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A PROSPECTIVE STUDY OF LIPID PROFILE IN DIABETES MELLITUS IN A TERTIARY CARE HOSPITAL

Dr.CH.Sandeep Kumar[1*], Dr. V.Rajesh Reddy Komatla[2]

[1]Assistant Professor, Department of General Medicine, Jagityal Medical College and Govt General Hospital, Jagityal, Telangana.*

[2]Consultant, Rainbow hospital, Madhira, Telangana.

Corresponding Author: Dr.CH.Sandeep Kumar

Abstract

Introduction: Diabetes mellitus is characterized by chronic hyperglycaemia with disturbances in carbohydrate, lipid and protein metabolism resulting from defects in insulin action or both. Approximately 463 adults are currently living with diabetes; by 2045 this will rise to 700 million with 79% of adults with diabetes living in low-and middle-income countries. Dyslipidemia is known to be a major risk factor for macrovascular complications in type 2 Diabetic patients and affects 10-73% of this population.

Materials and Methods: This is the study was carried out in the Department of General Medicine, Jagityal Medical College and Govt General Hospital, Jagityal, Telangana. Total 50 patients with DM were included in this study during the period of 1 year with different age group. From all the patients' lipid profile were evaluated and recorded. During the study period 50 normal healthy people without DM were also included as control study. From all the patients detail histories were taken as well as relevant clinical examination with routine investigations were also done. All the patients were for at least 12-14 hours overnight fasting and 5ml venous blood was collected in a disposable syringe on next morning (before breakfast) for the serum lipid profile and fasting blood sugar.

Results: In this study lipid profile were done for total 50 patients with DM and the result were evaluated. Out of 50 diabetic patients 24 (48%) were males and 26 (52%) were females. In the DM patients maximum numbers of patients were in the age group 35 years to 55 years. 70% of DM patients showed high serum cholesterol level (<250 serum cholesterol level) and all persons had normal serum cholesterol level in control group.

Conclusion: In DM patients lipid abnormalities in diabetes are raised serum cholesterol, raised triglycerides, and raised serum LDL and low serum HDL. Therefore there is important impact of dyslipidemia on cardio vascular complications required complete attention throughout the course of disease. Hence early screening of diabetic patients for dyslipidemia and intervention is necessary to minimize the risk of cardiovascular diseases.

Key Words: Diabetes mellitus, HDL, LDL, triglycerides.

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INTRODUCTION

Diabetes mellitus is characterized by chronic hyperglycaemia with disturbances in carbohydrate, lipid and protein metabolism resulting from defects in insulin action or both.[1] Approximately 463 adults are currently living with diabetes; by 2045 this will rise to 700 million with 79% of adults with diabetes living in low-and middle-income countries. Dyslipidemia is known to be a major risk factor for macrovascular complications in type 2 Diabetic patients and affects 10-73% of this population.[2]

Diabetic dyslipidemia consist of reduced high density lipoprotein (HDL), raised triglycerdes (TG) and excess of small dense low density lipoprotein (LDL) particles. Lipid abnormalities are common in patients with diabetes mellitus because insulin resistance or deficiency affects key enzymes and pathways of lipid metabolism.[3]

Micro-vascular and macro-vascular complications, including cardiovascular disease (CVD), retinopathy, nephropathy, and neuropathy, occur due to chronic uncontrolled hyperglycaemia in diabetics. Glycated haemoglobin (HbA1c) is used to monitor long term glycaemic control routinely, predict the risk of complications development, and also function as the indicator for the mean blood glucose level.[4]

Dyslipidemia, hyperglycemia and hyperlipidemia are results of Insulin resistance and obesity combine cause and have additive cardiovascular risk. Therefore identification, critical evaluation and follow-up of serum lipid profile is important in DM continuously.[5] One of the study showed that prevalence of dyslipidemia in diabetes mellitus is 95%. The main aim of this study is to know the lipid profile in Diabetics mellitus (DM).

MATERIALS AND METHODS

Study design: A prospective study

Study location: Department of General Medicine, Jagityal Medical College and Govt General Hospital, Jagityal.

Study duration: January 2022 to December 2022.

Sample Size: 50 patients

This is the study was carried out in the Department of General Medicine, Jagityal Medical College and Govt General Hospital, Jagityal, Telangana. Total 50 patients with DM were included in this study during the period of 1 year with different age group. From all the patients' lipid profile were evaluated and recorded. During the study period 50 normal healthy people without DM were also included as control study. From all the patients detail histories were taken as well as relevant clinical examination with routine investigations were also done. All the patients were for at least 12-14 hours overnight fasting and 5ml venous blood was collected in a

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disposable syringe on next morning (before breakfast) for the serum lipid profile and fasting blood sugar.

RESULTS

In this study lipid profile were done for total 50 patients with DM and the result were evaluated. Out of 50 diabetic patients 24 (48%) were males and 26 (52%) were females. In the DM patients maximum numbers of patients were in the age group 35 years to 55 years. 70% of DM patients showed high serum cholesterol level (<250 serum cholesterol level) and all persons had normal serum cholesterol level in control group as shown in table no 1 below.

Serum cholesterol level	DM	Control
<150	4	38
151-250	11	12
251-300	23	0
305-350	4	0
351-400	8	0
Total	50	50

Table 1: Distribution of the controls and patients according to their serum cholesterol level

Serum triglyceride level	DM	Control
<150	12	50
150-199	12	0
200-499	20	0
>500	6	0
Total	50	50

Table 2: Distribution of the controls and patients According to their serum triglyceride level

Serum LDL level	DM	Control
<130	11	45
130-159	19	5
>160	20	0
Total	50	50

Table 3: Distribution of the controls and patients according to their serum LDL level

Serum HDL level	DM	Control
<40	43	12
≥60	7	38
Total	50	50

Table 4: Distribution of the controls and patients according to their serum HDL level

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DISCUSSION

Abnormalities of lipid metabolism have been reported in patients with diabetes mellitus accompanied by the risk of cardiovascular arteriosclerosis.[6] Many factors may affect blood lipid levels in diabetes because of interrelationship between carbohydrates and lipid metabolism and vice versa. Dyslipidaemia as a metabolic abnormality is frequently associated with diabetes mellitus.[7]

Abnormal serum lipids are likely to contribute to the risk of coronary artery disease and other complications of atherosclerosis in diabetic patients. According to the CDC, in adults with diabetes have one or more lipid abnormalities is about 97% whereas the prevalence of diabetic dyslipidemia varies from 25% to 60% in many studies.[8]

In this study showed 70% of DM patients showed high serum cholesterol level. This variation in prevalence may be due to differences in body mass index and possibly genetic variation. According to the studied conducted by Ahmad et al 21% patients with type 2 diabetes had raised serum cholesterol (>200 mg/dl) and 34. 2% patients have raised triglycerides in serum (>150 mg/dl).[9] 75% patients with DM showed serum TG was raised in this study which showed higher. The reason for difference in serum cholesterol values may be due to difference in the dietary habits of the people. The study done by G. D. Bhambhani et al serum LDL level was high in 78% of type 2 DM patients, while only 19% of type 1 DM patients showed higher value which is higher than this study.[10]

CONCLUSION

In DM Hyperlipidemia is the commonest complication and it predisposes them to premature atherosclerosis and macrovascular complications. In DM patients it is evident that all the lipid fractions are elevated when compared to healthy controls suggesting that DM has a real impact on lipid metabolism from this study. In DM patients lipid abnormalities in diabetes are raised serum cholesterol, raised triglycerides, and raised serum LDL and low serum HDL. Therefore there is important impact of dyslipidemia on cardio vascular complications required complete attention throughout the course of disease. Hence early screening of diabetic patients for dyslipidemia and intervention is necessary to minimize the risk of cardiovascular diseases.

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