetic patients as compared to obese controls.

We should try to control hormone such as resistin it will be helpful to control diabetic obese patients with dyslipidemia.

Author's Contribution:

Concept & Design of Study: Syeda Ijlal Zehra Zaidi
Drafting: Sadia Islam, Naghmana Lateef
Data Analysis: Syeda Ijlal Zehra Zaidi
Revisiting Critically: Sadia Islam, Naghmana Lateef
Final Approval of version: Syeda Ijlal Zehra Zaidi

Conflict of Interest: The study has no conflict of interest to declare by any author.

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