CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.3515382

Available online at: http://www.iajps.com *Research Article*

COMPARISON OF MEAN LIPID PROFILE BETWEEN TYPE-II DIABETICS AND NON-DIABETICS

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Abstract:

Objective: *To compare the mean lipid profile between type-II diabetics and non-diabetics at tertiary care hospital.*

Material and methods:

This case control study was conducted at Department of Medicine, Bahawal Victoria Hospital, Bahawalpur from August 2018 to February 2019 over the period of 6 months. Total 100 type-II diabetics having age >40 years wither male or female and duration of diabetes mellitus more than 4 years were selected. Age and sex matched 25 non-diabetics are taken as controls. Lipid parameters were compared between diabetics and non-diabetics.

Results:

Mean serum cholesterol level in cases and controls were 209.02±27.15 mg/dl and 182.24±49.03 mg/dl respectively. Significantly higher mean serum cholesterol was noted in cases as compared to controls with p value 0.000. Mean total LDL in cases was 126.82±25.63 mg/dl and in controls was 106.76±27.29 mg/dl. Difference of mean LDL level between cases and controls was statistically significant with p value 0.000. In cases, mean Triglyceride level was 223.54±46.98 mg/dl and in controls was 151.48±40.12 mg/dl. Mean serum Triglyceride levels was significantly high in cases as compared to controls with p value 0.000. Mean HDL of cases was 36.24±4.96 mg/dl and in controls was 41.24±1.55 mg/dl and the difference was statistically significant with value 0.000.

Conclusion:

Results of present showed that lipid parameters are significantly higher in type-II diabetics as compared to non-diabetics. Retinopathy was the most common complication.

Key words: *Diabetes, lipid profile, complications*

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Please cite this article in press Naveed Nayyer et al., ***Comparison Of Mean Lipid Profile Between Type-II Diabetics And Non-Diabetics.,*** *Indo Am. J. P. Sci, 2019; 06(10).*

INTRODUCTION:

Diabetes mellitus refers to a group of common metabolic disorders that share the phenotype of hyperglycemia. Type 2 Diabetes Mellitus (DM) is a heterogeneous group of disorders characterized by variable degree of insulin resistance, impaired insulin secretion, and increased glucose production.[1] The prevalence of diabetes mellitus is growing rapidly worldwide and is reaching epidemic proportions. The global prevalence of diabetes among adults is estimated to be 6.4%, affecting 285 million people in 2010 and is expected to increase to 7.7% affecting 439 million people by 2030.[2-4] Lipid 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.[5-7] The most common pattern of dyslipidemia is hypertriglyceridemia and reduced HDL cholesterol levels. DM itself does not increase levels of LDL, but the small dense LDL particles found in Type2 DM are more atherogenic because they are more easily glycated and susceptible to oxidation.[8]

The objective of present study is to compare of mean lipid profile between type-II diabetics and non-diabetics at tertiary care hospital.

MATERIAL AND METHODS:

This case control study was conducted at Department of Medicine, Bahawal Victoria Hospital, Bahawalpur from August 2018 to February 2019 over the period of 6 months. Total 100 type-II diabetics having age >40 years wither male or female and duration of diabetes mellitus more than 4 years were selected. Age and sex matched 25 non-diabetics are taken as controls. Patients having age less than 40 years, type-II diabetics with concomitant diseases or condition affecting the lipid levels like hypothyroidism, on lipostatic drugs, thiazides were excluded from the study.

Five ml blood sample of all the cases and controls was taken and sent to laboratory for lipid profile. Findings of laboratory was entered in pre-designed proforma along with demographic profile of the patients.

All the collected data was entered in SPSS version 20 and analyzed. Mean and SD was calculated for age and lipid profile. Frequencies and percentages were calculated for categorical data like gender and complications. Student t test was used to detect the difference between the lipid parameter of cases and controls.

RESULTS:

Mean fasting blood sugar levels in cases were 177.30±41.14 mg/dl and in controls were 92.68±23.22 mg/dl. After applying student test, if was found that fasting blood sugar levels are significantly higher in cases as compared to controls with p value 0.000. Mean post prandial blood sugar levels were 310.50±55.78 mg/dl in cases and 138.84±36.47 mg/dl in controls. Difference of mean post prandial blood sugar level between cases and controls was statistically significant with p value 0.000. (Table 1)

Mean serum cholesterol level in cases and controls were 209.02±27.15 mg/dl and 182.24±49.03 mg/dl respectively. Significantly higher mean serum cholesterol was noted in cases as compared to controls with p value 0.000. Mean total LDL in cases was 126.82±25.63 mg/dl and in controls was 106.76±27.29 mg/dl. Difference of mean LDL level between cases and controls was statistically significant with p value 0.000. In cases, mean Triglyceride level was 223.54±46.98 mg/dl and in controls was 151.48±40.12 mg/dl. Mean serum Triglyceride levels was significantly high in cases as compared to controls with p value 0.000. Mean HDL of cases was 36.24±4.96 mg/dl and in controls was 41.24±1.55 mg/dl and the difference was statistically significant with value 0.000. (Table 2)

Retinopathy was found in 42 (42%) cases followed by neuropathy 34 (34%), nephropathy 28 (28%), ischemic heart disease 36 (36%) and stroke was found in 8 (8%). (Fig. 1)

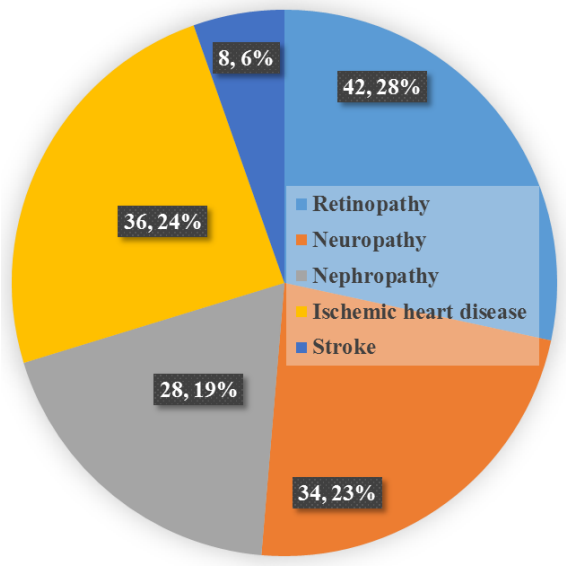
Table 1: Comparison of sugar parameters between cases and controls

Sugar parameters	Cases (n =100)	Controls (n = 25)	P value
Fasting blood sugar (mg/dl)	177.30±41.14	92.68±23.22	0.000
Post prandial blood sugar (mg/dl)	310.50±55.78	138.84±36.47	0.000

Table 2: Comparison of lipid parameters between cases and controls

Lipid parameters	Cases (n=100)	Controls (n=25)	P value
Total cholesterol mg/dl	209.02±27.15	182.24±49.03	0.000
LDL mg/dl	126.82±25.63	106.76±27.29	0.000
Triglyceride mg/dl	223.54±46.98	151.48±40.12	0.000
HDL mg/dl	36.24±4.96	41.24±1.55	0.000
VLDL mg/dl	45.18±9.72	30.2±5.20	0.000

Fig. 1: Distribution of complications



DISCUSSION:

This case control study was conducted among the patients who were admitted to Department of Medicine, Bahawal Victoria Hospital, Bahawalpur, for diabetic management or for the management of the associated complications of diabetes, who were compared with the control non-diabetic, non-hypertensive population. Dyslipidemia was an obvious feature in the present study among the study group. TG's and VLDL's were significantly raised to the tune of 98% in the study population compared to the control population. HDL levels were reduced among the diabetics when compared to the non-diabetics.

These findings corroborated with the Study conducted by Mazzone et al, where he documented an increase in TG's.[9] In this study it was observed that apart from an increase in TG's and VLDL and decrease in HDL, total cholesterol also was found to be slightly raised in the study. A study conducted by Otamere HO et al also documented an increase in triglycerides, total cholesterol, LDL and decrease in HDL which was similar to the findings in this study.[10] Studies such as Albrki WM et al also documented increased levels of TG's, VLDL and decreased levels of HDL which was pretty much the picture of our study.[11]

The commonest complication among the study population was Retinopathy with an incidence of 42% followed by ischemic heart disease (36%) and peripheral neuropathy (34%). According to ADA, the incidence of retinopathy at 10 years of diabetes is around 60%.[12]

The incidence of Peripheral Neuropathy in the study was around 34% which was close to that observed by A Ramachandran in their study which was around 27.5%.[13] Siva Prabodh V et al conducted a study and documented elevated levels of TG's, TC, LDL and depressed levels of HDL, similar to that observed in this study.[14] Bijlaani PK et al and Barr et al found that

HDL levels were depressed in diabetics which was one of the finding in this study as well with mean HDL level of (36.24±4.96mg/dl) among the diabetic population compared to HDL level of (41.24±1.55mg/dl) among non-diabetics.[15] Among the diabetic population 68% were on oral hypoglycemic agents, 22% on Insulin and the rest 10% were on a combination of Insulin and oral hypoglycemic agents. The study did not reveal any correlation between the type of therapy and its influence on the alteration in lipid profile which is somewhat similar to Karlander et al study in which the combination of bedtime insulin plus daytime sulphonylurea show similar lipid effects to those seen with insulin therapy alone-a decrease in triglyceride, an increase in HDL (20%) and no change in LDL or LP (a) levels.[16]

CONCLUSION:

Results of present showed that lipid parameters are significantly higher in type-II diabetics as compared to non-diabetics. Retinopathy was the most common complication.

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