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

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Abstract

Background: Early detection and treatment of hyperlipidemia in diabetic patients reduces the risk for cardiovascular and cerebrovascular diseases. Lifestyle changes such as diet and exercise are very important in improving

Methods: This is a cross sectional case control study.100 patients of type 2 diabetes mellitus and 100 age and sex matched healthy controls were taken. Lipid profile was done in cases and controls using appropriate tests.

Results: Mean age in diabetic patients was 51.12± 10.21 years and control patients were 50.45± 9.82 years and age range was 24-70 years. 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 both[1] . 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 vessels[2].

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 worldwide[3].

Hyperglycaemia and atherosclerosis are related in type-2 diabetes. [4]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. The prevalence of dyslipidemia in diabetes mellitus is 95%.[5-6] Early detection and treatment of hyperlipidemia in diabetic patients reduces the risk for cardiovascular and

cerebrovascular diseases. Lifestyle changes such as diet and exercise are very important in improving

Materials and Methods

From the patients admitted 100 representative cases of Type 2 DM are taken as subjects for the study. Age and sex matches 100 non-diabetic 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 anticubital 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.
- Serum glucose estimation by Ortho-Toluidine method
- Determination of total cholesterol by Watson method
- Determination of serum triglycerides by Acetyl Acetone method
- Determination of HDL-Cholesterol by Watson method
- Serum LDL-Cholesterol was calculated by Friedwald's Formula

Results

This was a cross sectional, case control, hospital based study on 100 type 2 diabetes mellitus patients attending in OPD with equal number of age and sex matched controls.

Mean age in diabetic patients was 51.12± 10.21 years and control patients was 50.45± 9.82 years and age range was 24-70 years.

Graph 1

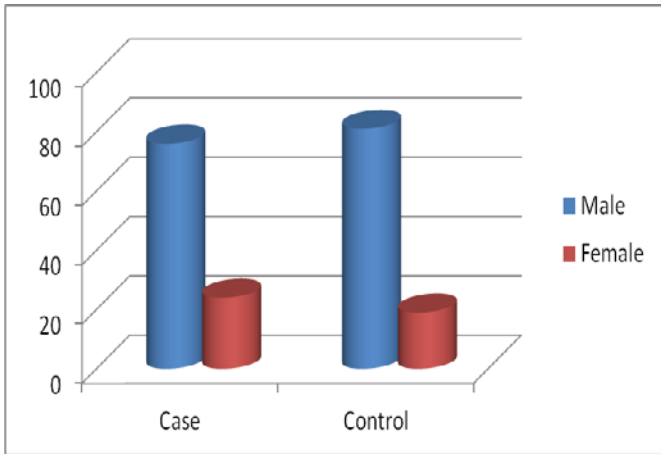

Table 1: Comparision of biochemical parameters in case and controls.

Parameters	Case (n=100)	Control (n=100)	p-value
Mean Total cholesterol	161.23 ± 39.52	155.21 ± 27.01	>0.05
Mean LDL	92.34 ± 26.52	91.23± 29.01	>0.05
Mean HDL	33.21 ± 8.10	50.21± 9.82	<0.05
Mean Triglycerides	178.23± 61.23	136.3 ± 23.12	<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 51.12± 10.21 years and control patients was 50.45± 9.82 years and age range was 24-70 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 dyslipedemia).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

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