

Cholesterol level in serum of adult men and women diabetic Sudanese patients (Type II)

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Abstract

The aim of the study was to compare the glucose and total cholesterol in fasting serum between males and females type II diabetic Sudanese patients. The average fasting blood glucose and serum total cholesterol for men was 166.5mg/dl and 136.63mg/dl respectively while for women was 174.5mg/dl and 166.13mg/dl respectively. The control was 89.1mg/dl and 141mg/dl respectively. The cholesterol and glucose results of females were significantly higher than those of males. Statistically, there was positive correlation between fasting blood glucose and cholesterol in women group.

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Introduction:

Diabetes is a condition where the blood sugar level is higher than normal. There are two main types of diabetes.

1. Type 1 diabetes or insulin – dependent diabetes. It is usually seen in young people.
2. Type 2 diabetes – usually non insulin-dependent. It tends to affect adults over 40 and overweight people ⁽¹⁾.

There are many factors which lead to increase the level of glucose in the blood; the increase in weight especially in females, type of diet, the infection of pancreas, and also increased of level of glucose during pregnancy ⁽²⁾.

The major lipids in the body are fatty acids, triglycerides, cholesterol and low density lipoprotein (LDL) ⁽³⁾. The cholesterol present in the living cells of the animals, especially in nerve-cells, but not

present in plant cells. Human body can synthesize cholesterol as 1-5 g/day, while the cholesterol taken from food as 0.3g/day⁽⁴⁾.

Cholesterol concentration in the blood depends on age, sex and type of food ingested. The cholesterol increases with the increasing of age, where maximum levels reach in 50-60 years ⁽⁵⁾. An increased level of cholesterol above 300 mg/dl leads to heart attack ⁽⁶⁾.

Materials and methods:

Study area: The study was conducted in Khartoum state.

Study population: The study was conducted on Sudanese patients with type 2 diabetes mellitus. A total of 30 patients (15 males and 15 females) and 30 healthy controls (15 males and 15 females) were included in this study.

Sampling collection: After overnight fasting, was separated and examined for glucose and total cholesterol.

Methods: Glucose was measured by glucose oxidase method ⁽⁷⁾ and cholesterol is measured by cholesterol esterase/oxidase enzymatic method ⁽⁸⁾.

Results and discussion:

The control group showed glucose and cholesterol mean values of 89.1mg/dl & 141mg/dl respectively, while in diabetic patients the levels increased significantly ($p<0.05$) to reach 171.67 mg/dl for glucose and 151.43 mg/dl for cholesterol (table 1)

Table 1: Descriptive data showed the level of F.B.G and cholesterol in normal and DM patient of the studied sample.

Variables	Control	Patients	p value
Glucose	89.1	171.67	<0.01
Cholesterol	141	151.43	<0.05

The diabetic females showed higher significant value ($p<0.05$) compared to diabetic males. The breakdown of glucose to ATP in females to produce more energy is less, so there is excess of glucose in their blood ⁽⁴⁾. Diabetic women in U.S.A are 82% and men 17.5% ⁽⁵⁾.

The high level of glucose in females may be due to two reasons, either higher uptake of sugars in their meals, or there is low physical activities compared to males.

For all studied patients, statistical analysis revealed that there was insignificant correlation between fasting blood glucose and cholesterol levels in patients, as well as insignificant

blood was collected from each subject, and serum correlation in male patients; but there was a significant ($P < 0.05$) correlation in female D.M patients (table 2)

Table 2: Descriptive data showed the level of F.B.G and cholesterol in male and female and correlation between glucose and cholesterol levels in DM patient.

Variables	Male	Female	P value
Glucose	166	174.5	<0.05
Cholesterol	136.73	166.13	<0.05
Correlation probability	0.101	0.048*	

* Significant correlation.

Previous research of Omar and Amira ⁽⁹⁾ showed that there is positive correlation between the level of triglyceride, low density lipoprotein and cholesterol in D.M patients. D.M patients have to avoid foods which have high level of cholesterol.

References:

1. Compbell, I.W. (2006). Facts about Cholesterol Net. Docator. Co- UK.Deabetis Community. Cholesterol Facts;
2. Gavin, J.R. (1998).New Classification and diagnostic criteria for diabetes mellitus. CIm Cornerston.1 (3):12.
3. Kates, M. (1975). Isolation, analysis and Identification of lipids. Techniques of Lipidology. 502-523
4. Mane, Pd. (2000). Clinical chemistry in diagnosis and treatment 8th ed. London, New York. 366-371.
5. National Diabetes Data Group , Diabetes in America-National Institute of Diabetes , digestive and kidney disease. (1994). NIH Publication No 95: 1468.

6. Burchfield, C.M; Laws. A.; Ben Fante, R.R. (1995). Combined effect of HDL, cholesterol, triglyceride and total cholesterol concentration on 18 years risk of atheroseclerotic disease. 92 (6): 1430.
7. Bishop, M.L; Janet, L; Duben. Eangei, K.E. (2000). Baby clinical chemistry, 4th ed. U.S.A. Lippincolt William; 232-254.
8. Richmond, N. (1973). Clin. Chem. Bio. 19: 1350- 1356.
9. Amira, M.E; Omar, M.I. (2009). Lipid profile in Sudanese diabetes patients. Research.