

Comparison of Pattern of Dyslipidemia in Type 1 & Type 2 Diabetes Mellitus

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Aim: To compare the pattern of dyslipidemia between type 1 and type 2 diabetes mellitus.

Study Design: Cross sectional survey.

Setting: Diabetic Clinic and Medical wards of Mayo Hospital, Lahore .for six months.

Methods: 230 patients of diabetes mellitus were divided into two groups with 115 patients in each (Group A and Group B comprising of type 1 and type 2 diabetes mellitus respectively). Fasting lipid profile was performed.

Results: In group A and B, there were 35 (30.4%) and 40(34.8%) patients having cholesterol level of > 200mg/dl, 67 (58.3%) and 75(65.2%) patients having triglyceride level of > 150mg/dl , 31 (27%) and 50(43.5%) patients having LDL level of >100mg/dl & 44(38.3%)and 38(33%) patients having HDL<40mg/dl respectively. In group A, 67(58.3%) patients were having dyslipidemia while there were 79 (68.3%) having the same in Group B.

Conclusion: Dyslipidemia was found in both type 1 and type 2 diabetic patients, but in type 2 diabetic patients dyslipidemia was found in more patients as compared to type 1 patients.

Key words: Diabetes mellitus, dyslipidemia, cholesterol, triglyceride, low density protein(LDL)

INTRODUCTION

Diabetes mellitus is a syndrome with disturbed metabolism and inappropriate hyperglycemia resulting from a lack of insulin secretion or to a combination of insulin resistance and inadequate insulin production¹. It is associated with increased risk of multiple complications². In Asian population its prevalence has been estimated to range from 1 to 15%. Diabetes mellitus not only causes acute medical emergencies, but also potentially devastating late complications like; stroke, myocardial infarction and peripheral vascular disease³. Diabetes mellitus is associated with 2 to 3 fold increased risk of coronary heart disease⁴ and dyslipidemia is believed to be a major cause of increase risk Dyslipidemia in the form of increased plasma triglyceride levels, total and LDL cholesterol, decrease in HDL cholesterol and changes in apolipoproteins can cause atherogenic changes⁵. However in contrast to type 2 diabetes mellitus, no data of dyslipidemia in type 1 diabetes mellitus is available⁶. Cardiovascular disease is the most common complication of diabetes mellitus in women to have rates of coronary heart disease similar to those of men⁷. Hyperglycemia and hypertension, particularly in men, and diabetic dyslipidemia, especially in women, are risk factors amenable to more aggressive treatment⁸ It is accepted internationally as well that there is a lack of detailed data on the incidence and prevalence of dyslipidemia in type 1 diabetes mellitus⁷ and also that it is a major modifiable risk factor for CHD

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remains largely undiagnosed and untreated in type 1 diabetics⁹. In Pakistan, only a few studies have been carried out to evaluate the pattern of dyslipidemia in Diabetes Mellitus.

MATERIALS & METHODS

It was conducted in the Diabetic Clinic and Medical Wards of Mayo Hospital, Lahore for six months as a Cross sectional survey. The calculated sample size with 5% margin of error, 80% power of study taking expected percentage of cholesterol (> 200mg/dl) i.e. 75% in type 1 and 56.6% in type 2 diabetes mellitus is 230(115 cases in each group). It was non-probability purposive sampling. Diabetes patients between 13-85 years, of either sex, both insulin or non-insulin dependent, body mass index (BMI): under weight (< 25) obese (> 30) were included while those with renal and thyroid diseases, which affect lipid metabolism secondarily and those on drugs which affect lipid metabolism such as beta blockers, steroids and statins were excluded. 230 patients were equally divided into group A and B comprising of type 1 and 2 diabetes mellitus..Demographic data including age, sex were collected and entered into SPSS version 10 for statistical analysis. Fasting lipid profile was performed from clinical laboratory of Mayo hospital, Lahore. All information was collected through a proforma. Mean and standard deviation was calculated for pattern of dyslipidemia i.e. cholesterol >200mg/dl (yes/no), triglyceride >150mg/dl (yes/no) and LDL >100mg/dl (yes/no). Two groups were compared for pattern of dyslipidemia (cholesterol, triglyceride, LDL & HDL) using Chi Square test.

RESULTS

Out of 230 patients, mean age was 24.5 ± 6.1 & 48.7 ± 10.8 years in group A and B respectively. There were 95(82.6%) males and 20(17.4%) females in Group A while in group B, there were 84(73%) males and 31(27%) females. In group A, there were 35(30.4%) patients having cholesterol level of >200 mg/dl and 80 (69.6%) having cholesterol level <200 mg/dl and in group B, there were 40(34.8%) patients having cholesterol level of >200 mg/dl and 75(65.2%) having cholesterol level <200 mg/dl. In group A, there were 67(58.3%) patients having triglyceride level of >150 mg/dl and 48(41.7%) having triglyceride level <150 mg/dl, and in group B, there were 75 (65.2%) patients having triglyceride level of >150 mg/dl and 40(34.8%) having triglyceride level <150 mg/dl. In group A, there were 31 (27%) patients having LDL level of >100 mg/dl and 84(73%) having LDL level <100 mg/dl, and in group B, there were 50(43.5%) patients having LDL level of >100 mg/dl and 65(56.5%) having LDL level <100 mg/dl. In group A, there were 44(38.3%) patients having high HDL and 71(61.7%) having low HDL, and in group B, there were 38 (33%) patients having high HDL and 77 (67%) having low HDL.

DISCUSSION

It has been studied that a 1mmol/L increase in LDL-C is associated with a 1.57 fold increase in CHD risk and 0.1mmol/L increase in HDL-C concentration with a 15% decrease in risk¹⁰. It was found that 56.6, 23.6, 77.1 and 48.9 % of diabetic subjects had borderline to high risk levels of total cholesterol, triglyceride, LDL-C and HDL-C respectively¹¹. According to one study 63.75 and 58.5% of type 1 diabetes mellitus patients have elevated levels of triglycerides, total cholesterol and LDL respectively¹². Hyperglycemia and hypertension, particularly in men, and diabetic dyslipidemia especially in women are risk factors amendable to more aggressive treatment⁸. Mean age of the patient in group A was 24.5 ± 6.1 years and in group B was 48.7 ± 10.8 years. According to study of Khan¹³ it was 29 years in group A(type 1) and in group B (type 2) was 54 years, which is comparable. In our study cholesterol was high in 30.4% & 34.8% ,triglyceride was high in 58.3% & 65.2%, LDL was high in 27% & 43.5% patients in group A and B respectively. According to study of Khan¹³ cholesterol was high in 22% & 32%, triglyceride was high in 52% & 40% , LDL was high in 46% & 12% patients in group A and B respectively. HDL level was higher in 38.3% patients in group A and 33% in group B. According to study of Khan¹³ it was higher in 35% patients in type 1 group and 30% in type 2 group, which is comparable. Diabetes is frequently

associated with elevated concentrations of total plasma triglycerides, LDL cholesterol, and reduced concentration of HDL¹⁴.

CONCLUSION

It is concluded that pattern of dyslipidemia was found in both type 1 and type 2 diabetic patients, but in type 2 diabetic patients dyslipidemia was found in more patients as compared to type 1 patients.

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