ORIGINAL ARTICLE

Dyslipidemia in Type 2 Diabetes Mellitus in normal and Underweight Patient

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ABSTRACT

Aim: To find out the frequency of dyslipidemia in type II diabetes mellitus in normal and underweight patients.

Methods: Total 246 patients with type-II DM were selected for this cross sectional study from October 2015 to April 2016. All the patients were selected from Department of Medicine, Ghazi Khan Hospital, DG Kahn. Pts having age 30-70 years either male or female, having BMI 15 to 24.99 were selected.

Results: Total 246 cases of type II DM were selected for this study. Mean age of the patients was 50.93±2.26 years, mean weight was 54.74±7.97 Kg, mean height was 62.07±2.57 inches and mean BMI was 21.82±2.77. Among the 246 patients dyslipidemia was found in 183(74%) patients. Out of 107 (43.5%) male patients, dyslipidemia was found in 73(68.22%) patients. Among the 139(56.5%) female patients dyslipidemia was present in 110(79.14%) patients.

Conclusion: Results of this study revealed that dyslipidemia in can occur in any age group and male and female diabetics can be equally victim of dyslipidemia. Normal weight diabetics are more victim of dyslipidemia as compare to underweight diabetics.

Keywords: Diabetes mellitus, normal weight, under weight, BMI, fasting plasma glucose

INTRODUCTION

Diabetes mellitus is a metabolic syndrome associated with hyperglycemia as a result of relative or absolute deficiency of insulin, accompanied by end organ resistance of variable degree to this hormone. Globally, as of 2010, about 285 million individuals had diabetes with type II making up about 90% of the cases[1]. Chronic hyperglycemia results in microvascular (retinopathy, neuropathy, nephropathy) and macrovascular complications. i.e. stroke, coronary artery disease and peripheral vascular disease.

Dyslipidemia is an abnormal concentration of lipids or lipoproteins in the blood. Dyslipidemia manifest as elevated total cholesterol, increased triglycerides, elevated low density lipoprotein cholesterol and a decrease in HDL cholesterol[2]. Dyslipidemia is an important risk factor for cardiovascular complications in diabetes. Increased triglycerides and reduced HDL cholesterol plasma concentrations are common features of dyslipidemia especially in type II DM[3]. The lipid profile of individuals with type I DM is highly dependent on glycemic control. Patients with poorly controlled type I DM show higher levels of total triglycerides (TG) and total cholesterol (TC) and variable concentrations of high density lipoprotein cholesterol compared with non-diabetic controlled patients, whereas subjects with well controlled type I DM show similar and sometimes more favorable lipid and lipoprotein concentrations than control[4]. Over the 90% of cases with type II DM had one or more types of dyslipidemia. The most common dyslipidemia in a study of Saudi medical journal was high HDL cholesterol and high triglyceride[5]. The prevalence of hypertension (HTN), DM, dyslipidemia and metabolic syndrome (MS) substantially increases with increasing BMI[6]. One or more lipids can be deranged in diabetic patients especially in overweight patients but lipid levels may also be deranged in diabetic patients in normal weight and underweight patients.

This study will help us to determine the frequency of lipid disorders in type-II DM in normal weight and underweight patients. Many studies have been conducted for dyslipidemia in obese patients in past, but not much work has been performed in normal weight and underweight patients. This study will give frequency of different lipid disorders in this patient group so that early screening and management can be done in these patients.

MATERIAL AND METHODS

Total 246 patients with type-II DM were selected for this cross sectional study from October 2015 to April 2016. All the patients were selected from Department of Medicine, Ghazi Khan Hospital, Dera Ghazi Kahn. Patients having age 30-70 years either male or female, having BMI 15 to 24.99 were

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selected for this study. Patients with presence of decompensate heart failure, presence of chronic liver disease, presence of chronic kidney disease, pregnant women and patients with BMI > 24.9 were excluded from the study. Patients having fasting plasma glucose level ≥126mg/dl labelled as Type-II diabetic. An approval was taken from review committee of the institution and written informed consent was taken from every patient.

Five ml fasting blood sample was taken from every patient. Sample was sent to laboratory for TG, Total cholesterol and HDL analysis. The entire test was run on fully automated chemistry analyzer selectra E & all levels were measured in mg/dl. Weight and height of all patients were also be taken. Dyslipidemia is defined on the basis of laboratory reports of fasting lipid profile with abnormalities in any one of the three parameters (1. serum cholesterol > 200mg/dl, 2. serum triglycerides>150mg/dl,3. DL<40 for males and <50 for females).

Patients having BMI (kg/m2) 18.5-24.9 labelled as normal weight and patients having BMI (kg/m2) 15-18.4 labelled as underweight. All the data with Demographic profile was record in pre designed profroma.

All the data was entered in SPSS version 17 and analyzed. Mean and standard deviation was calculated for age, height, weight and BMI as numerical variable. Qualitative data like dyslipidemia and gender was presented as frequencies and graph. Frequencies and percentage was also calculated for dyslipidemia in type II diabetes mellitus in normal and underweight patients. Effect modifiers was controlled through stratification of age, gender and BMI (as normal weight and underweight) to see the effect of these on outcome variable which is dyslipidemia. Post stratification chi-square test was applied. P-value ≤0.05 was taken as significant.

RESULTS

Total 246 patients with type II diabetes mellitus were included in this study. Mean age of the patients was 50.93±12.26 years, mean weight was 54.74±7.97Kg, mean height was 62.07±2.57 inches and mean BMI was 21.82± .77. Among the 246 patients dyslipidemia was found in 183 (74%) patients (Fig. 1). Male patients was 107 (43%) and female patients was 139 (575) (Fig. 2). Among the 246 patients, 196 (80%) patients with normal weight and 50 (20%) patients was under weight (Fig. 3).

As shown in table 1, patients were divided into two age groups, age group 30-50 years and age group 51-70 years. In age group 30-50 years, there were 108(43.9%) patients and dyslipidemia was found in 85(78.7%) patients. Out of 138(56.1%) patients of age group 51-70 years dyslipidemia was found in 98(71%) patients. Insignificant (p. value 0.187) association was found between age and dyslipidemia.

Fig. 1: Frequencies for dyslipidemia

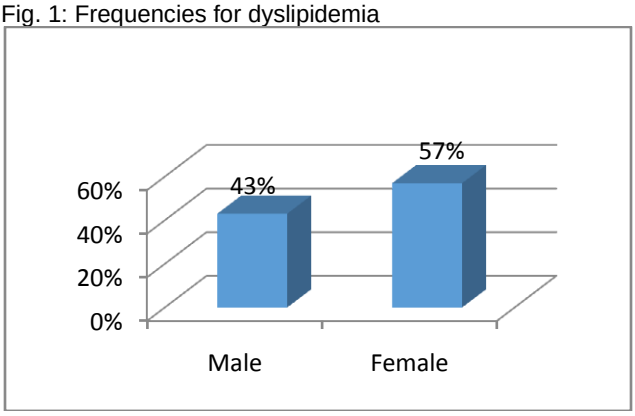


Fig. 2: Frequencies for gender

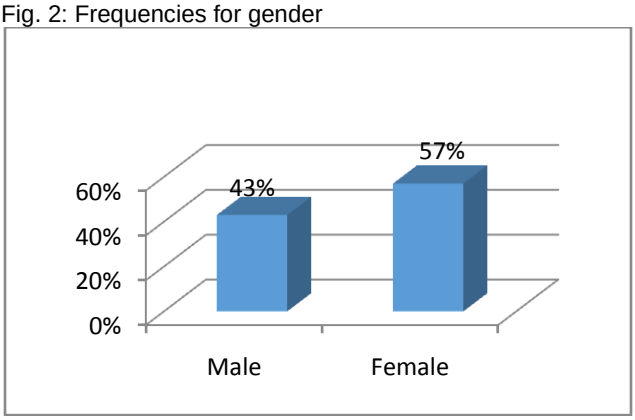
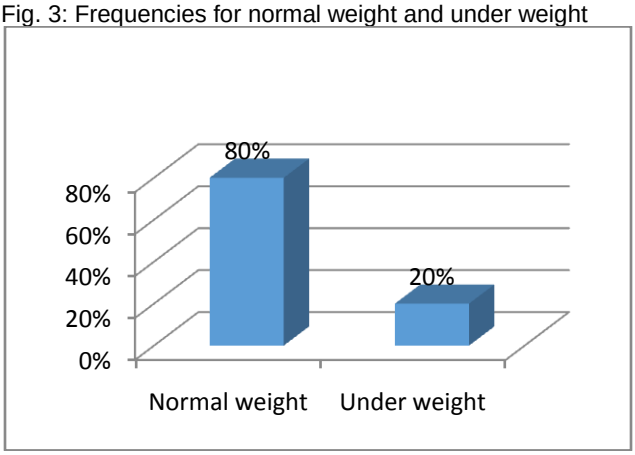


Fig. 3: Frequencies for normal weight and under weight



Stratification for gender was done. Out of 107(43.5%) male patients, dyslipidemia was found in 73(68.22%) patients. Among the 139(56.5%) female patients dyslipidemia was present in 110(79.14%) patients. Insignificant association between gender of

the patients and dyslipidemia was observed. P. value 0.057 (Table 2).

As sown in table 3, 196(79.67%) patients were with normal weight and dyslipidemia was seen in 173(88.27%) patients. Out of 50(20.33%) underweight patients dyslipidemia was seen in 10(20%) patients. Highly significant association was observed between BMI (Normal weight and under weight) with dyslipidemia. P. value 0.000 (Table 3).

Table 1: Stratification in relation to age

Age in years	Dyslipidemia		Total
	Yes	No	
30-50	85(78.7%)	23(21.3%)	108(43.9%)
51-70	98(71%)	40(29%)	138(56.1%)
Total	183(74.39%)	63(25.61%)	246(100%)

P value 0.187

Table 2: Stratification in relation to gender

Gender	Dyslipidemia		Total
	Yes	No	
Male	73(68.22%)	34(31.78%)	107(43.5%)
Female	110(79.14%)	29(20.86%)	139(56.5%)
Total	183(74.39%)	63(25.61%)	246(100%)

P value 0.057

Table 3: Stratification in relation to BMI

BMI	Dyslipidemia		Total
	Yes	No	
Normal weight	173(88.27%)	23(11.73%)	196(79.67%)
Under weight	10(20%)	40(80%)	50(20.33%)
Total	183(74.39%)	63(25.61%)	246(100%)

P value 0.000

DISCUSSION

DM is associated with a greater risk ofmortality and morbidity from cardiovascular disease (CVD). Detection and management of dyslipidemia in cases of DM is one of the major step towards decreasing risk of CVDassociated with DM.[7]Subjects in our outpatient diabetes clinics are primarily with type 2 DM and represent a group at higher risk for CVD.

Therefore, efforts to reduce the risk of heart disease through evaluation of risk factors and introduction of preventive and therapeutic measures into a comprehensive treatment program must be a primary focus when caring for the diabetic patients.

The pathogenesis of heart disease in patients of DM is very complex, but serum lipids are frequently abnormal and likely to contribute to the risk of coronary artery disease. Type II DM is typically associated with a dyslipidemia characterized by hypertriglyceridaemia and low HDL levels, while the levels of TC and LDL may or may not differ significantly from those in the non-diabetics[8]. In our study mean age of the diabetic patients were 50.93±12.26 years. Similar mean age of diabetics was reported by Mehmood F et al[9]. In present study dyslipidemia was found in 74% patients. Mehmood F et al reported dyslipidemia in 81.5% patients which is comparable with our study[9]. in another study by Abdel-Aal et al[10] dyslipidemia was found in 83.9% diabetics which is comparable with our findings. Comparable results were also reported by Mathura et al[11] in their study. Similar findings of dyslipidemia were also reported by some other studies[12-14].

CONCLUSION

Results of this study revealed that dyslipidemia in can occur in any age group and male and female diabetics can be equally victim of dyslipidemia. Normal weight diabetics are more victim of dyslipidemia as compare to underweight diabetics.

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