

Dedication

To my parents: the meaning of love.

To my husband: the source of my power.

**To my daughters and my son: my great
treasure.**

**To my brothers and sisters: the flowers of my
life.**

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Abstract

This study was performed in Khartoum state during the period from January to May 2011.

The aim of the study is to compare the sensitivity of C – reactive protein and GFR as a marker of Diabetic Nephropathy in Sudanese with type 2 diabetes mellitus.

Seventy five blood samples were collected from diabetic Sudanese patient with type 2 diabetes mellitus, and seventy five healthy volunteers control group for the comparison, GFR was calculated by using the equation of Cockcroft-Gault and CRP level was estimated turbidmetrically with automation technique (Mindary BS 300).

The study observed significant increase in the C-reactive protein level in the test group of type 2 diabetes mellitus when compared with control group (4.56 ± 0.89 mg/L verses 1.57 ± 0.76 mg/L) respectively ($P = 0.000$). Where as GFR was significantly decreased in the study group when compared with control group (94.04 ± 12.3 ml/min, verses 115.12 ± 13.7 ml/min) respectively, ($P = 0.000$). Significant maximum level of C-reactive protein in the test group with type 2 diabetes mellitus was recorded in the duration of the disease from 1 year to 5 years (5.2 ± 1.0 mg/L, versus 1.7 ± 0.65 mg/L) ($p = 0.000$), In contrast, no significant decrease in mean GFR in the test group with type 2 diabetes mellitus compared with their control in the same duration of the disease from 1 year to 5 years (99.74 ± 11.38 ml/min, versus 115 ± 13.2 ml/min) ($p = 0.03$). The study recorded insignificant correlation between serum C-reactive protein levels with both the duration of type 2 diabetes mellitus and the patient's age ($P = 0.647$) ($P = 0.846$).

In conclusion: CRP is higher in test group of type 2 diabetes mellitus than in healthy individuals, and reached the peak maximum in the first five years from the onset of type 2 diabetes mellitus, In contrast, GFR reached the minimum reduction after sixteen years from the onset of the type 2 diabetes mellitus.

مستخلص الدراسة

مرض السكرى عبارة عن اعتلال ابيض يتميز بارتفاع مستوى السكر فى الدم ،والذى يحدث نتيجة لاعتلالات جينية او خلل فى هرمون الانسولين.وهو من الاسباب الرئيسية لامراض الكلى.

أجريت هذه الدراسة فى ولاية الخرطوم خلال الفتره من يناير 2011م الى مايو 2011م. الهدف من هذه الدراسة هو مقارنة مدى حساسية بروتين سى المتفاعل ومعدل الرشح الكبيبي كعلامه لحدوث امراض الكلى عند السودانيين المصابين بالنوع الثانى من مرض السكرى. خمسه وسبعون عينة دم تم جمعها من المرضى السودانيين المصابين بالنوع الثانى من مرض السكرى والذين تتراوح اعمارهم من 30 سنة الى 60 سنة، وكذلك تم جمع عينات من خمسه وسبعون متطوعين أصحاء لاستخدامهم فى عملية المقارنه.

مستوى معدل الرشح الكبيبي تم قياسه بواسطة معادلة كوكروفت- قولت، أما مستوى بروتين سى المتفاعل فتم قياسه كيميائيا باستخدام الطريقه الذاتيه بواسطة جهاز مندرى اس 300.

لوحظ فى هذه الدراسة زياده فى مستوى بروتين سى المتفاعل لدى المرضى ($4.56\text{mg/dL} \pm 0.89\text{mg/dL}$) مقارنة بالاصحاء ($1.57\text{mg/dL} \pm 0.76\text{mg/dL}$) عند مستوى معنويه = 0.000.

كذلك لوحظ انخفاض معدل الرشح الكبيبي عند المرضى ($94.04\text{ml/min} \pm 12.3\text{ml/min}$) اذا ما قورن بالاصحاء ($115.12\text{ml/min} \pm 13.7\text{ml/min}$) عند مستوى معنويه = 0.000. بالرغم من ان هناك علاقه قويه بين انخفاض معدل الرشح الكبيبي وفترة الاصابه بالنوع الثانى لمرض السكرى (معامل الارتباط = 0.250) (مستوى المعنويه اقل من 0.05)، الا انه لوحظ ان مستوى بروتين سى المتفاعل لم يتاثر بفترة الاصابه لكنه وصل لأعلى مستوياته خلال فتره مبكره من الاصابه بالنوع الثانى لمرض السكرى (من سنة الى خمس سنوات). بالمقارنه فان مستوى معدل الرشح الكبيبي قد انخفض بعد مرور ستة عشر سنة من حدوث الاصابه بالنوع الثانى من مرض السكرى.

النتائج : مستوى بروتين سى المتفاعل اعلى لدى المصابين بمرض السكر النوع الثانى من مستواه لدى الاصحاء كذلك بروتين سى المتفاعل وصل لأعلى مستوياته بمرضى السكر النوع الثانى فى الخمس سنوات الاولى، بينما معدل الرشح الكبيبي انخفض لادنى مستوياته بعد مرور ستة عشر سنة من الاصابة بمرض السكر النوع الثانى.

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Abbreviations

ADH	Antidiuretic Hormone
AER	Albumin Excretion Rate
BMI	Body Mass Index
BUN	Blood Urea Nitrogen

CKD	Chronic Kidney Disease
CRP	C - reactive protein
DKA	Diabetic Ketoacidosis
DM	Diabetes mellitus
ELISA	Enzyme –Linked Immunosorbent Assay
ESR	Erythrocyte sedimentation rate
FPG	Fasting Plasma Glucose
GBM	Glomerular Basement Membrane
GDM	Gestational Diabetes mellitus
GFR	Glomerular Filtration Rate
HS-CRP	High Sensitivite C - reactive protein
IBD	Inflammatory Bowel Disease
IDDM	Insulin-dependent diabetes mellitus
IFG	Impaired Fasting Glucose
LADA	Latent Autoimmune Diabetes of Adults
MDRD	Modification of Diet in Renal Disease
NIDDM	Non-insulin-dependent diabetes mellitus
OGTT	Oral Glucose Tolerance Test
SBE	Sub acute Bacterial Endocarditis
SLE	Systemic Lupus Erthematosus
SPSS	Statistical Package for Social Science
STD	Standard