

بسم الله الرحمن الرحيم

**Sudan University of Science and Technology**

**College of Graduate Studies**



# **Assessment of Serum Levels of Creatinine and Urate among Sudanese with Type2 Diabetes Mellitus**

(A study in Khartoum state )

تقييم مستويات الكرياتينين و اليورات في مصل الدم لدى السودانيين المصابين بداء السكري من النوع الثاني-  
دراسة في ولاية الخرطوم

**A Thesis Submitted in Partial Fulfillment For the Requirement of the of M.Sc  
Degree in Clinical Chemistry**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى:

وَلَتَلُوْنَكُمْ شَيْءٌ مِّنَ الْخَوْفِ وَالْجُوعِ وَنَقْصٍ مِّنَ الْأَمْوَالِ وَالْأَنْفُسِ وَالثَّمَرَاتِ ۗ وَبَشِّرِ الصَّابِرِينَ (155)

الَّذِينَ إِذَا أَصَابَتْهُمُ مُصِيبَةٌ قَالُوا إِنَّا لِلَّهِ وَإِنَّا إِلَيْهِ رَاجِعُونَ (156)

صدق الله العظيم

سورة البقرة

## ***Dedication***

***I dedicate my work***

***To the spirit of my husband Elshaheed Abd elathim Hamaza***

***To the spirit of my father and mother***

***To my sons and my daughters***

***To my beloved country, Sudan***

***To all my teachers in the clinical chemistry department***

## **Acknowledgements**

*Thanks first and last to ALLAH who enable me to conduct this study by grace of him and donated strength and patience.*

*My special thank, grate fullness and profound gratitude to my supervisor Dr. **Bader Eldien Hassan Elabid** who made this study possible by his valuable guidance, effort and patience.*

*My appreciation are also due to all patients from who blood sample were collected.*

*Finally, I wish to express my great thanks to all people who helped me in this work.*

## **Abstract**

This is a cross- sectional study conducted during the period from March 2012 to October 2012. The aim of this study to assess the serum levels of creatinine and urate among Sudanese with type2 diabetes mellitus. Sixty patients with type2 diabetes mellitus were selected as a test group from the military hospital in Khartoum state, Sudan.

The test group was compared with a control group which included 40 healthy volunteers. Age and gender of the test group were matched with the control group. Blood specimens were collected from both groups and the serum levels of creatinine and urate were estimated . Cobas integra 400plus from Roche company was used for measurement of serum levels of creatinine and urate . Statistical package for social science (SPSS version 11.5) computer software was used for data analysis.

The results of this study indicates a significant increase in the means of the serum levels of creatinine and urate in type 2 diabetic patients (test group) compared with non diabetic subjects as control (  $P \leq 0.05$  ).

The results of the current study indicates a significant, strong positive correlation between the duration of the diabetes mellitus type 2 with both serum levels of creatinine and urate. Also significant a weak positive relationship was observed between the serum levels of creatinine and the BMI and Insignificant a weak positive relationship was observed between the serum levels of urate and the BMI.

Inconclusion; the serum levels of creatinine and urate are increased in diabetic patients with type 2 diabetes mellitus. There is strong positive correlation between creatinine and urate and the duration of diabetes mellitus. There is a weak relationship between the serum levels of creatinine and the BMI , and no correlation between the serum levels of urate and the BMI .

## مستخلص الدراسة

اجريت هذه الدراسة المقطعية خلال الفترة من مارس وحتى اكتوبر 2012 فى ولاية الخرطوم بمستشفى القوات المسلحة حيث تم تقييم مستويات الكرياتينين والحمض اليورات في مصل الدم عند ستين مريض بداء السكري من النوع الثاني مع 40 من الاصحاء المتطوعين كمجموعة ضابطة. وتم تطابق الاعداد والجنس بين مجموعة الاختبار والمجموعة الضابطة .

تم جمع عينات الدم من كلا المجموعتين ومن ثم تم قياس مستوى الكرياتينين والحمض اليورات . الاجهزه والمحاليل المستخدمة في القياس من شركة روش العالمية . كما استخدم برنامج الحزمة الاحصائية للعلوم الاجتماعية (SPSS نسخة 11.5 ) لتحليل النتائج.

كان هنالك ارتفاع ذو دلالة احصائية معنوية فى كل المستويات الوسطية للكرياتينين والحمض اليورات في مجموعة المرضى المصابين بالسكري من النوع الثاني مقارنة بالاصحاء حيث كان الاحتمال اقل من (0.05)

من هذه الدراسة وجد هنالك ارتباط قوي موجب ذو دلالة احصائية معنوية في مستويات الكرياتينين والحمض اليورات في مصل الدم عند مرضي السكري من النوع الثاني مقارنة بالمجموعى الضابطة . هنالك ارتباط موجب ضعيف ذو دلالة احصائية معنوية بين معدل كتلة الجسم ومستوى الكرياتينين . كما انه لم يكن هنالك ارتباط ذو دلالة احصائية معنوية بين معدل كتلة الجسم ومستوى الحمض اليورات.

وعلى نلخص نتائج هذه الدراسة : ان هنالك ارتفاع في مستويات الحمض اليورات ومستويات الكرياتينين في مصل الدم بالاضافة الي نسبة الهوجلوبيين المجلز عند المرضى السودانيين المصابين بداء السكري من النوع الثاني كما ان هنالك ارتباط ضعيف بين كتلة الجسم ومستوي الكرياتينين ولأء توجد علاقة ذات دلالة احصائية بين كتلة الجسم ومستوى الحمض اليورات في مصل الدم عند المرضى المصابين بالسكري من النوع الثاني .

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## Abbreviations:

BMI.....	Body mass index
DM .....	Diabetes Mellitus
DM-1.....	Diabetes Mellitus type 1
DM-2 .....	Diabetes Mellitus type 2
NIDDM .....	Non-Insulin-Dependent Diabetes Mellitus
IDDM .....	Insulin –Dependent Diabetes Mellitus
SD .....	Standard Deviation
NPN .....	Non Protein Nitrogen
DKA .....	Diabetic Ketoacidosis

