

Estimate the level of cholesterol and triglycerides in patient with type II diabetes in the province of Najaf

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Abstract

Abstract Background and Objectives: Diabetes mellitus (DM) is a group of metabolic disorders of carbohydrate metabolism in which glucose is underutilized, producing hyperglycemia. Furthermore, it is proposed that the underutilization of glucose is associated with changes in the lipid profile. Changes in lipid profiles are also well related to the severity of DM. This study involved 50 were patients admitted with a diagnosis of DM; blood samples were drawn under aseptic precautions from cases of DM and healthy controls. Necessary investigations were carried out and values were tabulated for cases and controls separately for statistical evaluation. Our Results show that the DM patients compared to controls significant increase in the following parameters were observed. Cholesterol ratios increased. Furthermore, the levels of triacylglycerol increased. We conclude that there is a statistically significant large effect in cholesterol and TG a level of cases compared with controls, cholesterol level is increased and TG levels were well associated with blood sugar also increased .

Keywords: cholesterol, TG, DM, blood sugar

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Introduction

Diabetes mellitus is a common chronic disease worldwide as a common and severe health problem^(1, 19) Presently, the occurrence of diabetes worldwide is estimated to be about 415 million (8.8% of the whole people) and is predicted to reach 642 million by 2040, India has the second-highest number of diabetics with estimated prevalence of 69.3 million, which is expected to reach 123.5 million by 2040⁽²⁾. Type 2 diabetes is characterized by insulin resistance, hyperglycemia, and insulin absence. The insulin resistance contributes to the unusual lipid profile associated with type 2 diabetes^(8, 17), many factors like age, older, increased weight and higher blood sugar levels before that whether a patient will increase diabetes mellitus. Triglyceride-Glucose (TG) is an emerging replacement indicator of insulin resistance. Little studies have displayed that TG was significantly associated with the development of T2DM in Spain, China, and Korea^(5, 4, 6, 7). Cholesterol is a fat element that is present in the body, is a steroid, a type of the class of lipids that all have the same four-ring system, plays a vital role in increasing the hazard of cardiovascular disease^(9, 18).

Materials and methods

Patients without diabetes and Patients of known cases of diabetes were selected casually. A full history was taken and all essential clinical checks and examinations were performed. Agreement from each patient was taken after a complete explanation of the whole procedure. Saliva samples were estimated for levels of cholesterol (Cholesterol was estimated by cholesterol esterase cholesterol oxidase method. While (Triglycerides were estimated using the enzymatic colorimetric method^(10, 11).

Results and Discussion

In table (1), observed a mild positive contact between sugar and cholesterol with high incorporeal effect. And found a poor positive contact between sugar and TG with incorporeal effect, this happenwhen the type II diabetes occurs, the body is unable to benefit from glucose due to the inability of the hormone insulin to enter the cells of the body, which leads to the accumulation of glucose in the blood and causes the symptoms and complications of diabetes. On the other hand, patients with type 2 diabetes often suffer from fat metabolism disorders as well as high blood pressure, indicating to the belief of many scientists that the increase of adipose tissue in the abdomen is primarily responsible for diabetes, as well as an increased risk of disease heart and blood vessels.

Several studies have indicated, the fat associated with type 2 diabetes with a high concentration of TG and LDL and a low concentration of HDL cholesterol is small. Insulin resistance is also believed to be possible in this type of fat to increase liver secretion of VLDL and other lipoproteins containing apo, Due to increased free fatty acid formation in the liver^(12, 13). Through HDL work, TGs are transferred from VLDL to HDL, creating TG-rich HDL molecules, which are analyzed by hepatic lipase and rapidly disinfected from plasma⁽¹⁴⁾. Transferring protein-mediated cholesterol from TGs from VLDL to LDL contributes to the formation of small dense LDL molecules⁽¹⁵⁾.

Table 1: The Correlations for Sugar andCholesterol

		Cholesterol	T.G
sugar	Pearson Correlation	.500**	.307*
	Sig. (2-tailed)	.000	.030
	N	50	50
Cholesterol	Pearson Correlation		.170
	Sig. (2-tailed)		.239
	N		50

In (Table2) we found high incorporeal difference for sugar between patients and controls

Table 2: The Group statistics for sugar

Group		N	Mean	Std. Deviation	Std. Error Mean	F-TEST	p-value
sugar	patients	50	178.00	99.302	14.043	86.73	<0.01 h.s.
	control	50	86.60	9.227	1.305		

Found high incorporeal difference for Cholesterol between patients and controls

Table 3: The group statistics for cholesterol

	Group	N	Mean	Std. Deviation	Std. Error Mean	F-TEST	P-value
Cholesterol	patients	50	190.56	61.674	8.722	55.55	<0.01 hs
	control	50	123.84	11.682	1.652		

In (Table 3), we found high incorporeal difference for TG between patients and controls.

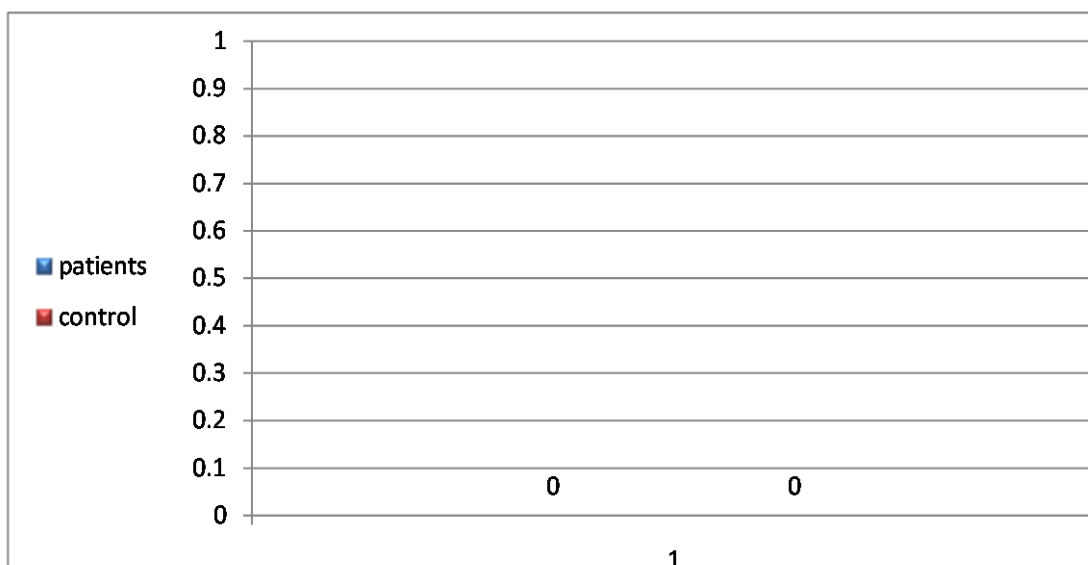


Figure 4: shows the sugar, cholesterol and TG for the patient and controls.

In (Figure 4) we found a high difference in sugar levels between patient and control and also found high levels in diabetics for cholesterol and TG in comparing to cholesterol, TG is potentially useful for predicting T2DM in clinical practice. It is a potential mediator of the association between BMI and T2DM development (3)

Table4: the Group statistics for TG

	Group	N	Mean	Std. Deviation	Std. Error Mean	F-TEST	P-value
T.G	patients	50	174.62	107.851	15.252	21.65	<0.01 h.s
	control	50	63.96	30.107	4.258		

Table 5: the Group statistics for male and female in sugar

	gander	N	Mean	Std. Deviation	Std. Error Mean	F-TEST	P-value
sugar	male	28	182.46	96.709	18.276	0.053	0.819
	female	22	172.32	104.515	22.283		

The (Table 5) Found no incorporeal difference between male and female for sugar.

Table 6: the Group statistics for male and female in Cholesterol

	gander	N	Mean	Std. Deviation	Std. Error Mean	T-TEST	P-value
Cholesterol	male	28	172.75	61.421	11.608	0.074	0.787
	female	22	213.23	55.349	11.800		

The (Table 6) found no incorporeal difference between male and female for Cholesterol

Table 7: the Group statistics for male and female in TG

	gander	N	Mean	Std. Deviation	Std. Error Mean	T-TEST	P-value
T.G	male	28	193.36	115.379	21.805	1.921	0.172
	female	22	150.77	94.665	20.183		

The (Table 7) found no incorporeal difference between male and female for TG.

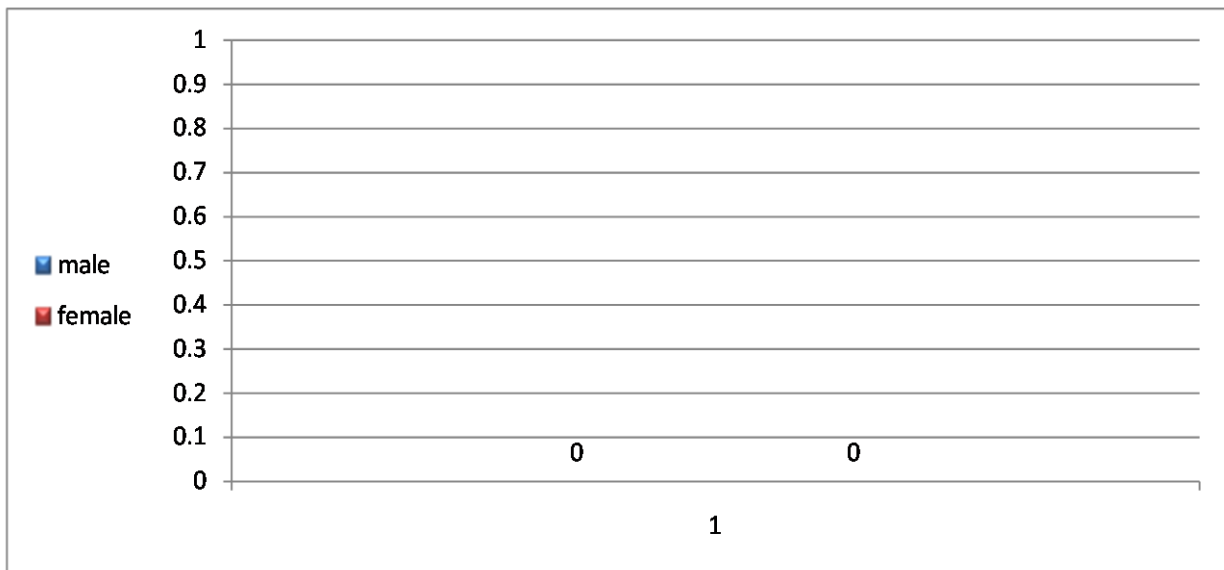


Figure5: the Sugar and cholesterol and TG for maleand female.

In the (Figure5), there is a small difference between male and female sugar percent while there is a rise in the level of cholesterol in female than male and the situation is reversed in T.G.

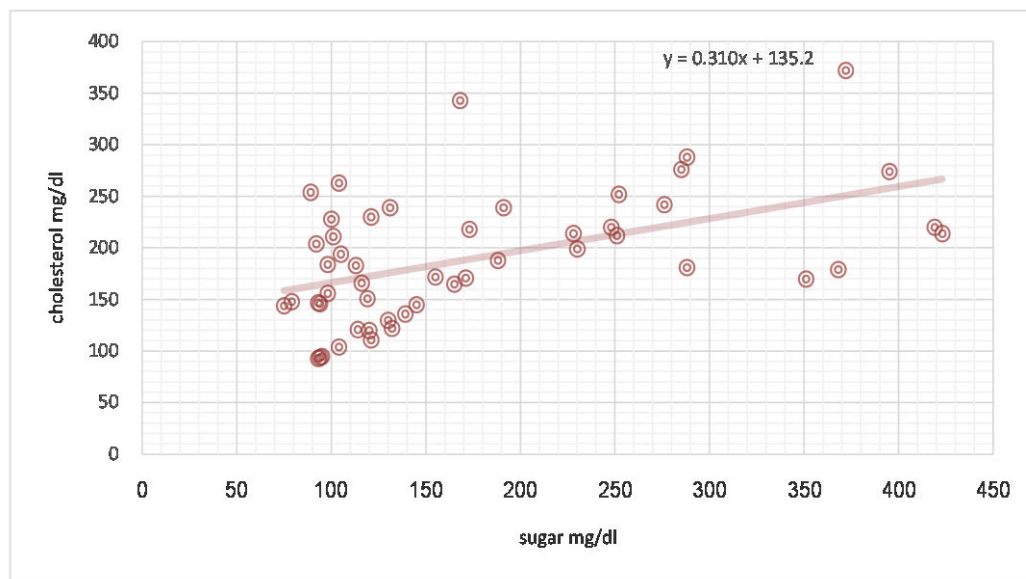
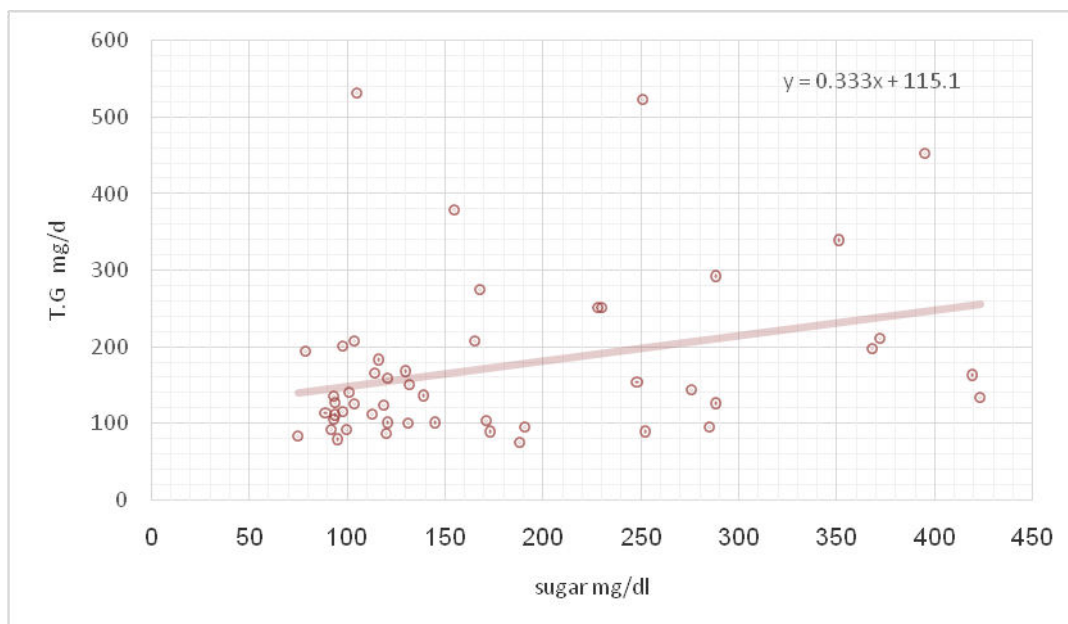


Figure6: The calibration occurred between the cholesterol and sugar**Figure 7: the calibration occurred between the TG and sugar**

In the above figure (6, 7), the correlation between sugar, cholesterol and TG directly proportional.

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