IJABR

International Journal of Advanced Biotechnology and Research (IJABR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-9, Issue-4, 2018, pp204-208
http://www.bipublication.com

Research Article

Study of Dyslipidemia in Type 2 Diabetes Patients from BBH Rawalpindi

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ABSTRACT

OBJECTIVES: The objective of the study was to:

- determine the frequency of dyslipidemia in type 2 diabetes patients and;
- to compare dyslipidemia in controlled with uncontrolled type 2 diabetes patients.

STUDY DESIGN:

- It was a cross sectional study.

SETTINGS:

- This study was conducted in Medical Units of BBH, Rawalpindi.

RESULTS: In this study, frequency of controlled/uncontrolled diabetes revealed as 59.33%(n=89) and uncontroleld were 40.67%(n=61), Comparison of dyslipidemia in controlled and uncontrolled diabetes mellitus was done which shows that out of 89 cases 21 cases were controlled and 68 were un-controlled, p value was calcualted as 0.000 and odd ratio was 0.09, which shows a significant difference between the two groups.

CONCLUSION: The frequency of dyslipidemia is high among patients with type 2 diabetes mellitus and it is significantly higher in uncontrolled diabetes. So, it is recommended that every patient who present with type II diabetes, should be sort out for allergic dyslipidemia. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

KEYWORDS: Type II Diabetes mellitus, controlled/uncontrolled, dyslipidemia, frequency

INTRODUCTION

The term diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. It is a global endemic with rapidly increasing prevalence in both developing and developed countries.[1] No nation or region is free of diabetes mellitus. Globelly, the number of adults with diabetes in 2010 was estimated to be 285 million, with prevalence of 6.4%. By 2030, the estimated number will increase to 439 million with prevalence of 7.7%.[2,3] It is estimated to be responsible for 3.96 million adult deaths per year at global level.[5] Pakistan with a population of approximately 150 million has a high prevalence of diabetes Nearly 11.5% population is suffering from diabetes mellitus in Pakistan.[4] WHO ranks Pakistan 7th on diabetic prevalence list with 6.9 million diabetic people.

The term “dyslipidemia” is increasing being used to describe abnormal changes in lipid profile, replacing the old term “hyperlipidemia”. Diabetes mellitus has strong association with dyslipidemia and this dyslipidemia is related to poor glycemic control and duration of the disease.[6] Among various dyslipidemia in diabetes the most common is hypertriglyceridemia followed by decrease

levels of serum HDL-cholesterol, raised serum LDL-cholesterol and lastly increased serum cholesterol levels.[6] Impaired action of insulin in diabetic patients increase the rate of intracellular hydrolysis of triglyceride (IG) with the release of non esterified fatty acids (NEFA) which act as substrate for liver. Impaired insulin action and relative insulin deficiency causes complex alterations in plasma very low density lipoprotein (VLDL) levels and decreased serum HDL-cholesterol levels both causing increased rate of atheroselerosis and hence contributing to CAD.[6]

Considering diabetes mellitus as a common disease in our population and associated dyslipidiemia in diabetic make diabetic patients 2-4 time more susceptible to coronary artery disease (CAD) which is the major cause of increased mortality and morbidity in these patients.[6] In type 2 diabetics.[7] In Pakistan study comparing glycaemic status & dyslipidemia, hypertriglyceridemia was found in 64% of patient with good glycaemic control compared with 92% of patients in poorly controlled group i.e. $P<0.05$,[8] where as HDL in controlled was 28% and uncontrolled was 100%[7] while LDL was equal 0% in both controlled and uncontrolled groups. This is statistically quite significant and needs to be evaluated on a large scale as there is study showing that improved controls of hyperglycemia do modify diabetes associated dyslipidemia LDL-cholesterol and HDL-cholesterol. On the other hand, revealed the same pattern in both groups of patients.[8]

Dyslipidemia in diabetic can be overlooked and resultantly under treated, so aim of my study is to analyzed the lipid profile abnormalities in controlled versus uncontrolled type 2 diabetes patients. Early detection of dyslipidemia in uncontrolled diabetic patients will prime the treating clinicians of this important risk factor and to formulate treatment guidelines for the prevention of CAD in diabetic patients.

METHODOLOGY

We included 150 cases having age range 20-70 years of either gender, newly diagnosed diabetes mellitus (diagnosed with in 2 years) and using oral anti diabetic agents. We excluded all patients with primary hyperlipidemias, with diseases, which affect lipid metabolism secondarily such as renal, thyroid etc. Patients who were on various drug treatments that affect metabolism such as β-blockers; steroids; lipid lowering agents, thiazide diuretics (except anti-diabetic drugs) After taking history, the patients were admitted in the department of medicine. The patients were grouped according to the age, sex, duration and control of diabetes mellitus. Patients with two consecutive readings with a mean of <7% over the last six months was labeled as controlled diabetics. Patients with two consecutive reading over last six months with a mean of >7% were considered as uncontrolled diabetics. Lipid profile evaluation including serum cholesterol, triglyceride, HDL, LDL, VLDL and total cholesterol to HDL ratio levels. Blood sample of 5c.c for evaluation of lipid profiles and BSF was taken after 14 hours of overnight fast. Fasting lipid profile was performed in main hospital laboratory, Allied hospital Faisalabad and reported by pathologist. Dyslipidemia was assessed by using Lipid profile value and entered on specially designed performa.

All Data was entered and statistics were obtained using SPSS version 16. Quantitative data was expressed as mean $\pm$ S.D. i.e., age, duration of diabetes and lipid profile levels. Frequency and percentages were expressed of qualitative variables like sex, controlled/uncontrolled diabetics and dyslipidemia. Chi-square was applied as test of significance to compare dyslipidemia between controlled and uncontrolled diabetes mellitus patients. P value ≤ 0.05 was considered as significant. Odd ratio was calculated.

RESULTS

Age distribution of the patients was recorded which shows that majority of the patients were recorded between 41-60 years of age i.e. 58%(n=87), 14%(n=21) between 20-40 years and 28%(n=42) between 61-70 years, mean and sd was calcualted as 51.83 ± 10.95 years. (Table No. 1).

Gender distribution of the patients shows 57.33%(n=86) male and 42.67%(n=64) females. (Table No. 2)

Duration of diabetes mellitus was recorded as 46%(n=69) during 0-12 months and 54%(n=81) were recorded during 13-24 months. (Table No. 3)

Frequency of controlled/uncontrolled diabetes revealed as 59.33%(n=89) and uncontroleld were 40.67%(n=61). (Table No. 4)

Comparison of dyslipidemia in controlled and uncontrolled diabetes mellitus was done which shows that out of 89 cases 21 cases were controlled and 68 were un-controlled, p value was calcualted as 0.000 and odd ratio was 0.09, which shows a significant difference between the two groups. (Table No. 5)

TABLE No. 1: Age Distribution Of The Patients (N=150)

Age(in years)	No. of patients	%
20-40	21	14
41-60	87	58
61-70	42	28
Total	**150**	**100**

Mean and SD: 51.83±10.95

TABLE No. 2: Gender Distribution of the Patients (N=150)

Gender	No. of patients	%
Male	86	57.33
Female	64	42.67
Total	**150**	**100**

TABLE No. 3: Duration of Diabetes (N=150)

Duration (in months)	No. of patients	%
0-12	69	46
13-24	81	54
Total	**150**	**100**

TABLE No. 4: Frequency of Dyslipidemia in Type 2 Diabetes Patients Diabetes Mellitus (N=150)

Dyslipidemia	No. of patients	%
Yes	89	59.33
No	61	40.67
Total	**150**	**100**

TABLE No. 5: Comparison of Dyslipidemia in Controlled and Uncontrolled Diabetes Mellitus (N=89)

Group	Dyslipidemia		P value	Odds ratio
	Yes	No		
Controlled	21	68	0.000	0.09
Un-controlled	68	21		

DISCUSSION

Dyslipidemia in diabetic is overlooked and resultantly under treated, so we planned to analyze the lipid profile abnormalities in controlled versus uncontrolled type 2 diabetes patients. Early detection of dyslipidemia in uncontrolled diabetic patients will prime the treating clinicians of this important risk factor and to formulate treatment guidelines for the prevention of CAD in diabetic patients.

The findings of the study are in agreement with a Pakistani study comparing glycaemic status & dyslipidemia, hypertriglyceridemia was found in

64% of patient with good glycaemic control compared with 92% of patients in poorly controlled group i.e. P<0.05,[8] where as HDL in controlled was 28% and uncontrolled was 100%[7] while LDL was equal 0% in both controlled and uncontrolled groups and shows dylipidemia significantly higher in uncontrolled group.

Jacobs MJ and colleagues[9] assessed the prevalence, treatment, and control of dyslipidemia among United States (U.S.) adults with diabetes and recorded that a significant increased persons with diabetes remain uncontrolled for dyslipidemia. Intensified efforts at screening and treatment according to current guidelines should be warranted.

Elnasri et al compared the frequency of various dyslipidemias in diabetics and age, sex matched healthy controls in Sudan and found an increased incidence of various dyslipimedias in diabetics as compared to controls with particularly statistically significant increase in triglycerides level and a decrease in HDL-C levels. Other studies also showed a high prevalence of dyslipidemias in diabetics.[10]

Malik S and others[11] examined the extent of control of cardiovascular risk factors and distance from goal for those with uncontrolled levels in a recent sample of U.S. adults with diabetes and recorded 50.2% of subjects with diabetes were not at goal for A1C, 64.6% for low density lipoprotein-cholesterol (LDL-C), 52.3% for high density lipoprotein-cholesterol (HDL-C), 48.6% for triglycerides and 53.0% BP. Only 5.3% of men and 12.7% of women with diabetes were simultaneously at goal for A1C, LDL-C and BP. Even among those on treatment, most were not at goal for these parameters. Women were more likely to have LDL-C and HDL-C not at goal than men. Non-Hispanic Blacks were more often not at goal for BP and LDL-C. Mean distances from targets were 36mg/dL for LDL-C, 18mmHg for systolic BP, 6mmHg for diastolic BP and 2.0% for A1C in patients not at goal and concluded that many U.S. adults with diabetes have sub-optimal control of cardiovascular risk factors and remain far from target goals for BP, lipids and A1C, even if on treatment.

However, the findings of the study in agreement with other studies reveal that glycemic control even in developed countries is also lower and increased incidence of dyslipidemia is reported which needs early detection of dyslipidemia diabetic patients either in controlled/uncontrolled, for the prevention of CAD in such patients.

CONCLUSION

The frequency of dyslipidemia is high among patients with type 2 diabetes mellitus and it is significantly higher in uncontrolled diabetes. So, it is recommended that every patient who present with type II diabetes, should be sort out for allergic dyslipidemia. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

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