DYSLIPIDEMIA IN TYPE II DIABETIC PATIENTS WITH AND WITHOUT MICROALBUMINURIA

[1]**Dr. Afshan Ashiq,** [2] **Dr. Maida Ayub,** [3] **Dr. Ayesha Sarwar**
[1]Punjab Medical College Faisalabad, Pakistan
[2]Faisalabad Medical University Faisalabad, Pakistan
[3]Faisalabad Medical University Faisalabad, Pakistan

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 microalbumina and without it
Methodology: This study was conducted at Allied Hospital Faisalabad from July 2017 to December 2017 a total of 100 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. 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, 41%(n=41) were between 35-50 years of age whereas 59%(n=59) were between 51-70 years of age, mean+sd was calculated as 55.43+7.66 years, male cases were 58%(n=58) whereas 42%(n=42) were females. Presence of microalbuminuria was recorded in 29%(n=29). Comparison for presence of dyslipidemia in diabetic cases with and without microalbuminuria shows that 93.10%(n=27) in microalbuminuria and 59.15%(n=42) in cases without it had hypertriglyceridemia, p value was 0.0009, increased LDL-C was recorded in 86.21%(n=25) in microalbuminuria group whereas 61.97%(n=44) had in cases without microalbuminuria, p value was 0.017, decreased DHL-C level were recorded in 82.76%(n=24) in microalbuminuria group and 74.65%(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

Corresponding author:
Dr. Afshan Ashiq,
Punjab Medical College,
Faisalabad,
Pakistan

QR code

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 [1]. 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 [2]. 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 [3].

Some authors claim that the body composition components including lipid profile and body fat are responsible for the higher rate of this disease [2,4]. 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) [5-7]. Another term diabetic dyslipidemia encompasses a dense LDL particles, decreased HDLC 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 [8]. Particularly, regulation of lipoprotein lipase, apoprotein production, action of cholesteryl ester, transfer of proteins and peripheral and hepatic actions of insulin [4,5]. The usual association between dyslipidemia and atherosclerosis is well documented. In diabetic cases, the associated hyperglycemia, insulin changes and obesity significantly increases the progress of atherosclerosis [9,10].

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:

In this cross sectional study, at Allied Hospital Faisalabad from July 2017 to December 2017a total of 100 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, 41%(n=41) were between 35-50 years of age whereas 59%(n=59) were between 51-70 years of age, mean+sd was calculated as 55.43+7.66 years. (Table No. 1) Male cases were 58%(n=58) whereas 42%(n=42) were females. (Table No. 2). Presence of microalbuminuria was recorded in 29%(n=29). (Table No. 3) Comparison for presence of dyslipidemia in diabetic cases with and without microalbuminuria shows that 93.10%(n=27) in microalbuminuria and 59.15%(n=42) in cases without it had hypertriglyceridemia, p value was 0.0009, increased LDL-C was recorded in 86.21%(n=25) in microalbuminuria group whereas 61.97%(n=44) had in cases without microalbuminuria, p value was 0.017, decreased DHL-C level were recorded in 82.76%(n=24) in microalbuminuria group and 74.65%(n=53) without it, p value was 0.38. (Table No. 4).

TABLE No. 1
AGE DISTRIBUTION (n=100)

Age(in years)	No. of patients	%
35-50	41	41
51-70	59	59
Total	**100**	**100**
mean+ SD	**55.43+7.66**	

TABLE No. 2
GENDER DISTRIBUTION (n=100)

Gender	No. of patients	%
Male	58	58
Female	42	42
Total	**100**	**100**

TABLE No. 3
PRESENCE OF MICROALBUMINURIA(n=100)

Microalbuminuria	No. of patients	%
Yes	29	29
No	71	71
Total	**100**	**100**

TABLE No. 4
COMPARISON FOR PRESENCE OF DYSLIPIDEMIA IN DIABETIC CASES WITH AND WITHOUT
MICROALBUMINURIA (n=100)

Lipid profile	Microalbuminuria (n=29)		Without Microalbuminuria (n=71)		P value
	No. of patients	%	No. of patients	%	
Hypertriglyceridemia's	27	93.10	42	59.15	0.0009
Increased LDL-C	25	86.21	44	61.97	0.017
Decreased HDL-C	24	82.76	53	74.65	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, 41%(n=41) were between 35-50 years of age whereas 59%(n=59) were between 51-70 years of age, mean±sd was calculated as 55.43±7.66 years, male cases were 58%(n=58) whereas 42%(n=42) were females. Presence of microalbuminuria was recorded in 29%(n=29). Comparison for presence of dyslipidemia in diabetic cases with and without microalbuminuria shows that 93.10%(n=27) in microalbuminuria and 59.15%(n=42) in cases without it had hypertriglyceridemia, p value was 0.0009, increased LDL-C was recorded in 86.21%(n=25) in microalbuminuria group whereas 61.97%(n=44) had in cases without microalbuminuria, p value was 0.017, decreased DHL-C level were recorded in 82.76%(n=24) in microalbuminuria group and 74.65%(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%.[11] In the Diabetic patients 34% had microalbuminuria,[11] our findings are comparable with this study.

Buch Archana C and others[12] studied renal and lipid profile in diabetic patients, they recorded prevalence of microalbuminuria in 41% and equal in both sexes, these findings are consistent with our study. They also recorded that fasting blood sugar, blood urea and serum creatinine was 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[13] 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 41.1%. 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/I 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 [14], although associations with lipid abnormalities were found to be more marked in patients with macroalbuminuria [14]. 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 [15] and a German study has shown a predictive value of both LDL cholesterol and TG on the development of persistent microalbuminuria [16].

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.

REFERENCES:
1. Uttra KM, Devrajani BR, Shah SZA, Devrajani T, Das T, Raza S, Naseem : Lipid profile of patients with diabetes mellitus (A Multidisciplinary Study). World Appl Sci J 2011, 12(9):1382–1384.
2. Abou-Seif MA, Youssef AA: Evaluation of some biochemical changes in diabetic patients. Clin Chim Acta 2004; 346:161–70.
3. Roberto T, Dodesini AR, Lepore G: Lipid and Renal disease. J Am Soc Nephrol 2006, 17: S145-S147.
4. Elinasri HA, Ahmed AM: Patterns of lipid changes among type 2 diabetes patients in Sudan. Eastern Mediter Health J 2008; 14:2.
5. Mooradian AD: Dyslipidemia in type 2 diabetes mellitus. Nat Clin Pract Endocrin Metab 2009; 5:150–9.
6. Goldberg IJ: Diabetic dyslipidemia: causes and consequences. J Clin Endo Metab 2001; 8(3):965–71.
7. Smith S, Lall AM: A Study on lipid profile levels of diabetics and non-diabetics among Naini region of Allahabad. India Turkish J Biochem 2008;33(4):138–41.
8. Taskinen MR: Diabetic dyslipidemia. Atheroscler Suppl 2002, 3(1):47–51.
9. Wexler DJ, Grant RW, Meigs JB, Nathan DM: Cagliero: sex disparities in treatment of cardiac risk factors in patients with type 2 diabetes. Diabetes Care 2005; 28:514–20.
10. Regmi P, Gyawali P, Shrestha R, Sigdel M, Mehta KD, Majhi S: Pattern of Dyslipidemia in Type-2 Diabetic Subjects in Eastern Nepal. J Nepal Assoc Med Lab Sci 2009;10: 11–3
11. Ahmedani MY, Hydrie MZI, Iqbal A, Gul A, Mirza WB. Prevalence of Microalbuminuria in Type 2 Diabetic Patients in Karachi, Pakistan: a multi-center study. J Pak Med Assoc! 2005; 55:382-6.
12. Buch Archana C, Sangeeta C, handanwale Shirish S, Harsh K. Study of renal and lipid profile in diabetic patients. Int J Pharm Bio Sci 2015; 5:33-41.
13. Diouf NN, Lo G, Sow-Ndoye A, Djité M, Tine JA, Diatta A. Evaluation of microalbuminuria and lipid profile among type 2 diabetics. Rev Med Brux. 2015;36(1):10-3.
14. Mattock MB, Cronin N, Cavallo-Perin P. Plasma lipids and urinary albumin excretion rate in type 1 diabetes mellitus: the EURODIAB IDDM Complications Study. Diabet Med 2001; 18:59–67.
15. Abraha A, Schultz C, Konopelska-Bahu T.Glycaemic control and familial factors determine hyperlipidaemia in early childhood diabetes: Oxford Regional Prospective Study of Childhood Diabetes. Diabet Med 1999; 16:598–604.
16. Raile K, Galler A, Hofer S. Diabetic nephropathy in 27,805 children, adolescents, and adults with type 1 diabetes: effect of diabetes duration, A1C, hypertension, dyslipidemia, diabetes onset, and sex. Diabetes Care 2007; 30:2523– 8.