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Studying Different Biochemical Markers in People with Diabetes Mellitus

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1. Abstract

The aim of the study is to find out what changes are likely to occur in the levels of high-density lipoprotein cholesterol, low-density lipoprotein cholesterol and glucose glucose in the serum of patients with diabetes mellitus. The levels of the aforementioned substances in the sera of patients and their differences from healthy subjects, where the results showed changes in patients and this indicates the presence of structural negative changes in patients and statistically significant ($p < 0.05$)

It must be followed up and appropriate solutions developed.

2. Introduction

Regularly known as diabetes, is a gathering of metabolic complications described by a high glucose level over a delayed time of time [1]. Side effects frequently incorporate continuous pee, expanded thirst and expanded appetite [2]. Whenever left untreated, diabetes can cause numerous wellbeing complications [2]. Intense intricacies can incorporate diabetic ketoacidosis, hyperosmolar hyperglycemic state, or death [3]. Serious long haul difficulties incorporate cardiovascular illness, stroke, constant kidney infection, foot ulcers, harm to the nerves, harm to the eyes and mental impairment [2, 5].

Diabetes is because of either the pancreas not creating sufficient insulin, or the cells of the body not answering as expected to the insulin produced [12].

When the body is unable to absorb sugar (glucose) into its cells and use it for energy, diabetes develops. As a result, more sugar builds up in your bloodstream [1]. Diabetes that is not managed properly can have serious repercussions and cause damage to a

wide range of your body's organs and tissues, such as your eyes, kidneys, heart, and nerves [2]. The course of assimilation incorporates separating the food you eat into dissimilar supplement foundations. Your body converts sugars such as bread, rice, and pasta into sugar (glucose). When sugar enters your circulation, it requests assistance inside your body's cells, where it will be used. Cells are what composition your body's tissues and organs. Insulin is this assistance or "main" [3]. Insulin stays a chemical completed by your pancreas, an organ situated behindhand stomach. Insulin is pumped into your circulation by your pancreas. Insulin is the "main" that opens the "door" in the cell membrane, allowing glucose to pass in your body's cells. The "energy," that tissues and organs require toward function appropriately is provided by glucose [4].

The pancreas does not produce enough insulin or any insulin at all in diabetes. or the pancreas produces insulin, but the cells in your body don't rejoin to it and can't usage it as they ought. On the off chance that glucose can't get into body cells, it stays in your circulatory system and your blood glucose level rises [5].

2.1. Types of Diabetes Include

Diabetes mellitus: An autoimmune disease of this kind occurs when the body attacks itself. For this situation, the insulin-delivering cells in your pancreas are annihilated. Type 1 diabetes affects up to 10% of diabetes patients. It's normally analyzed in kids and youthful grown-ups (yet can create at whatever stage in life). It was once otherwise called "adolescent" diabetes. Insulin needs to be taken every day by people who have Type 1 diabetes. It is also known as insulin-dependent diabetes as a result [6].

Diabetes mellitus: This type occurs when either your body does not produce enough insulin or your cells do not normally respond to the insulin. The most prevalent form of diabetes is this one. Type 2 diabetes affects up to 95% of diabetes patients. It usually happens to people who are middle-aged or older. Adult-onset diabetes and insulin-resistant diabetes are two additional common names for Type 2 diabetes [7].

Diabetes at birth: During pregnancy, some women develop this type. After giving birth, gestational diabetes typically disappears. However, you are more likely to develop Type 2 diabetes later in life if you have gestational diabetes [8].

Diabetic symptoms include: Expanded thirst, Feeble, tired sensation, Obscured vision, Deadness or shivering in the fingers or ends, Slow-recuperating bruises or cuts, Impromptu mass reduction, Successive pee, Continuous unexplained contaminations and Dry mouth [9].

Problems include: Courage destruction, which reasons shocking and prickly that starts at the digits and feasts to the rest of the body [11], kidney destruction, which can result in kidney failure or the need for dialysis or a transplant [12], eye damage (retinopathy), which container result in sightlessness [13]. foot destruction, which includes nerve destruction, reduced blood movement, and reduced medicinal of wounds and infections [14], are all examples of cardiovascular problems

Diabetes is caused by a defect in the hormone insulin, which either prevents it from being secreted, does not secrete it at all, or develops resistance to it. This results in a high blood glucose level and contributes to the spread of numerous other diseases, including high cholesterol levels [15]. Patients with type 2 diabetes have a higher blood cholesterol level, but patients with type 1 diabetes who control their glucose levels do not develop high cholesterol levels [16]. However, it was likewise tracked down that in patients with type II, regardless of whether they control the degree of glucose, they frequently foster an elevated cholesterol level as well [17].

There are two kinds of cholesterol [18], so cholesterol is not a bad substance:

High cholesterol: It accumulates in the blood vessels and raises the risk of a number of heart diseases.

Healthy cholesterol: is involved in the production of cell membranes, many hormones, and vitamins, and helps prevent heart disease.

When a person has type 2 diabetes and the level of sugar in their blood is at its normal level, the body's cholesterol level rises; however, when the level of sugar in the blood is high, this causes a significant increase in the body's cholesterol level, as diabetes causes a decrease in good cholesterol, an increase in bad cholesterol, and a rise in triglycerides [18].

In this study, we hypothesized that patients with diabetes would

have higher levels of HDL cholesterol, LDL cholesterol, and glucose, markers of diabetes. We compared HDL cholesterol, LDL cholesterol, and glucose levels at baseline in patients with and without diabetes to test our hypothesis.

Aim: The purpose of this study is to investigate the connection between the onset of diabetes mellitus and the levels of glucose, LDL cholesterol, and HDL cholesterol.

3. Research method

3.1. Methods

Using the colorimetric method, plasma levels of HDL cholesterol, LDL cholesterol, and glucose were measured in 30 diabetic patients and 30 healthy controls. All of the results were looked at statistically.

3.2. Experimental

3.2.1. Subjects: Serum HDL cholesterol, LDL cholesterol and Glucose levels were estimated in (30) sound people. furthermore, 30 patients with Diabetes mellitus. The mean period of control (47.93 ± 3.05) and the patient gathering (46.73 ± 3.54) which were haphazardly chosen from patients with Diabetes mellitus from October to Walk 2023. Data in regards to the clinical history of each subject was acquired, including age, sicknesses endured and span of disease with their day to day diet and occupation.

3.2.2. Strategies: All gatherings were exposed to careful clinical history, assessment and explicit Diabetes mellitus examination. Venous blood tests (5 ml) were gathered from the patient and control gatherings. Serum was isolated by centrifugation (Gallen Germany) at 3000 RPM for 10 min and put away in covered plastic cylinders at -20°C until examination. HDL cholesterol, LDL cholesterol and Glucose levels in the Serum were estimated by utilizing the Spectrophotometric technique at 420 nm, 430 nm by utilizing Shimadzu U.V-Noticeable recorder spectrophotometer model U.V-160. last focus was communicated in pg/ml

3.2.3. Measurable examination: Information are communicated as mean \pm SEM. Statistical examination was completed utilizing a plan, factual bundle for sociology (SPSS), the huge contrasts among control and the patient not entirely set in stone by utilizing an Understudy's t test. The likelihood of ($P < 0.05$) is viewed as huge all through.

4. Results and Discussion

4.1. Results

Serum levels of glucose and LDL cholesterol were found to be significantly higher in diabetic patients than in control subjects ($P < 0.05$). HDL cholesterol levels in the blood were significantly lower in the patient group ($P < 0.05$) than in the control group.

Clinical attributes about patients' age, etc were summed up in (Table 1).

Serum LDL cholesterol and Glucose levels were viewed as essentially higher in Diabetes mellitus patients contrasted with control

($p < 0.05$, Figure 1, 2 and 3) HDL cholesterol was fundamentally diminished in the serum of Diabetes mellitus patients contrasted with control.

Table 1: General Attribute of Solid Controls and Diabetes mellitus Patients (Cases).

A	General Characters
B	Sound Control
C	Diabetes mellitus
D	Complete No.of Subjects
E	30
F	30
G	Age
H	47.93±3.05
I	46.73±3.54

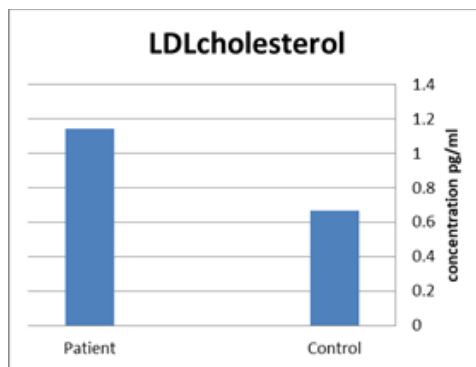


Figure 1: LDL cholesterol levels in healthy and patient at ($p < 0.05$).

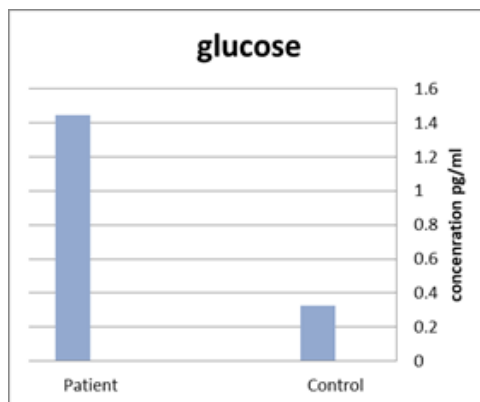


Figure 2: Glucose levels in healthy and patient at ($p < 0.05$).

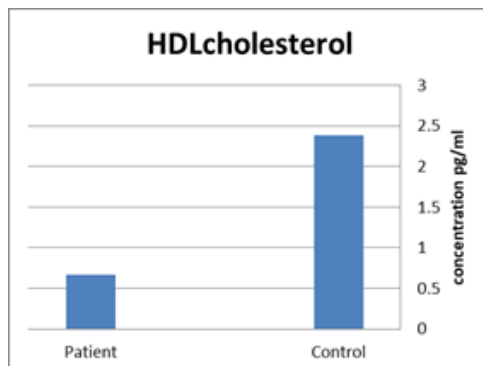


Figure 3: HDL cholesterol levels in healthy and patient at ($p < 0.05$).

4.2. Discussion

Overabundance cholesterol in the body is an extremely normal condition in diabetic patients (over 70% of type 2 diabetics have such an increment). Also, cholesterol is a significant consider the organization of living cell films. It assumes a significant part in the arrangement of numerous fundamental substances in the body, including the chemicals testosterone, estrogen and progesterone, as well as being fundamental in the creation of the bile that is made in the liver and put away in the gallbladder, notwithstanding different capabilities it performs inside the body. In any case, an expansion in cholesterol or any issue or deformity in its production inside the body prompts serious and difficult issues that influence human wellbeing and life. Cholesterol jumble slows down numerous sicknesses that are straightforwardly connected with diabetes and high blood pressure [19]. The collection of low-thickness lipoprotein (LDL) cholesterol and fatty oils in the veins, particularly coronary courses, prompts lethal sicknesses like atherosclerosis and myocardial dead tissue. Consequently, I remembered to specify something about cholesterol and its belongings and its nearby association with the two past sicknesses, diabetes and hypertension, since one reason help in the event of confusions, notwithstanding the non-drug therapy techniques that are appropriate for treating the terrible impacts of cholesterol [18].

Cholesterol is a drunkard steroid that has the upsides of fat and in this way its name has been related with the sickness of atherosclerosis that feeds the heart. There are a few sorts of cholesterol, yet we are worried about two principal types: low-thickness lipoprotein (LDL) cholesterol, which is called terrible cholesterol, which adheres to the inward layer of the supply routes that feed the heart, and high-thickness lipoprotein cholesterol (HDL), which is called great cholesterol, which forestalls the collection of awful cholesterol on the walls of the heart. coronary veins “. The proportion of high-thickness lipoprotein (HDL) cholesterol to add up to cholesterol is the basic consider deciding the gamble of all out cholesterol in the body to human wellbeing. If the proportion of good cholesterol (HDL) is equivalent to 0.3 of complete cholesterol or more (that is, roughly 33% of all out cholesterol), then the all out cholesterol isn’t significant according to a wellbeing perspective, in light of the fact that the extent of good cholesterol is adequate to keep terrible cholesterol from adhering to the corridors of the heart. The ordinary proportion of good cholesterol (HDL) is 45 mg/cm³ in guys, while this proportion in females is 60 mg/cm³ and this makes sense of why the frequency of atherosclerosis in females is uncommon contrasted with males [20]. The justification for this is that estrogen present in females in amounts More than guys, as per specialists, is the justification behind the elevated degree of good cholesterol in the lady’s body, as proven by the way that menopause is the place of death of security for females concerning the chance of openness to atherosclerosis. It is realized that menopause is the place where the course of estrogen

lack and blurring starts. The great cholesterol in the body ought not be under 25 mg/cm³ in guys and at the very least 45 mg/cm³ in females [20].

In this review, we exhibited that serum levels of LDL cholesterol and Glucose are altogether expanded in Diabetes mellitus when contrasted with sound subject.

In the current review LDL cholesterol and Glucose level has been reliably exhibited to be raised in patients with Diabetes mellitus. Decline the adequacy of HDL cholesterol in Diabetes mellitus leads expanded fatty oils in patients with type 2 diabetes because of metabolic problems because of high glucose level (more than 200 mg/dl) and the powerlessness to change over.

5. Conclusion

The consequences of the current review give proof that the family background of (parent or kin) of Type 1 diabetes, Injury to the pancreas, (for example, by contamination, growth, medical procedure or mishap), Presence of autoantibodies (antibodies that erroneously assault body tissues or organs), Actual pressure (like a medical procedure or sickness) and openness to diseases brought about by infections. Diabetes mellitus patients typically had elevated glucose and LDL cholesterol levels.

The aim of the study is to find out what changes are likely to occur in the levels of high-density lipoprotein cholesterol, low-density lipoprotein cholesterol and glucose in the serum of patients with diabetes. 30 patients with diabetes and 30 healthy people close in age participated in this research to compare. The levels of the previously mentioned substances in the serum of patients and their difference from healthy people, as the results showed changes Which ($p < 0.05$ in patients, and this indicates the presence of a state of negative structural changes in patients, with a statistically significant significance (It must be followed up and appropriate solutions should be developed.

References

- Kitabchi AE, Umpierrez GE, Miles JM, Fisher JN. Hyperglycemic crises in adult patients with diabetes. *Diabetes Care*. 2009; 32(7): 1335-43.
- Krishnasamy S, Abell TL. Diabetic Gastroparesis: Principles and Current Trends in Management. *Diabetes Therapy*. 2018; 9(Suppl 1): 1-42.
- Saedi E, Gheini MR, Faiz F, Arami MA. Diabetes mellitus and cognitive impairments. *World Journal of Diabetes*. 2016; 7(17): 412-22.
- Chiang JL, Kirkman MS, Laffel LM, Peters AL. Type 1 diabetes through the life span: a position statement of the American Diabetes Association. *Diabetes Care*. 2014; 37(7): 2034-54.
- Ripsin CM, Kang H, Urban RJ. Management of blood glucose in type 2 diabetes mellitus (PDF). *American Family Physician*. 2009; 79(1): 29-36.
- Brutsaert EF. Drug Treatment of Diabetes Mellitus. MSDManuals.com. Retrieved 12 October 2018. 2017.
- Shoback DG, Gardner D, eds. Chapter 17. Greenspan's basic & clinical endocrinology (9th ed.). New York: McGraw-Hill Medical. 2011. ISBN 978-0-07-162243-1.
- Norman A, Henry H. Hormones. Elsevier. 2015; 136-7.
- Rippe RS, Irwin JM, eds. Manual of intensive care medicine (5th ed.). Wolters Kluwer Health/Lippincott Williams & Wilkins. 2010; 549. ISBN 978-0-7817-9992-8.
- Picot J, Jones J, Colquitt JL, Gospodarevskaya E, Loveman E, Baxter L, et al. The clinical effectiveness and cost-effectiveness of bariatric (weight loss) surgery for obesity: a systematic review and economic evaluation. *Health Technology Assessment*. 2009; 13(41): 1-190.
- Cash J. Family Practice Guidelines (3rd ed.). Springer. p. 396. ISBN 978-0-8261-6875-7. Archived from the original on 31 October 2015. 2014.
- Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2012; 380(9859): 2163-96.
- American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2017. *Diabetes Care*. 2018; 41(5): 917-28.
- Cooke DW, Plotnick L. Type 1 diabetes mellitus in pediatrics. *Pediatrics in Review*. 2008; 29(11): 374-84.
- Rockefeller JD. Diabetes: Symptoms, Causes, Treatment and Prevention. 2015. ISBN 978-1-5146-0305-5.
- Kitabchi AE, Umpierrez GE, Miles JM, Fisher JN. Hyperglycemic crises in adult patients with diabetes. *Diabetes Care*. 2009; 32(7): 1335-43.
- Kenny C. When hypoglycemia is not obvious: diagnosing and treating under-recognized and undisclosed hypoglycemia. *Primary Care Diabetes*. 2014; 8(1): 3-11.
- Verrotti A, Scaparrotta A, Olivieri C, Chiarelli F. Seizures and type 1 diabetes mellitus: current state of knowledge. *European Journal of Endocrinology*. 2012; 167 (6): 749-758.
- Symptoms of Low Blood Sugar. WebMD. Archived from the original on 18 June 2016. Retrieved 29 June 2016.
- Glucagon-Injection side effects, medical uses, and drug interactions. MedicineNet. Retrieved 2018-02-05.