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Lipid profile in Sudanese with long
standing diabetes type II

A Thesis submitted in partial fulfillment for M.Sc degree in clinical chemistry

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Dedication

To my parents who give meaning to my life.

To my Brothers for providing everything.

To my sister for her support and encouragement.

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Abstract

A descriptive Study conducted during the period, march to June 2007, compared serum levels of total cholesterol, triglyceride , HDL- cholesterol and LDL- cholesterol , of 50 known as patients of long standing diabetes mellitus type II as a test who were selected randomly from Jabir Abuliz specialized diabetic center in Khartoum, and 30 healthy non-diabetic as control group, controls were selected randomly to be matched with age and sex with that of the diabetic group.

The serum levels of total cholesterol, triglyceride, and LDL- cholesterol, all were highly significantly raised ($p < 0.05$) in the test group (diabetics). When compared to the control group. Mean \pm SD for control versus diabetic group were found to be :

(110.53 ± 31.94 versus 221.34 ± 36.41 mg/dl) ; for serum total cholesterol.

(103.57 ± 26.16 versus 179.28 ± 69.67) mg/dl ; for serum triglyceride.

(75.00 ± 29.34 versus 183.74 ± 42.96) mg/dl ; for serum LDL-cholesterol.

The serum levels of HDL- cholesterol was found to be significantly reduced ($p < 0.05$) in the test group compared to the control group.

(47.30 ± 6.34 versus 38.44 ± 8.44) mg/dl ; for serum HDL-cholesterol .

Correlations:

In this study, it is concluded that, long standing diabetes type II is associated with hypercholesterolemia, hypertriglyceridemia, increased levels of LDL-cholesterol and low levels of HDL-cholesterol, these results for Sudanese diabetic patients agree with those reported outside Sudan, the serum levels of total cholesterol, LDL and triglyceride increase with the increase of the duration of the disease while the HDL is reduced, hence, with increase risk for atherosclerosis and coronary heart disease.

النتائج

أجريت هذه الدراسة الوصفية خلال الفترة من مارس حتى يونيو 2007. حيث تمت مقارنة مستويات الدهون المختلفة في مصل الدم (الكوليسترول، ثلاثي الجليسرايد، البروتينات الدهنية ذات الكثافة العالية و كذلك ذات الكثافة المنخفضة) عند 50 من مرضى السكري النوع الثاني تم تشخيصهم منذ فترة طويلة وتم اختيارهم عشوائياً من مركز جابر أبو العز للسكري بالخرطوم. و 30 من الاصحاء كمجموعة تحكم (مجموعة ضابطة). مجموعة التحكم تم اختيارهم عشوائياً بحيث يطابقون مرضى السكري في العمر و الجنس. كان هناك ارتفاع ملحوظ و ذو دلالة معنوية عالية حيث كان الاحتمال الاحصائي للمقارنة اقل من 0.05 في كل من المستويات الوسيطة للكوليستيرول، وثلاثي الجليسرايد، و كذلك في البروتينات الداهنة ذات الكثافة المنخفضة و ذلك عند مقارنة المستوى الوسطي عند مرضى السكري مقارنة بالمجموعة الضابطة و كانت النتائج كالتالي:

(المستوى الوسطي + الانحراف المعياري عند المجموعة الضابطة مقارنة بمجموعة مرضى السكري).

(110.53 ± 31.94 م قابل 221.34 ± 36.41 ملجرام / ديسلتر) بالنسبة لمصل الدم للكوليستيرول الكلي .
 (103.57 ± 26.16 م قابل 179.28 ± 69.67 ملجرام / ديسلتر) بالنسبة لمصل الدم ثلاثي الجليسرايد.
 (75.00 ± 29.34 م قابل 183.74 ± 42.96 ملجرام / ديسلتر) بالنسبة لمصل الدم للبروتينات الداهنة ذات الكثافة المنخفضة .

المستويات لمصل الدم للبروتينات الداهنة ذات الكثافة العالية كانت منخفضة عند مرضى السكري مقارنة بمجموعة التحكم حيث كان الاحتمال الاحصائي للمقارنة اقل من 0.05
 (47.30 ± 6.34 م قابل 38.44 ± 8.44 ملجرام / ديسلتر) بالنسبة لمصل الدم للبروتينات الداهنة ذات الكثافة العالية.

و عليه تلخص هذه الدراسة الى أن لمرض السكري النوع الثاني أثر واضح في زيادة مستويات الدهون: الكوليستيرول، ثلاثي الجليسرايد و البروتينات الداهنة ذات الكثافة المنخفضة و انخفاض في مستويات البروتينات الداهنة ذات الكثافة العالية. هذه النتائج لمرضى السكري تتوافق مع نتائج مرضى السكري الأخرى خارج السودان . مستويات مصل الدم لكل من الكوليستيرول، ثلاثي الجليسرايد و البروتينات الداهنة ذات الكثافة المنخفضة تزيد بازدياد فترة المرض بينما تنخفض مستويات البروتينات الداهنة ذات الكثافة العالية بالدم مما يجعل المرضى أكثر عرضة للإصابة بأمراض القلب و ضيق و تصلب الشرايين.

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List of Abbreviations

CETP	cholesterol ester transfer protein.
CHD	coronary Heart Disease.
DKA	Diabetic Keto-Acidosis.
DM	Diabetes Mellitus.
FFA	Free Fatty Acids.
HDL	High Density Lipoprotein.
HDL- C	High Density Lipoprotein – cholesterol.
IDL	Intermediate Density Lipoprotein.
IDDM	Insulin dependant diabetes mellitus.
IFG	Impaired Fasting Glucose.
IGT	Impaired Glucose Tolerance.
IHD	Ischemic Heart Disease.
LDL	Low Density Lipoprotein.
NFFA	Non- Esterified Free Fatty Acids.
TG	Triglyceride.
VLDL	Very Low Density Lipoprotein.

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