

**A Study of Lipid Profile in Diabetes Mellitus type-2 patients At Tertiary Care Hospital, Rajasthan.**

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**Abstract**

**Background-** Diabetes is one of the highly prevalent diseases around the world.

**Methods-** This is a cross sectional case control study. 40 patients of type 2 diabetes mellitus and 40 age and sex matched healthy controls were taken. Lipid profile was done in cases and controls using appropriate tests.

**Results-** 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 high degree of elevated lipid and lipoprotein levels among the diabetic patients showing that they are more prone to these abnormalities,

**Keywords-** Lipid Profile, Diabetes Mellitus -2, Patients.

**Introduction**

Diabetes mellitus is a chronic disease that through its complications can seriously impact the quality of life of individuals. The World Health Organization (WHO) is warning that the number of people with diabetes is rapidly increasing <sup>1</sup>. According to the International Diabetes Federation Diabetes Atlas, it is estimated that about 194

million people had diabetes in the year 2003 and about 2/3rd of the people lived in developing countries<sup>2</sup>.

In India, the number of diabetic patients is so high that it is no more considered an epidemic but in fact a pandemic. According to the International Journal of diabetes in Developing Countries, India is considered to be the Diabetic capital of the world. The International Diabetes Federation estimates that the number of diabetic patients in India has doubled from 19 million in 1995 to 40.9 million in 2007 and it is projected to increase to 69.9 million by 2025<sup>2,3</sup>. Some studies in India have shown a threefold rise in the diabetic prevalence in rural as well as the urban areas<sup>4,5</sup>.

**Materials and Methods**

From the patients admitted 40 representative cases with H/O Type 2 DM are taken as subjects for the study. Age and sex matches 40 nondiabetics 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 with 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. 7-10ml 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. Statistical analysis was done using SPSS software (version 20). T-test was used for the comparison of two groups.

**Lipid profile measured following methods**

- 1) Serum total cholesterol: was measured by Enzymatic method Normal serum cholesterol: 150-250 mg/dl
- 2) Serum HDL cholesterol: was measured by “Phosphotungstate method. Normal HDL – Cholesterol: 30 – 70 mg/dl.
- 3) Serum LDL cholesterol: If the value of Triglycerides is known, LDL-cholesterol can be calculated based on Friedewald’s equation.
- 4) Serum Triglycerides: was measured by enzymatic colorimetric method Normal Serum Triglycerides: Male: 60-165 mg/dl Female: 40-140 mg/dl.

**Results**

This was a cross sectional, case control, hospital based study on 40 type 2 diabetes mellitus patients attending in OPD with equal number of age and sex matched controls. Mean age in diabetic patients was 42.02± 9.10 years and control patients was 45.60± 8.40 years and age range was 20-65 years. Both groups were well matched for age and sex distribution.

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

Parameters	Case (n=40)	Control (n=40)	p-value
Mean Total cholesterol	163.90 ± 41.02	157.80 ± 25.90	>0.05
Mean LDL	93.90 ± 28.50	91.80± 29.60	>0.05
Mean HDL	33.60 ± 8.80	51.80± 10.80	<0.05
Mean Triglycerides	181.20± 60.20	137.50 ± 23.20	<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 42.02± 9.10 years and control patients was 45.60± 8.40 years and age range was 20-65 years. Both groups were well matched for age and sex distribution. These values were similar to those reported by Kumar et al <sup>6</sup>.

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.<sup>7-8</sup>

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.<sup>9</sup>

### **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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