

Evaluation Dyslipidemia and Resistin in Diabetic Obese Patients in Mirpur AJK

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ABSTRACT

Objective: This study was planned to compare and correlate the potential role of resistin in obese patients with T2DM

Study Design: Comparative study

Place and Duration of Study: This study was conducted in Pharmacology and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur-AJK from April 2016 to November 2017.

Materials and Methods: In this study we also collaborate with Medicine department of DHQ Hospital of Mirpur AJK. In this study we had taken 120 (Eighty) male and female obese patients. Pregnant women were not considered in study. We also ensured that patients had taken any medicine. In our study, we select the range of patient from thirty six to fifty nine year (36 to 59).

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 (206.2 ± 69 mg/dl), serum triglycerides (184.3 ± 73mg/dl), serum LDL(165.4 ± 36mg/dl) was significantly higher in diabetic obese Patients. Serum HDL (39.1 ± 14) mg/dl) was significantly low in diabetic subjects. Our study showed that cholesterol, triglyceride (TG) and low density lipoprotein (LDL) are found higher in obese diabetic patients as compared to obese controls. Resistin, total cholesterol and LDL-cholesterol were not exist significantly in obese diabetic patients when we compared the result with obese controls. But on other side we observed the results of TG (triglycerides) is significant higher in obese diabetic patients as compare obese controls. it means that there is positive correlation present between TG (triglycerides) and obese diabetic patient.

Conclusion: Lipid profile is disturbed with resistin which ultimately caused to insulin resistance in diabetes mellitus in obese subjects. We should try to control hormone such as resistin will be helpful to control diabetic obese patients with dyslipidemia

Key Words: Diabetes mellitus, Dyslipidemia, Resistin, Obesity

Citation of articles: Iqbal S, Alam K, Isam A, Asnad. Evaluation Dyslipidemia and Resistin in Diabetic Obese Patients in Mirpur AJK. Med Forum 2018;29(2):49-52.

INTRODUCTION

Lipid metabolism is the process in which lipid is synthesized and utilized by body in normal process but any defects in metabolism this lipid is accumulate in different organ cell of body such as in liver cells, muscle and pancreas cells which ultimately caused Lipotoxicity. It means that anabolism of lipid increased.¹

In specific organs cells, fatty acids, metabolites of fatty acids such as acyl-CoA, Ceramide and diacylglycerols are accumulate due to abnormal metabolism process in body, uptake of fatty acids are increased and oxidation of fatty acids are disturbed.²

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Received: November, 2017; Accepted: January, 2018

The metabolites inhibit different process in body such as phosphorylation process major process Receptors (insulin receptor substrates) phosphorylation and IRS-1 and IRS-2 tyrosine receptor. By phosphorylation inhibition, ultimately inhibiting insulin-mediated glucose uptake.³ Free fatty acids are produced in large quantities due to abnormal lipid abnormal metabolism and the reason is Type 2 diabetes mellitus.⁴ Dyslipidemia is main problem in obese patients. The reason for dyslipidemia is high lipid profile. In this disease, high density lipoprotein cholesterol (HDL) is high in blood serum. And also low density lipoproteins (LDL) are high in combination. So due this free fatty acids (FFA) and triglycerides (TG) ultimately caused Dyslipidemia.⁵ Hormonal also effects the lipid metabolism due to abnormal metabolism the triacylglycerol are accumulated in different organ cell specially liver cells and muscles cells which is the main reason of insulin resistance and abnormal hormone also increase free fatty acids in blood circulation.⁶ Decreased High density lipoprotein (HDL-C) have link with decreased level of Apo-A. We know very well that abnormal Lipoprotein such as (HDL) caused decreased High density Lipoprotein -C (HDL-C).⁷ In abnormal metabolism the high concentration of triacylglycerol (TG) and High density lipoprotein (HDL) particles are

produced in liver cells which caused decreased Apo protein A (Apo-A) and it is due to high breakdown of HDL particles.^{8,9} Resistin is hormone which is protein in nature with high no of cysteine amino acids (polypeptide cysteine-rich). This hormone is present in rodents and also in human beings which is found in specific tissue that is adipose tissue.¹⁰ Due to the protein in nature this hormone effects free fatty acid concentration by different enhancement mechanism. Free fatty acids are decreased in muscles cells by this hormone. It is also effects free fatty acid concentration by disturbance of re-esterification process of free fatty acids in adipose tissue.^{11,12}

Lipogenesis is decreased by ephosphorylation reduction reaction which is the main reason (AMPK) which is ultimately increased free fatty acids.¹³

MATERIALS AND METHODS

This study was conducted in Pharmacology and Biochemistry Department of Mohtarma Benazir Bhutto *Shaheed* Medical College Mirpur-AJK. In this study we also collaborate with Medicine department of DHQ Hospital of Mirpur AJK. In this study we had taken 120 (Eighty) male and female obese patients. Pregnant women were not considered in study. We also ensured that patients had taken not any medicine. In our study, we select the range of patient from thirty six to fifty nine year (36 to 59).

We take 3ml blood sample in test tube and centrifuge for 15 minutes. Test was performed Micro lab 300. Serum Cholesterol, Total Cholesterol, serum triglycerides, HDL and LDL were estimated.

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 (206.2 ± 69 mg/dl), serum triglycerides (184.3 ± 73mg/dl), serum LDL(165.4 ± 36mg/dl) was significantly higher in diabetic obese Patients. Serum HDL (39.1 ± 14) mg/dl) was significantly low in diabetic subjects. Our study showed that cholesterol, triglyceride (TG) and low density lipoprotein (LDL) are found higher in obese diabetic patients as compared to obese controls. Resistin, total cholesterol and LDL-cholesterol were not exist significantly in obese diabetic patients when we compared the result with obese controls. But on other side we observed the results of TG (triglycerides) is significant higher in obese diabetic patients as compare obese controls. It means that there is positive correlation present between TG (triglycerides) and obese diabetic patient.

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

Variables	Diabetics n= 60 Mean ±SD	Non Diabetics n=60 Mean±SD	p value
Cholesterol mg/dl	206.2 ± 69	152.1 ± 36	**0.000
Triglycerides mg/dl	184.3 ± 73	123.2 ± 35	**0.0001
LDL mg/dl	165.4 ± 36	140.3 ± 36	*0.0229
HDL mg/dl	39.1 ± 14	53.1 ± 14	**0.000

n = number of subjects

* = significant ** = highly significant

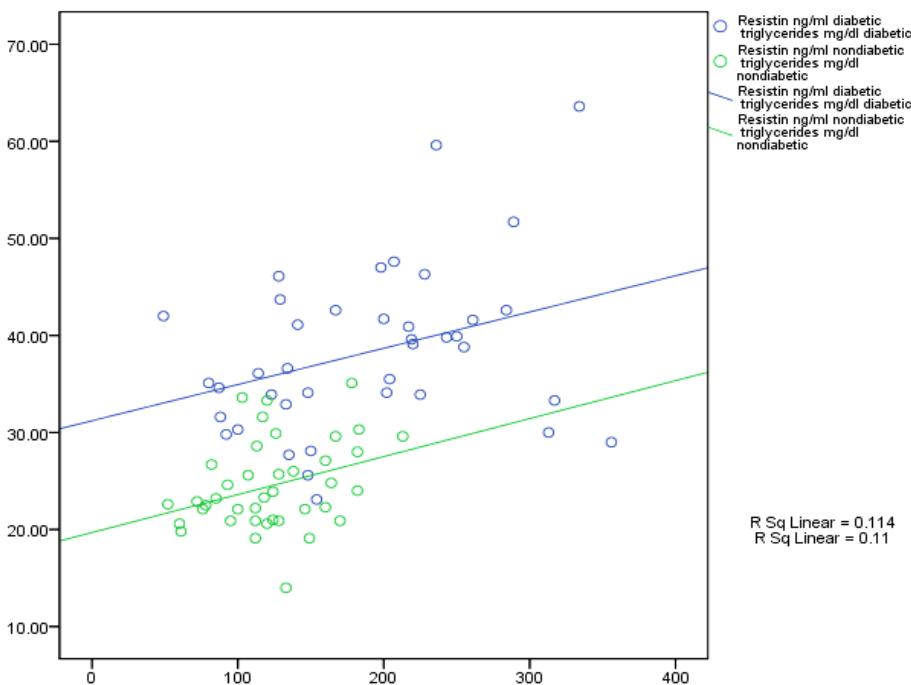


Figure No.1: Triglycerides(mg/dL)

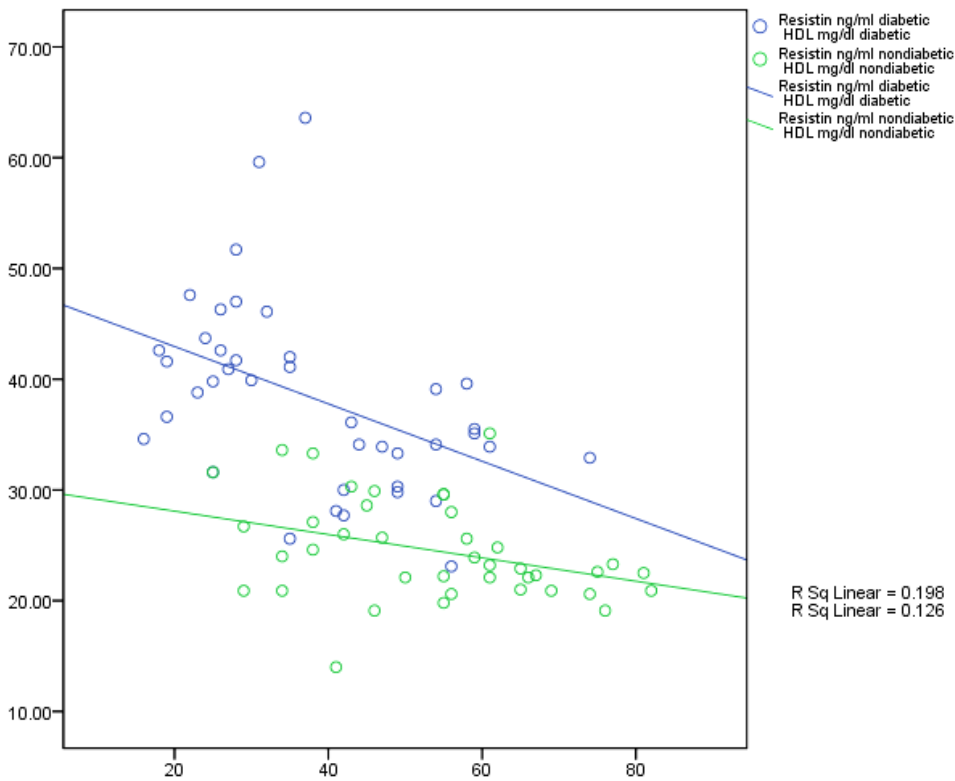


Figure No.2: HDL(mg/dL)

DISCUSSION

Obesity and type 2 diabetes are major problems of Dyslipidemia and it is also found that it is worldwide as an epidemic due to insulin resistance metabolic abnormality.¹⁴ Lipid is major biomolecule and its metabolism effect whole body system. The main reason of type 2 diabetes and obesity is abnormal lipid metabolism and Insulin resistance.¹Our study showed that cholesterol, triglyceride (TG) and low density lipoprotein (LDL) are found higher in obese diabetic patients as compared to obese controls. Resistin, total cholesterol and LDL-cholesterol were not existed significantly in obese diabetic patients when we compared the result with obese controls. But on other side we observed the results of TG (triglycerides) is significant higher in obese diabetic patients as compare obese controls. It means that there is positive correlation present between TG (triglycerides) and obese diabetic patient.

But on other side we observed the results of resistin is significant higher in obese diabetic patients as compare obese controls. it means that there is positive correlation present between resistin and obese diabetic patient. We observed the results of HDL- cholesterol is lower in obese diabetic patients as compare obese controls. it means that there is negative correlation present between HDL- cholesterol and obese diabetic patient. The result of Asano et al. (2010) is also

supported our studies. According his study that there is positive correlation present between resistin and obese diabetic patients and also positive correlation present between TG(triglycerides) and obese diabetic patients. However this in correlation present between LDL-cholesterol and total cholesterol and obese diabetic patients. The result of Hoseen et al. (2010) is also supported our studies. He study in rodent According his study that there is positive correlation present between resistin and obese diabetic patients and also positive correlation present between TG(triglycerides) and obese diabetic patients. However, this in correlation present between LDL-cholesterol and total cholesterol and obese diabetic patients

The result of Contrary to this Qi et al. (2008) is also supported our studies. According his study that there is no significant correlation present between resistin and lipid in Metabolic syndrome .The result of Mohammad zadeh et al. (2008 is also supported our study. He study in metabolic syndrome according his study that there is link exist between obesity, dyslipidemia and insulin resistance with insulin resistance.

CONCLUSION

Triglycerides is significant higher in obese diabetic patients as compare obese controls.it means that there is positive correlation present between TG (triglycerides) and obese diabetic patient

But on other side we observed the results of resistin is significant higher in obese diabetic patients as compare obese controls. It means that there is positive correlation present between resistin and obese diabetic patient. HDL- cholesterol is lower in obese diabetic patients as compare obese controls. it means that there is negative correlation present between HDL-cholesterol and obese diabetic patient.

Lipid profile is disturbed with resistin which ultimately caused to insulin resistance in diabetes mellitus in obese subjects. 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: Sohail Iqbal
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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