



ORIGINAL RESEARCH PAPER

Biochemistry

A STUDY OF CORRELATION BETWEEN GLYCATED HEMOGLOBIN AND LIPID PROFILE IN DIABETES MELLITUS PATIENTS.

KEY WORDS:

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ABSTRACT

Background Diabetes mellitus, being the most common non communicable disease in the world, is Usually associated with dyslipidemia, as hyperglycemia can derange the lipid metabolism. Previous studies shown that good control of lipid profile and glycemic levels can effectively Prevent complications such as cardiovascular disease, diabetic nephropathy, and diabetic Retinopathy. This study intends to know that, HbA1c levels can be used to monitor the lipid levels in the blood. **Objective** To determine the correlation between HbA1c and Lipid profile in Diabetes Mellitus patients. **Methodology** Cross sectional study was done at Department of Biochemistry, Osmania General Hospital For a period of 2 months. HbA1c and Lipid profile were done in 30 Diabetic patients. Data was analyzed using GraphPad prism v-9 statistical software. **Results** Pearson's correlation coefficient was used to calculate the correlation between HbA1c and Lipid profile parameters. significant positive correlation was observed between Triglycerides, LDL, TC, VLDL with HbA1c and significant negative correlation was observed between HbA1c and HDL. **Conclusion:** HbA1c can predict dyslipidemia in Diabetes Mellitus patients. Early diagnosis of dyslipidemias can prevent the risk of Atherosclerosis and thereby reduces the risk of CVD.

INTRODUCTION:

Diabetes mellitus (DM) is a chronic metabolic disorder that occurs as a result of a complex interaction of genetic, environmental factors, and lifestyle choices. Morbidity and mortality due to DM are increasing because of changes in behaviour such as an unhealthy diet, physical inactivity, being overweight, obesity and tobacco use(1). Three hundred sixty-six million people have DM in 2011; half of these (183 million people) are undiagnosed. The number of people with DM worldwide is increasing and by 2030 this will have risen to 552 million(2). DM is a well-established risk factor for cardiovascular disease (CVD). People with type 2 diabetes mellitus (T2DM) have a higher cardiovascular morbidity and mortality, and are disproportionately affected by CVD compared with non-diabetic subjects(3). Dyslipidaemia encompasses changes in High density lipoprotein cholesterol (HDL-C), the size and density of Low-density lipoprotein cholesterol (LDL-C), very low-density lipoprotein cholesterol (VLDL-C) and triglyceride level. The lipid abnormalities are prevalent in diabetes mellitus because insulin resistance or deficiency affects key enzymes and pathways in lipid metabolism(4) In particular, the following processes are affected: apoprotein production, regulation of lipoprotein lipase, action of cholesteryl ester, transfer proteins and hepatic and peripheral actions of insulin. Even more, it has been proposed that the composition of lipid particles in diabetic dyslipidaemia is more atherogenic than other types of dyslipidaemias(5). In diabetes the associated hyperglycaemia, obesity and insulin changes highly accelerate the progression to atherosclerosis(5).

Therefore, present study was carried out to find association/relation between serum lipid profile and glycaemic control, in view of the hypothesis that early detection and treatment of lipid abnormalities can minimize the risk for atherogenic cardiovascular disorder and cerebrovascular accident in type-2 diabetic patients. Hence, the rationale of this study was to detect dyslipidaemia inpatients with type-2 diabetes mellitus.

MATERIALS AND METHODS:

Cross sectional study was done at Department of Biochemistry, Osmania General Hospital For a period of 2 months. HbA1c and Lipid profile were done in 30 Diabetic patients including males and females. Pearson's correlation coefficient was used to calculate the correlation between

HbA1c and Lipid profile parameters.

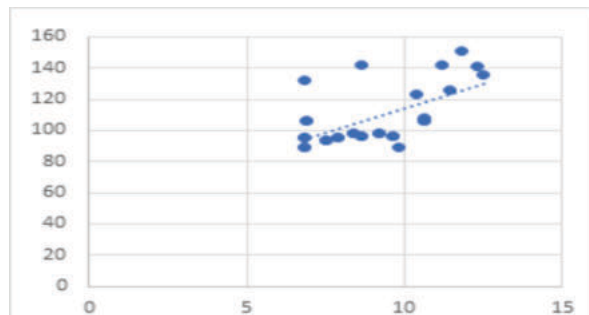
RESULTS

Table 1

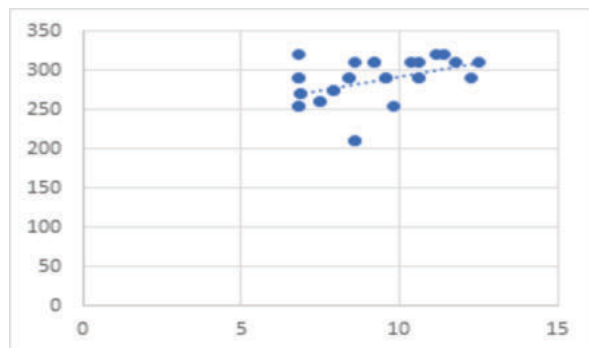
Lipid profile parameters	r with HbA1c	P value
Triglycerides	0.435	0.016
Total cholesterol	0.591	0.0005
LDL	0.611	0.0003
VLDL	0.425	0.016
HDL	-0.502	0.004

DISCUSSION:

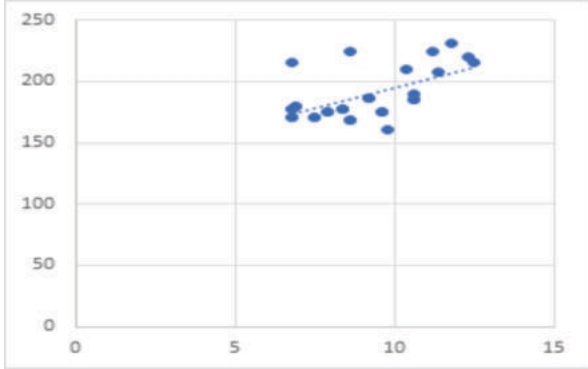
In Table 1 there is statistically positive correlation was observed between HbA1c and TC, LDL, TG, VLDL. And statistically negative correlation was observed between HbA1c and HDL.



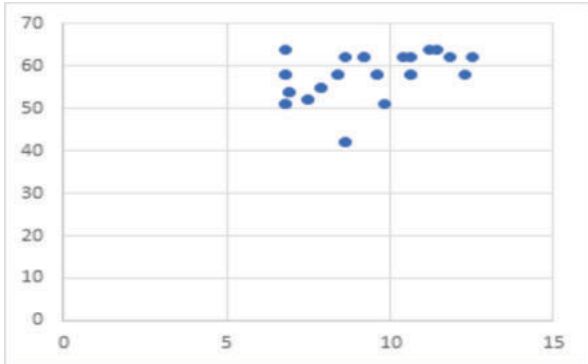
Scattered diagram between HbA1c and LDL



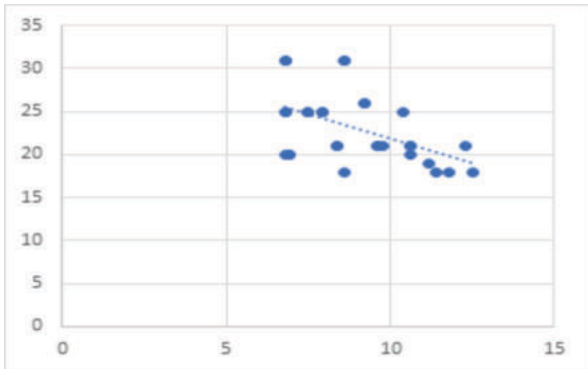
Scattered diagram between HbA1c and TG



Scattered diagram between HbA1c and TC



Scattered diagram between HbA1c and VLDL



Scattered diagram between HbA1c and HDL

CONCLUSION:

Hba1c can predict dyslipidemia in Diabetes Mellitus patients. Early diagnosis of dyslipidemias can prevent the risk of Atherosclerosis and thereby reduces the risk of CVD.

Limitations:

- Small sample size
- FBS values were not included in this study.

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