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Research Article

Assessment of dyslipidemia in normal and underweight type-II diabetics

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ABSTRACT

Objectives: To assess the frequency of dyslipidemia in normal and underweight type-II diabetics.
Material and methods: Total 100 type-II diabetics were selected for this cross sectional study from September 2015 to March 2016 from Department of Pathology, Nishter Medical College, Multan. Patients having age 30-70 years either male or female, having BMI 15 to 24.99 were selected for this study.
Results: Total 100 diabetics were selected for this study. Mean age of the patients was 51.77 ± 11.34 years, mean weight was 56.64 ± 6.74 Kg, mean height was 63.07 ± 1.57 inches and mean BMI was 20.43 ± 3.68. Out of 100 diabetics, dyslipidemia was found in 70 (70%) patients. Dyslipidemia was found in 34 (80.95%) patients of age group 30-50 years and 36 (62.07%) patients of age group 51-70 years. Statistically significant association of age with dyslipidemia was noted with p value 0.0489.
Conclusion: Findings of presents study showed higher frequency of dyslipidemia type-II underweight and normal weight diabetics. Statistically significant association of dyslipidemia with age and BMI was noted.

Key words: under weight, normal weight, diabetes mellitus,BMI, fasting plasma glucose, random plasma glucose.

INTRODUCTION:

Diabetes mellitus (DM) has become a very important public health problem in Pakistan with 7.1 million individuals with DM in 2010 expected to rise to 13.8 million in 2030 when the country will rank 4thin terms of number of individuals aged 20 years to 79 years with DM.[1]

It is a metabolic syndrome which is associated with hyperglycemia as a result of relative or absolute deficiency of insulin, accompanied by end organ resistance of variable degree to this hormone. Chronic hyperglycemia results in microvascular (retinopathy, neuropathy, nephropathy) and macrovascular complications. i.e. stroke, coronary artery disease and peripheral vascular disease.[1]In blood stream, abnormal concentration of lipids or lipoproteins known as dyslipidemia. Dyslipidemia manifest as elevated total cholesterol, increased triglycerides, elevated low density lipoprotein cholesterol and a decrease in HDL cholesterol.[2] In diabetic patients, dyslipidemia is a very important risk factor for cardiovascular complication. 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.Results of this study may help us to determine the frequency of lipid disorders in type-IIDM 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 100 type-II diabetics were selected for this cross sectional study from September 2015 to March 2016 from Department of Pathology, Nishter Medical College, Multan. Patients having age 30-70 years either male or female, having BMI 15 to 24.99 were 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. HDL<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 100 diabetics were selected for this study. Mean age of the patients was 51.77 ± 11.34 years, mean weight was 56.64 ± 6.74 Kg, mean height was 63.07 ± 1.57 inches and mean BMI was 20.43 ± 3.68. Out of 100 diabetics, dyslipidemia was found in 70 (70%) patients. (Fig. 1) Patients were divided into two age group i.e. age group 30-50

years and age group 51-70 years. Total 42 (42%) patients belonged to age group 30-50 years and 58 (58%) patients belonged to age group 51-70 years. Dyslipidemia was found in 34 (80.95%) patients of age group 30-50 years and 36 (62.07%) patients of age group 51-70 years. Statistically significant association of age with dyslipidemia was noted with p value 0.0489 (Table 1)

Out of 45 (45%) male patients, dyslipidemia was found in 29 (64.44%) patients and out of 55 (55%) female patients, dyslipidemia was noted in 41 (74.55%) patients. Insignificant association (P = 0.2836) between gender and dyslipidemia was noted. (Table 2)

Total 75 (75%) patients were normal weight and 25 (25%) patients were underweight. Dyslipidemia was noted in 64 (85.33%) and 6 (24%) normal and underweight patients. Statistically significant association between BMI and dyslipidemia was noted with p value 0.000. (Table 3).

Fig. 1 Frequencies of dyslipidemia

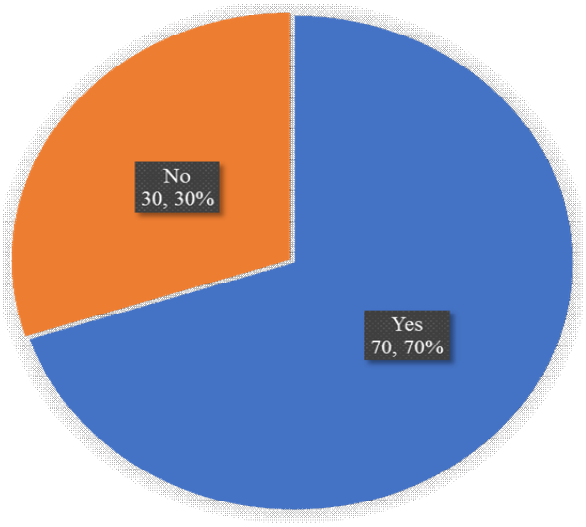

Table No. 1: Stratification in relation to age

Age (Years)	Dyslipidemia		Total	P. value
	Yes (%)	No (%)		
30-50	34 (80.95)	8 (19.05)	42 (42)	**0.0489**
51-70	36 (62.07)	22 (37.93)	58 (58)	
Total	**70 (70)**	**30 (30)**	**100**	

Table No. 2: Stratification in relation to gender

Gender	Dyslipidemia		Total	P. value
	Yes (%)	No (%)		
Male	29 (64.44)	16 (35.56)	45 (45)	**0.2836**
Female	41 (74.55)	14 (25.45)	55 (55)	
Total	**70 (70)**	**30 (30)**	**100**	

Table No. 3: Stratification in relation to BMI

BMI	Dyslipidemia		Total	P. value
	Yes (%)	No (%)		
Normal Weight	64 (85.33)	11 (14.67)	75 (75)	**0.000**
Under Weight	6 (24)	19 (76)	25 (25)	
Total	**70 (70)**	**30 (30)**	**100**	

DISCUSSION:

Detection and management of altered lipids in patients of DM is a major step to decrease the risk of CVD associated with DM.[7]Subjects in our outpatient diabetes clinics are primarily with type 2 DM and represent a group at higher risk for CVD.[7]

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]

The purpose of present study was to find out the frequency of dyslipidemia in type II diabetes mellitus in normal and underweight patients. Mean age of the patients was 51.77 ± 11.34 years, mean weight was 56.64 ± 6.74 Kg, mean height

was 63.07 ± 1.57 inches and mean BMI was 20.43 ± 3.68.Similar mean age of diabetics was reported by Mehmood F et al.[9]Out of 100 diabetics, dyslipidemia was found in 70% patients. In one study, Mehmood F et al[9] reported frequency of dyslipidemia in 81.5% patients. Findings of this study is in agreement with our study. In another study by Abdel-Aal et al[10] dyslipidemia was found in 83.9% diabetics which is also 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:

Findings of presents study showed higher frequency of dyslipidemia type-II underweight and normal weight diabetics. Statistically significant association of dyslipidemia with age and BMI was noted.

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