Association of Dyslipidaemia in Type2 Diabetic Patients Attending to Rajshahi Diabetes Association General Hospital

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ABSTRACT: Diabetes mellitus is defined as the chronic or persistent rise of blood glucose, due to the deficiency of insulin secretion or its action or both. Several pathological processes are involved in causing diabetes, and the process is regulated by genetic and/or environmental factors. Diabetes mellitus is a disease associated with several macro & micro angiopathies, diabetic ketoacidosis, HONK (hyperosmolar non kenotic coma/ Hyperosmolar hyper glycaemic state) etc. There is also development of hypertension and dyslipidaemia as chronic complications.

Keywords: Type 2 DM, Dyslipidaemia, Cholesterol, Triglyceride (TG), High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL), Macro Vascular Complications.

Article at a glance:
Study Purpose: To know about dyslipidemia in long term Diabetes mellitus.
Key findings: The various components of lipid profiles change because of long-term diabetes mellitus.
Newer findings: No newer findings were detected.
Abbreviations: HDL: High Density Lipoprotein, TG: Triglyceride, LDL: Low Density Lipoprotein, Diabetic Peripheral Neuropathy, DM: Diabetes Mellitus.

INTRODUCTION

In Diabetes Mellitus, there is chronic and persistent rise of blood glucose due to deficiency of insulin or its action or both which inolves multiple systems of the body.[1-3] It is classified into i) Type 1 DM, (diabetes mellitus) ii) Type 2 DM, (diabetes mellitus), iii) Other specific type, a secondary diabetes, and iv) Gestational diabetes mellitus (GDM). In type 1 DM, there is destruction of beta cells by autoimmune processes leading to insulin secretion nil and in type 2 DM, there is defect in insulin secretion and/or action produced by genetic and/ or environmental factors.[4] In secondary DM (other specific type) thereis defect in insulin secretion and/or action in indivisual in known disease, drugs or genetic condition/ syndrome. In GDM (gestational diabetes mellitus), the women identified to have glucose intolerance (IGT/IFG) or DM during pregnancy and usually due to defects of insulin secretion.[5] Dyslipdaemia is defined as an abnormal level of one or more blood lipid - such as total cholestcrol, low density lipoprotein (LDL), high density liproprotein (HDL) and triglyceride. (TG). There is strong evidence that high LDL and low HDL levels directly contribute to the formation of atherosclerotic plaques and in turn increases the risk of cardiovascular disease.[6]

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Key Features of Diabetic Dislipidaemia
i) Hypertriglyceridaemia (Normal 35-165 mg/ dl)
ii) A reduction in high-density lipoprotein (Normal 35-65 mg/dl)
iii) A rise in small dense low-densitydipoprotens (Normal less than 150 mg/dl)

Causes of Dyslipidemia
Primary Dyslipidemia
Primary causes: Genetic (hereditary) Causes
Secondary Causes: Lifestyle and other causes
Familial Combined hyperlipidemia
Familial dysbetalipoproteinemia
Familial hypercholesterolemia
Familial hypertriglyceridemia
Hypoalphaliporproteinemia
Lipoprotein lipase deficiency and aplipoproteinCll deficiency

Secondary dyslipidemia
Secondary causes contribute to many cases of dyslipidemia. The most important secondary cause of dyslipidemia is:
A sedentary lifestyle with excessive dietary intake of total calories, saturated fat, cholesterol, and trans fats (see sidebar Types of Fat.)

Some other common secondary causes include the following:
Having diabetes mellitus
Consuming large amounts of alcohol
Having chronic kidney disease
Having hypothyroidism
Having primary biliary cirrhosis
Using certain medications

Diagnosis of Dyslipidemia: Blood tests to measure cholesterol levels

levels of total cholesterol, LDL cholesterol, HDL Cholesterol, and triglycerides-the lipid profile-are measured in a blood sample. Because consuming food or beverages may cause triglyceride levels to increase temporarily, people must fast at least 12 hours before the blood sample is taken. Specific disorders include several hereditary disorders (primary dylipidemias), which produce different lipid abnormalities and have different risks.

Screening for Dyslipidemia
The fasting lipid profile is the levels of total cholesterol, triglycerides, LDL cholesterol, and HDL cholesterol measured after a person fasts for 12 hours. Doctors usually do this test every 5 years starting at age 20 as part of assessing whether the person is at risk of coronary artery disease. In addition to measuring lipid levels, doctors also screen for other risk factors for cardiovascular disease, such as high blood pressure, diabetes, of a family history of high lipid levels. In addition to measuring lipid levels, doctors also screen for other risk factors for cardiovascular disease, such as high blood pressure, diabetes, or a family history of high lipid levels.

In children and adolescents, screening with a fasting lipid profile is recommended between the ages of 2 and 8 years if the child has risk factors, such as a family member with severe dyslipidemia or one who developed coronary artery disease at a young age. In children with no risk factors, screening with a non-fasting lipid profile is usually done once before the chil reaches puberty (usually between age 9 to 11) and once more between the ages of 17 to 21.

METHODOLOGY

In this study, 10 (ten) patients were examined attending Rajshahi diabetic association general hospital. the fasting blood sugar (Fbs), blood sugar 2 hours after breakfast, period of diabetes, blood pressure (BP) and lipid profile were examined. Now, special consideration was given for lipid profile and duration of diabetes of all those patient. The important datas for blood suger and Lipid profile is given in a tabulated form and discussed thereafter.

Study Period: From the first week of September to the last week of October 2023.
Inclusion Criteria: The patients of Diabetes Mellitus with dyslipidaemia were included,
Exclusion Criteria: The patients of Diabetes Mellitus without dyslipidaemia were included **Period of study:** This study was performed in the month of June 2024.

RESULTS

Reduction in high density lipoprotein (HDL) and increase in triglyceride with increase in law density lipoprotein was found among 9 (Nine) patients. Reduction in high density lipoprotein (HDL) and increase in triglyceride with increase in total

cholesterol was found among 1 (one) Patient, Associated risk factor like highpertentionwasfoung among 9 (Nine) Patients.

Table 1: Findings of Lipid Profile

Sl	Lipid Profile	Total Case	Result
1	Reduction in high density lipoprotein (HDL) and increase in triglyceride with increase in law density lipoprotein	10	was found in 09 (Nine) cases
2	Reduction in high density lipoprotein (HDL) and increase in triglyceride with increase in total cholesterol	10	was found in 01 (One) cases
3	Associated risk factor like highpertention	10	was found in 09 (Nine) cases that is in sl no 1 and 2

There are 14 sections in this module 8. I understand the following points

The macro-vascular complications of diabetes mellinus and their pathogenesis.

How to manage hypertension and dyslipidemia of a diabetic person.

How to perform clinical examinations of foot of detect 'high risk foot' and advice diabetics for appropriate foot care practice.

DISCUSSION & CONCLUSION

It is already described previously that dyslipidaemia is defined as an abnormal level of one or more blood lipid, total cholesterol, high density lipoprotein, (HDL) low density lipoprotein (LDL) and Triglyceride (TG).[7, 8] Dyslipidaemiais are usually produced in uncontrolled and diagnosed diabetes, undiagnosed or hidden dibetes among IFG (impaired fasting glucose) patients and IGT (impaired glucose tolerance) patients. The patient who has dyslipidamia is at risk of development of macro & microvascular complications.

So, screening of dyslipidemia is very important to provide treatment guide to prevent above complications.[9] Studies have shown that correction of dyslipidaemia very effectively help tos reduce the risk of developing cerebrovascalar disease (Stroke) in persons with Chronic diabetes. A lipid profile examination at baseline and annually is therefore recommended in all adults with diabetes. So, dyslipidaemia must be treated which can prevent above completions and death.[10] So, testing of blood for dyslipidaemia should be done time to timeat aregular intervals of 03 months usually. Also, education about diabetic complications must be given to the patient which will lower the above complication and death.[11]

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Conflict of Interests: None declared.

Ethical Approval: Taken.

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