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RESEARCH ARTICLE

Clinical Assessment and Comparison of Lipid Profiles among Coronary Artery Disease and type 2 Diabetes Mellitus Patients receiving Statin Therapy

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ABSTRACT:

Aim and Objective: The aim of study is to assess and compare the lipid profiles among diabetic and coronary artery disease (CAD) patients receiving statin therapy. **Methods:** This retrospective observational study was carried out in a cardiac specialty hospital for a period of 6 months from January - June 2015. The inclusion criteria included adult patients greater than 18 years of age with the diagnosis of coronary artery disease or diabetes mellitus receiving statin therapy. CAD patients with any other co morbidity were excluded in the study. Lipid profile such as low-density lipoproteins (LDL), high-density lipoproteins (HDL), very-low-density lipoprotein (VLDL), total cholesterol (TC), triglycerides (TGL) were assessed. **Results:** The overall prevalence of dyslipidemia in our CAD patients was greater. More number of male patients was affected with CAD and diabetes when compared to female patients. No significant changes were observed in HDL levels. The study concludes that the incidence and the lipid profile for both the study groups were found to be high. The lipid parameters were assessed and compared for both the study groups which showed statistically no significance difference. Aggressive therapy of diabetic dyslipidemia will probably reduce the risk of coronary heart diseases (CHD) in patients with diabetes. Lowering triglycerides and increasing HDL cholesterol with a fibrate is associated with a reduction in cardiovascular events in patients with clinical CHD, low HDL, and near-normal levels of LDL.

KEYWORDS: Coronary artery disease, Diabetes Mellitus, Cholesterol.

INTRODUCTION:

Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in both developed and developing countries. It is a leading cause of death in India, and its contribution to mortality is rising: the number of deaths due to CAD in 1985 is expected to have doubled by 2015[1].

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia caused by defective insulin secretion, resistance to insulin action, or a combination of both, alteration of lipids and protein metabolism also are important manifestation of these defects in insulin secretion or action[2]. It is the 4th or 5th leading cause of death in most developed countries. Complication from diabetes is CAD. Type1 diabetes accounts for 5% to 10% of all diabetes cases. Type 2 DM accounts for 90% DM cases.[3]Of the risk factors, diabetes, and its predominant form, type 2 diabetes mellitus (T2DM), has a distinctive association with CAD. Those with diabetes have two- to four-fold higher risk of developing coronary disease than people without diabetes. The risk factors for CAD include hypertension, dyslipidemia, obesity, and smoking. Therefore,

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prioritizing and managing diabetic patients with CVD risk factors is vital.[4,5]Thus the study was designed to analyze the lipid profiles of the Diabetes Mellitus and CAD population and to find any significance of difference is observed between the study population.

MATERIALS AND METHODS:

This retrospective observational study comprising of 50 CAD patients and 50 diabetic patients receiving statin therapy was conducted in a cardiac specialty hospital in chennai from January 2015- June 2015. The inclusion criteria included the case sheets of adult patients with diagnosis of CAD and diabetes and exclusion criteria were records which did not have proper lab parameters and CAD with other co morbid diseases. The demographic details of the patients were collected. The study population was categorized into 2 groups, CAD and diabetic patients. Medical records of the out patients from the database were analyzed to evaluate the lipid profile differences in coronary artery disease and diabetes patients. Lipid profile data comprising of total cholesterol (TC), triglycerides (TGL), high- density lipoprotein (HDL), low-density lipoprotein (LDL), very low-density lipoprotein (VLDL) were collected. The data were analyzed using graph pad prism and the comparison between the two groups was done by student t test.

RESULTS:

In this retrospective study the case records of 50 Diabetes Mellitus patients and 50 CAD patients were analyzed. The demographic details of both the study groups were shown in Table 1 and Table 2.

Table 1. Age and Gender wise distribution of the study population

Age class (age in years)	No. of patients (n= 100)	Percentage (%)
21-30	6	6
31-40	17	17
41-50	22	22
51-60	19	19
61-70	17	17
71-80	12	12
81-90	7	7
Gender Wise Distribution		
Males	56	56
Females	44	44

Table- 2. Distribution of CAD and Diabetes between Genders in studied population

Gender	CAD group (n=50)	Diabetes Mellitus group (n=50)
Male	30	26
Female	20	24

P value>0.05, RR= 1.179

The lipid profile data comprising of TC, TGL, HDL, LDL, VLDL were collected from the both the study groups and the pattern and incidence of dyslipidemia were assessed as depicted in Table 3 and Table 4, respectively. The comparison of lipid profiles was done using student t test between the study groups as shown in Table 5.

Table 3. Patterns of Dyslipidemia in both the study population

Lipid parameters (mg/dl)	No. of patients (n=100)	Percentage (%)
TC(<200mg/dl)	31	31
TGL(<150mg/dl)	34	34
HDL(>40mg/dl)	57	57
LDL(<130mg/dl)	28	28
VLDL(<30mg/dl)	35	35

Table 4. Incidence of Dyslipidemia in Diabetes and CAD Patients

Gender	Diabetes Mellitus group (n=50)		CAD group (n=50)		Statistical Parameters
Dyslipidemic	No. of Patients	Percentage (%)	No. of patients	Percentage (%)	
	47	94	50	100	
Not Dyslipidemic	3	6	0	0	P value> 0.05

Table 5. Comparison of Lipid Profiles in CAD and Diabetes Patients

Parameters (mg/dl)	Diabetes mellitus (n=50)		CAD(n=50)		P value
TC (<200mg/dl)	Mean+=SD	Median	Mean=+SD	Median	>0.05
	192.96±28.4	189.5	186.06±37.6	189	
TGL (<150mg/dl)	147.04±68.07	124	152.4±66.3	128	>0.05
HDL (>40mg/dl)	40.68±5.9	40	40.16±4.6	38	>0.05
LDL(<130mg/dl)	121.36±27.7	122	122.04±2.1	121.5	>0.05
VLDL(<30mg/dl)	32.02±18.9	25	30.2±13.1	25	>0.05

DISCUSSION:

Diabetes is associated with high risk cardio vascular disease (CVD). Type 2 diabetes is associated with a marked increased risk of CVD individuals with diabetes have absolute risk of major coronary events similar to that of non diabetic individuals with established coronary heart disease (CHD)[6]. Dyslipidemia is well recognized and modifiable risk factor that should be identified early to institute aggressive cardio vascular preventive management[7]. In this study there was more number of patients affected with CAD or Diabetes in the age group of 41-50 years (22%) and 51-60 years (19%) in concordance with the previous study[8]. The male patients (56%) were more affected with CAD or Diabetes compared to female patients (44%). Dyslipidemia is caused due to the increase in TC, LDL, VLDL and TGL and decrease in serum HDL levels. There were 97% dyslipidemic patients in the diabetes

mellitus group and 100% in the CAD group. Total cholesterol was found to be high in the Diabetes Mellitus group (192.96±28.4) and CAD group (186.06±37.6). The TGL levels of Diabetes Mellitus group and CAD group were 147.04±68.07 and 152.4±66.3, respectively which was above optimal range[9] in accordance to the previous study but the HDL and VLDL levels were normal in our study population. The LDL levels were above optimal in the Diabetes Mellitus group (121.36±27.7) and CAD group (122.04±2.1).

CONCLUSION:

The study concludes that the incidence and the lipid profiles for both the study groups receiving statin therapy were found to be above optimal and high. There was no significant difference in the lipid profiles between the study groups. However, despite statin therapy, high CVD risk persists in these populations. Aggressive therapy of diabetic dyslipidemia will probably reduce the risk of CHD in patients with diabetes. Lowering triglycerides and increasing HDL cholesterol with a fibrate is associated with a reduction in cardiovascular events in patients with clinical CVD, low HDL, and near-normal levels of LDL. Combination therapy using statins and fibrates or niacin may be necessary to achieve lipid targets, but has not been evaluated in outcomes studies for either event reduction or safety.

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