

A Study of Lipid Profile in Diabetes Mellitus type-2 patients

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Abstract

Background: To study the lipid profile in diabetes mellitus in type 2 Diabetes mellitus patients.

Methods- This is a cross sectional case control study. 50 patients of type 2 diabetes mellitus and 50 age and sex matched healthy controls were taken. Lipid profile were done in cases and controls using appropriate tests.

Results: The FBS levels in all the diabetics were significant ($p < 0.05$) as compare to control. There was significant difference in mean HDL, Triglycerides level in diabetic and control patients ($p < 0.05$) There was no significant difference in LDL, Cholesterol level in Diabetic and control patients ($p > 0.05$).

Conclusion: We conclude that there is a high prevalence of elevated lipid and lipoprotein levels among the diabetic patients showing that they are more prone to these abnormalities,

Keywords: Diabetes Mellitus -2, Cholesterol, Lipid Profile,

Introduction

Diabetes mellitus(DM) is a group of metabolic disease characterized by increase blood glucose level resulting

from defects in insulin secretion, insulin action, or both¹.The chronic hyperglycemia of diabetes is associated with longterm damage, dysfunction and disturbance in failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels². Patients with type-2 diabetes have increased risk of cardiovascular disease associated with atherogenic abnormalities and dyslipidaemia. Coronary artery disease, especially myocardial infarction is the leading cause of morbidity and mortality worldwide³. Hyperglycaemia and atherosclerosis are related in type-2 diabetes

Persistent hyperglycaemia causes glycosylation of all proteins, especially collagen cross linking and matrix proteins of arterial wall. This eventually causes endothelial cell dysfunction, contributing to atherosclerosis.⁵Lipid abnormalities associated with diabetes are termed as dyslipidaemia rather than hyperlipidaemia because there may be changes in both quantity and quality of the lipoproteins. Diabetes mellitus (DM) is a common secondary cause of hyperlipidaemia, particularly, if glycaemic control is

poor, which in-turn is an important risk factor for atherosclerosis and coronary heart disease.⁶

Materials and Methods

From the patients admitted 50 representative cases of Type 2 DM are taken as subjects for the study. Age and sex matches 50 non-diabetics are taken as controls. The diagnosis of diabetes is based on revised criteria according to consensus panel of experts from the National Diabetes Data Group and WHO.

Inclusion Criteria

Patients of Type 2 DM

Exclusion Criteria

Type 2 diabetes patients with concomitant diseases or condition affecting the lipid levels such as hypothyroidism, on lipostatic drugs, and thiazides.

Method of data collection

- The blood sample of diabetes patients including controls group was taken after fasting for 10-12 hours.
- 5-10ml of venous blood was drawn from the antecubital vein by aseptic technique in plain vial.
- Serum was separated from the collected sample for biochemical analysis. Lipid profile investigations that included serum cholesterol, triglyceride, High density lipoprotein cholesterol (HDLcholesterol) and Low density lipoprotein cholesterol (LDL-cholesterol) were carried out on a semi-automated analyzer using standard kits.

Results

This was a cross sectional, case control, hospital based study on 50 type 2 diabetes mellitus patients attending in OPD with equal number of age and sex matched controls.

Table 1: Comparison of Blood sugar in case and controls.

FBS	Case (n=50)	Control (n=50)	p-value
Mean ±	156.32 ±	84.26 ± 15.63	<0.05
SD	49.36		

The FBS levels in all the diabetics were significant (p<0.05) as compare to control.

Table 2: Comparison of biochemical parameters in case and controls.

Parameters	Case (n=50)	Control (n=50)	p-value
Mean Total cholesterol	164.23 ± 36.23	152.31 ± 21.02	>0.05
Mean LDL	97.68 ± 28.32	92.32± 24.32	>0.05
Mean HDL	32.12 ± 8.56	52.32± 9.56	<0.05
Mean Triglycerides	189.36± 56.32	132.56 ± 21.25	<0.05

There was significant difference in mean HDL, Triglycerides level in diabetic and control patients (p<0.05) There was no significant difference in LDL, Cholesterol level in Diabetic and control patients (p>0.05).

Discussion

Mean age in diabetic patients was 48.23± 9.24 years and control patients was 47.28± 9.84 years and age range was 20-70 years. These values were similar to those reported by Kumar et al ⁶.

In our study the FBS levels in all the diabetics were significant (p<0.05) as compare to control similar result were observed by BhallaKapil et al.⁷

This study also demonstrates the typical diabetic dyslipidemia which is characterized by low HDL, high triglyceride. Various national and international epidemiological studies on lipid profile have also shown this pattern of dyslipidemia.⁸⁻⁹

No significant difference was observed in total cholesterol and absolute LDL levels in cases and controls in this study. Even if the absolute concentration of LDL cholesterol is not significantly increased; there is typically a preponderance of smaller, denser LDL particles, which possibly increases atherogenicity (atherogenic dyslipidemia). These changes are due to increased free fatty acid flux secondary to insulin resistance.⁹

Conclusion

We conclude that there is a high prevalence of high degree of elevated lipid and lipoprotein levels among the diabetic patients showing that they are more prone to these abnormalities

References

1. American Diabetes Association. Diagnosis and classification of diabetes Mellitus. *Diabetes Care*.2005;28(1):537-42.
2. Shera, A.S., F. Jawad and A. Maqsood,A.Prevalence of diabetes in Pakistan. *Diabetes Res.Clini. Pract*.2007;76(2):219-22.
3. Roberto, T., A.R. Dodesini, Lepore G. Lipid and Renal disease. *J. Am. Soc. Nephrol*.2006;17: S145-7.
4. Devrajani, B.R., S.Z. Shah, A.A. Soomro and T.Devrajani, . Type 2 diabetes mellitus: A risk factor for Helicobacter pylori infection: A hospital based case-control study. *Int. J. Diabetes Dev. Ctries*. 2010;30(1):22-6.
5. Mohan V, Deepa M, Deepa R, Shanthirani CS, Farooq S. Secular trends in the prevalence of diabetes and impaired glucose tolerance in urban south India – The Chennai urban rural epidemiology study (CURES-17). *Diabetologia* 2006;49:1175-78.
6. Kumar A, Kulshrestha M, TripathiA, Sharma M and Kartikeya. A study of correlation between carotid intima - media thickness and diastolic dysfunction in asymptomatic type 2 Diabetics.*IJCMR*. 2016;3:1458-1460.
7. BhallaKapil,Shukla R, Gupta VP et al. Glycosylated proteins and serum lipid profile in complicated and uncomplicated NIDDM patients. *Indian J. Clin Biochem*.1995;10(2):57-61.
8. Krauss RM. Lipids and lipoproteins in patients with type 2 diabetes. *Diabetes Care*. 2004;27:1496–504.
9. Witztum JL, Steinberg D. Role of oxidized low density lipoprotein in atherogenesis. *J Clin Invest*. 1991;88:1785– 92.