ORIGINAL ARTICLE

Assessment of Lipoprotein Abnormalities in Hyperlipidemic Diabetic and Non-Diabetic Patients - a comparative clinical study

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ABSTRACT

It is a fact concluded in this study that lipoprotein abnormalities are higherin diabetic individualsthan the non-diabetic individuals and significant changes were seen.Furthermore abnormal glycemic and lipoprotein levels created different medical complications. Current study presented serum glucose, cholesterol,triglyceride, low density lipoproteins and High density lipoproteins levels (120±20, 150±10, 120±30, 170±13,40±10), (310±21,290±10, 230±15, 260±22, 27±18) of Group X and Group Yrespectively.

Key word: Lipoproteins, apolipoproteins, hyperlipoproteinaemia, Hyperlipidemia

INTRODUCTION

Metabolic studies stated that all the fats are insoluble in water, therefore they cannot transport independently in the extracellular fluid[2]. Lipoproteins are fats transporter proteins which carry triglycerides[3], cholesterol and fat soluble vitamins in the biological system. These proteins particles are synthesized in small intestine and hepatocytes[6]. The major components of apolipoproteins in the lipoproteins of blood plasma are Apo A and Apo B. The high density lipoprotein (HDL) contains Apo A, as a significantprotein while inlow density lipoprotein (LDL) main protein component is Apo B[4]. These proteins are also a big part of other classes of lipoproteins.Actually Lipoproteins are the particles that transport total cholesterol and triglycerides in the body through blood stream to the all tissues. Lipoproteins consist of apolipoproteins, and cholesterol, triglycerides and phospholipids[5,10].

Diabetes mellitus or diabetes is an abnormality of metabolism in which glucose levels become increased [9]. It causes number of complications like renal problems, cardiac diseases, damage of eyes and many others in the body [7, 9]. Diabetes caused by many different factors but main cause is stress in which beta cells of pancreas do not synthesis insulin or some cases body cells cannot respond properly to the insulin produced[14]. The first condition in which insulin not produced by pancreas is called Type A whiles the situation in which body cells do not give proper respond to the insulin produced by pancreas in known as Type B[12]. Gestational diabetes is the third type whichdevelops when pregnant women without a previous history of diabetes develop high blood sugar levels[13].

Different studies claimed that hyperlipoproteinaemia in number of cases developed due to the abnormal metabolism of plasma lipoproteins[11]. In another study it is stated that abnormality of plasma apolipoprotein function causes diabetes mellitus. Researchers proved through their studies that major physiological and Biochemical changes in the biological system developed because of the lipoprotein abnormalities. When the serum levels of lipids or lipoproteins increased this condition is referred as hyperlipidemia.Hyperlipidemia may be idiopathic, that is without a known cause[8].

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MATERIALS AND METHODS

This study was conducted in Jinnah hospital Lahore. 200 patients were selected in this study and divided them into two different groups. In Group X. 100 individuals were non-diabetic while in Group Y, 100 individuals were diabetic. Blood glucose levels and serum cholesterol, triglycerides, Low density lipoproteins (LDL) and high density lipoproteins (HDL) were measured by colorimetric method with the help of different standard kits. The raw data was interpreted with the Biostatistical model SSPS.

RESULTS

Group X: 100 non-diabetic individuals

Parameters	Units	Mean ± SD
Glucose levels (random)	mg/dl	120±20
Cholesterol	mg/dl	150±10
Triglycerides	mg/dl	120±30
LDL	mg/dl	170±13
HDL	mg/dl	40±10

<0.005

Group Y: 100 diabetic individuals

Parameters	Units	Mean ± SD
Glucose levels (random)	mg/dl	310±21
Cholesterol	mg/dl	290±10
Triglycerides	mg/dl	230±15
LDL	mg/dl	260±22
HDL	mg/dl	27±18

<0.005

Present study presented different parameters such as serum glucose, cholesterol,triglyceride, low density lipoproteins and High density lipoproteins levels (120±20, 150±10, 120±30, 170±13,40±10), (310±21,290±10, 230±15, 260±22, 27±18) of Group X and Group Y respectively. Individuals of each group have significant changes (**<**0.005) regarding their results.

DISCUSSION

Dashty *et al* (2014) described in their study that low density cholesterol and high density lipoproteins are bad and good cholesterols. Their abnormalities created different medical complications like atherosclerosis, myocardial infarction, ischemic heart disease, kidney disease etc. Jotkowitz *et ,al* (2008) concluded in their study that LDL and HDL mostly showed more abnormalities in hyperglycaemic individuals and chances of different cardiac problems become increased. In a study by Nordestgaard *et al* (2010) it has seen that diabetic individuals showed a significant changes in their lipid profiles as compared to the non-diabetic individuals. Current study proved that serum glucose, cholesterol,triglyceride, low density lipoproteins and High density lipoproteins levels of diabetic individuals were higher than the non-diabetic individuals. The results of this study was significant (**<**0.005).

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