

A Study on the Dyslipidemia in Type II Diabetic Patients with and without Microalbuminuria

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ABSTRACT

Objective: To record the rate of microalbuminuria in cases with type II diabetic mellitus and to record the frequency of dyslipidemia in cases with microalbuminuria and without it.

Methodology: This study was conducted at Sheikh Zayed Hospital Rahim Yar Khan from July 2021 to December 2021 a total of 80 cases with type-II diabetes mellitus, between 35-70 years of age of either gender was enrolled whereas those having microalbuminuria, increased levels of serum creatinine with the history of CVD, UTI and pregnant females were excluded. Blood samples in a disposable syringe were obtained to determine microalbuminuria and with 12 hours fasting time for evaluation of hyper triglycerides, HDL-C, LDL-C in positive and negative cases of microalbuminuria.

Results: In this study, 35%(n=30) were between 35-50 years of age whereas 45%(n=50) were between 51-70 years of age, Mean±SD was calculated as 55.43±7.66 years, male cases were 48%(n=48) whereas 32%(n=32) were females. Presence of microalbuminuria was recorded in 29%(n=25). Comparison for presence of dyslipidemia in diabetic cases with and without microalbuminuria shows that 91.8%(n=27) in microalbuminuria and 57.13%(n=32) in cases without it had hypertriglyceridemia, p value was 0.0009, increased LDL-C was recorded in 84.19%(n=25) in microalbuminuria group whereas 59.95%(n=44) had in cases without microalbuminuria, p value was 0.017, decreased HDL-C level were recorded in 80.74%(n=24) in microalbuminuria group and 72.63%(n=53) without it, p value was 0.38.

Conclusion: The rate of microalbuminuria in cases with type II diabetes is not uncommon while these cases had higher risk of dyslipidemia when compared to those without it.

Keywords: Type II Diabetes Mellitus, Microalbuminuria Dyslipidemia

INTRODUCTION

The rate of type II diabetes mellitus is alarmingly increasing in South Asian countries. Higher susceptibility to environmental insulin (increased body mass index), higher grade of genetic predisposition may be responsible for this higher incidence. All types of diabetes are categorized by relative or absolute deficiency in insulin secretion or insulin action is correlated with disturbances of carbohydrate and chronic hyperglycemia, protein and lipid metabolism. A long-term damage, failure of numerous organs like kidneys, heart, eyes and blood vessels, and dysfunction of these organs is associated with chronic hyperglycemia.

Some authors claim that the body composition components including lipid profile and body fat are responsible for the higher rate of this disease. A term 'dyslipidemia' is known as abnormal change in lipid profile and replaced the previous term "hyperlipidemia". Dyslipidemia includes the change in Low density lipoprotein cholesterol (LDL-C), High density lipoprotein cholesterol (HDL-C), triglyceride levels and very low-density lipoprotein cholesterol (VLDL-C). Another term diabetic dyslipidemia encompasses a dense LDL particle, decreased HDL-C and high triglycerides. The diabetic individuals may suffer with lipid abnormalities due to deficiency or insulin resistance which affects the pathways and key enzymes in lipid metabolism. Particularly, regulation of lipoprotein lipase, apoprotein production, action of cholesteryl ester, transfer of proteins and peripheral and hepatic actions of insulin. The usual association between dyslipidemia and atherosclerosis is well documented. In diabetic cases, the associated hyperglycemia, insulin changes and obesity significantly increase the progress of atherosclerosis.

In US, diabetes and dyslipidemia are prognosis of end stage renal disease which further increases the risk of decline in renal function, while increases cardiovascular mortality rate. This study was planned to record the rate of dyslipidemia in cases with and without having microalbuminuria in diabetics (type-II).

METHODOLOGY

This study was conducted at Sheikh Zayed Hospital Rahim Yar Khan from July 2021 to December 2021 a total of 80 cases with

type-II diabetes mellitus, between 35-70 years of age of either gender were enrolled whereas those having microalbuminuria, increased levels of serum creatinine with the history of CVD, UTI and pregnant females were excluded. Each patient was explained the purpose of including their data in the study and their informed consent was also obtained. The basic information regarding demographic data was also the part of special designed proforma. With the help of paramedical staff, blood samples in a disposable syringe was obtained to determine microalbuminuria and with 12 hours fasting time for evaluation of hyper triglycerides, HDL-C, LDL-C in positive and negative cases of microalbuminuria. We used software based data analysis and recorded the study variables of the study i.e. presence/absence of microalbuminuria, and dyslipidemia in cases with and without microalbuminuria.

RESULTS

In this study, 35%(n=30) were between 35-50 years of age whereas 45%(n=50) were between 51-70 years of age, Mean±SD was calculated as 55.43±7.66 years. (Table No. 1) Male cases were 48%(n=48) whereas 32%(n=32) were females. (Table No. 2). Presence of microalbuminuria was recorded in 29%(n=25). (Table No. 3) Comparison for presence of dyslipidemia in diabetic cases with and without microalbuminuria shows that 91.8%(n=27) in microalbuminuria and 57.13%(n=32) in cases without it had hypertriglyceridemia, p value was 0.0009, increased LDL-C was recorded in 84.19%(n=25) in microalbuminuria group whereas 59.95%(n=44) had in cases without microalbuminuria, p value was 0.017, decreased HDL-C level were recorded in 80.74%(n=24) in microalbuminuria group and 72.63%(n=53) without it, p value was 0.38. (Table No. 4)

Table 1: Age Distribution (n=80)

Age(in years)	No. of patients	%
35-50	30	30
51-70	50	50
Total	80	80
Mean+ SD	55.43±7.66	

Table 2: Gender Distribution (n=80)

Gender	No. of patients	%
Male	48	48
Female	32	32
Total	80	80

Table 3: Presence of Microalbuminuria(N=80)

Microalbuminuria	No. Of Patients	%
Yes	25	25
No	55	55
Total	80	80

Table 4: Comparison for Presence of Dyslipidemia in Diabetic Cases with And Without Microalbuminuria (n=80)

Lipid profile	Microalbuminuria (n=25)		Without Microalbuminuria (n=55)		P value
	No. of Patients	%	No. of Patients	%	
Hypertriglyceridemia's	27	91.8	32	57.13	0.0009
Increased LDL-C	25	84.19	44	59.95	0.017
Decreased HDL-C	24	80.74	53	72.63	0.38

DISCUSSION

We planned this study with the view to find the frequency of hypertriglyceridemia, increased LDL-C and decreased HDL-C with and without microalbuminuria in type-II diabetic patients. As with microalbuminuria, diabetic patients are at more risk of developing cardiac problems but often diabetic patients remain undiagnosed of presence of microalbuminuria. In this study, 35%(n=30) were between 35-50 years of age whereas 45%(n=50) were between 51-70 years of age, Mean±SD was calculated as 55.43±7.66 years, male cases were 48%(n=48) whereas 32%(n=32) were females. Presence of microalbuminuria was recorded in 29%(n=25). Comparison for presence of dyslipidemia in diabetic cases with and without microalbuminuria shows that 91.8%(n=27) in microalbuminuria and 57.13%(n=32) in cases without it had hypertriglyceridemia, p value was 0.0009, increased LDL-C was recorded in 84.19%(n=25) in microalbuminuria group whereas 59.95%(n=44) had in cases without microalbuminuria, p value was 0.017, decreased HDL-C level were recorded in 80.74%(n=24) in microalbuminuria group and 72.63% (n=53) without it, p value was 0.38. We compared our results with a local study, where in Type II diabetic patients with and without microalbuminuria, hypertriglyceridemia was 93.7% vs. 67.3%, decreased HDL-C was 91.3% vs. 81.4% and raised LDL-C was 93.2% vs. 69.5%. In the Diabetic patients 34% had microalbuminuria, our findings are comparable with this study.

Buch Archana C and others studied renal and lipid profile in diabetic patients, they recorded prevalence of microalbuminuria in 35% and equal in both sexes, these findings are consistent with our study. They also recorded that fasting blood sugar, blood urea and serum creatinine were significantly higher in the microalbuminuria group. Lipid profile parameters were not significantly different in both the groups, we found similar findings in our study. Diouf NN and others established the respective prevalence of microalbuminuria and dyslipidemia and evaluated their association with diabetes type 2, they recorded that the prevalence of microalbuminuria is 48.7% and that of dyslipidemia is 35.1%. Glycated hemoglobin is higher in subjects with microalbuminuria than in patients with normal microalbuminuria with a statistically significant difference (P < 0.001). There is a strong correlation (R = 0.82) between glycated hemoglobin and microalbuminuria, 1% increase in HbA1c corresponding approximately to an increase of 39.7 mg/l of microalbuminuria, they concluded that microalbuminuria and dyslipidemia are frequently found in type 2 diabetes, but the pathophysiological mechanisms of the association are not well known.

Increased total cholesterol and/or TG have been associated with microalbuminuria, although associations with lipid abnormalities were found to be more marked in patients with macroalbuminuria. With respect to the pediatric populations with diabetes, data from the Oxford Regional Prospective Study showed that the prevalence of microalbuminuria increased across tertiles of total cholesterol, and a German study has shown a predictive value of both LDL cholesterol and TG on the development of persistent microalbuminuria. However, our study confirmed the frequency of hypertriglyceridemia's, increased LDL-C decreased HDL-C in diabetic patients with microalbuminuria is significantly higher than in patients without microalbuminuria, we

can manage these cases accordingly and prevent them from cardiac morbidities and mortality.

CONCLUSION

The rate of microalbuminuria in cases with type II diabetes is not uncommon while these cases had higher risk of dyslipidemia when compared to those without it.

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