

Dedication

To my Family.

I dedicate this work

Mustafa

Acknowledgments

All great thanks are firstly to Allah our creator above for giving us the courage, ability and strength to accomplish this work.

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Abstract

A case-control study conducted during the period from January 2011 to December 2012, compared the plasma levels of alanine transaminase, aspartate transaminase, alkaline phosphatase, bilirubin, total protein, albumin and HbA_{1c} of 200 Sudanese patients with long standing Type2 diabetes mellitus (as a test group) and 100 apparently healthy volunteers (as a control group).Participants in this study were from Jaber Abu Elez diabetic center in Khartoum state, Sudan. Age and sex of the test group were matched with the control group. The plasma levels of ALT,AST, ALP, bilirubin, total protein, albumin and HbA_{1c} were measured using a semi automated methods. The means of the plasma levels of ALT, AST,ALP,bilirubin and HbA_{1c}% of the diabetic group were significantly raised when compared to the control group. The means of the plasma levels of total protein and albumin of the diabetic group were significantly reduced when compared to the control group. In the diabetic group the plasma levels of ALT, AST, ALP and bilirubin show positive correlations with duration of diabetes,HbA_{1c} and BMI, whereas the plasma level of total protein and albumin shows negative correlation with the duration of diabetes , ,HbA_{1c} and BMI. From the results of this study, it is concluded that:in Sudanese patients, type2 diabetes mellitus is associated with high plasma levels of ALT, AST, ALP and bilirubin and low levels of total protein and albumin. In addition, there are positive correlation between the plasma levels of ALT,AST,ALP and bilirubin with the duration of diabetes,HbA_{1c} and BMI. And negative correlation between plasma levels of total protein and albumin with duration of diabetes,HbA_{1c} and BMI.

مستخلص الدراسة

اجريت هذه الدراسة (حالة وضبط) خلال الفتره من يناير 2011 الي ديسمبر 2012 حيث تمت مقارنة مستويات الالانين ترانسماينيز والاسبارتيت ترانسماينيز والالكالين فوسفاتيز والبيليروبين والبروتين الكلي والاليومين بالاضافه للهيموقلوبين المجلز عند (200) من المرضى السودانيين المصابين بداء السكري من النوع الثاني طويل الامد مع (100) من المتطوعين الاصحاء غير المصابين بداء السكري (كمجموعه ضابطه). كل المشاركين في هذه الدراسة كانوا من مركز جابر ابو العز بولاية الخرطوم. المحاليل المستعمله في الدراسة كانت كلها من شركة الانظمه الحيويه الالمانيه , في حين تم قياس نسبة الهيموقلوبين المجلز باستخدام طريقه شبه الية . كان هنالك ارتفاع ذو دلالة احصائيه معنويه في كل المستويات الوسيطة للالانين ترانسماينيز والاسبارتيت ترانسماينيز والالكالين فوسفاتيز والبيليروبين بالاضافه للهيموقلوبين المجلز في مجموعه مرضي السكري مقارنة بالاصحاء . وكان هنالك انخفاض ذو دلالة احصائيه معنويه في كل المستويات الوسيطة للبروتين الكلي والاليومين في مجموعه مرضي السكري مقارنة بالاصحاء . عند مقارنة مستويات الالانين ترانسماينيز والاسبارتيت ترانسماينيز والالكالين فوسفاتيز بالاضافه للبيليروبين في مجموعه الدراسة مع مدة الاصابه بمرض السكري والهيموقلوبين المجلز ومؤشر كتلة الجسم اظهر الالانين ترانسماينيز والاسبارتيت ترانسماينيز والالكالين فوسفاتيز بالاضافه للبيليروبين علاقه ايجابيه وثيقه بينما اظهر البروتين الكلي والاليومين علاقه عكسيه مع مدة المرض والهيموقلوبين المجلز ومؤشر كتلة الجسم . من نتائج هذه الدراسة نخلص الي ان مرض السكري من النوع الثاني يؤدي الي ارتفاع مستويات الالانين ترانسماينيز والاسبارتيت ترانسماينيز والالكالين فوسفاتيز بالاضافه للبيليروبين في بلازما الدم بينما يؤدي الي انخفاض قليل في مستوي البروتين الكلي والاليومين . وبالاضافه الي ذلك هنالك علاقه وثيقه بين مستويات الالانين ترانسماينيز والاسبارتيت ترانسماينيز والالكالين فوسفاتيز بالاضافه للبيليروبين في مجموعه الدراسة مع مدة الاصابه بمرض السكري والهيموقلوبين المجلز ومؤشر كتلة الجسم وعلاقه عكسيه بين مستوي البروتين الكلي والاليومين في مجموعه الدراسة مع مدة الاصابه بمرض السكري

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Abbreviations

ALT	Alanine aminotransferase
ALP	Alkaline phosphatase
AST	Aspartate aminotransferase
BMI	Body mass index
CVD	Cardiac vascular disease
DKI	Diabetic ketoacidosis
GGT	γ - glutamyltranspeptidase
GFR	Glomerular filtration
HbA1c	glycatedhaemoglobin
HCV	Hepatitis C virus
HDL	High density lipoprotein
IRAS	Insulin resistance atherosclerosis
LFTs	Liver function tests
MODY	Maturity- onset diabetes of the young
NAFL	Nonalcoholic fatty liver
NASH	Nonalcoholic steatohapatitis
SD	Standard deviation
SREBP	Sterol regulatory element binding protein

TNF	Tumor necrosis factor
T2DM	Type 2 diabetes mellitus
ULN	Upper limit of normal
VA	Veterans affairs
VLDL	Very low density lipoprotein
WHO	world health organization

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