

**SUDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
COLLEGE OF GRADUATE STUDIES**

**SERUM α -AMYLASE ACTIVITY IN SUDANESE
PATIENTS WITH CHRONIC
RENAL FAILURE**

By

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**A thesis submitted for partial fulfillment of
MSc degree in clinical chemistry**

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October 2005

Dedication *Dedication*

To my family; parents, brothers, and sisters.

To my friends.

To my teachers

To all CRF patients over all the world.

I dedicate this study.

ABSTRACT

Chronic renal failure (CRF) is currently considered as a common health problem in Sudan, as the disease is widely distributed in most areas of Sudan.

This study was conducted to essentially investigate status of serum α -amylase in Sudanese patients of chronic renal failure with special reference to the effects of diabetes mellitus.

A group of 50 patients with chronic renal failure (14 were diabetics), undergoing regular haemodialysis, visiting Khartoum Renal Dialysis Center (KRDC), and Sudanese Transplanted Kidney Association Medical Center (STKA), during the period of May to July 2005. A total number of 25 healthy volunteers had also been enrolled in this study as a control group.

Blood specimens were collected from all groups (n, 75), and the level of α - amylase using (CNP-G3) substrate, creatinine using Jaffe's reaction were determined. Similarly, urea was measured using urase enzyme whereas glucose was determined using glucose oxidase enzyme method. Statistical analysis was done, using SPSS software package for groups of patients and control.

The study indicates a significant increase ($P=0.022$) in α - amylase levels of chronic renal failure patients when compared with control group, as a significant difference in serum α - amylase level was similarly confirmed within subgroups of patients (diabetic & non-diabetic) and control group; the level of α -amylase in groups of diabetics was less than non-diabetics group ($P=0.008$). Serum α - amylase is significantly correlated with creatinine and duration of diabetes mellitus ($P=0.031$), ($P=0.008$), respectively unlike blood glucose level, age, and duration of chronic renal failure

ملخص البحث

يعتبر الفشل الكلوي المزمن مشكلة صحية في الآونة الأخيرة إذ انتشر في جميع أنحاء السودان. ولذلك أجريت هذه الدراسة لمعرفة تأثير الفشل الكلوي المزمن على مستويات نشاط إنزيم الفا اميليز، وخصوصا في مرضى الفشل الكلوي المزمن و الذين يعانون من الداء السكري.

تم في هذه الدراسة اختيار مجموعة من ٥٠ مريضا بالفشل الكلوي المزمن والذين يخضعون للغسيل الدموي المنتظم في مراكز غسيل الكلى بالخرطوم. وقد تم تقسيم المرضى إلى مجموعتين، مجموعة تضم ١٤ مريضا جميعهم يعانون من الفشل الكلوي وداء السكري معا، بينما تضم المجموعة الأخرى ٣٦ مريضا يعانون من الفشل الكلوي فقط. كما أخذت عينات من ٢٥ متطوعا أصحاء كعينات مرجعية. وقد تم فحص جميع المجموعات (٧٥) شخصا بالنسبة لوظائف الكلى، حيث قيس مستوى البولينا في الدم باستخدام إنزيم اليوريز، كما تم قياس مستوى الكرياتينين باستخدام تفاعل (Jaffe)، و قيس أيضا مستوى الجلوكوز باستخدام إنزيم (Glucose oxidase) وأخيرا تم قياس مستوى نشاط إنزيم الفا اميليز باستخدام (CNP-G3) كمادة أساس.

وقد خلصت الدراسة إلى وجود علاقة قوية جدا بين مستوى الفا اميليز في الدم ومرض الفشل الكلوي المزمن عند المقارنة بالعينة المرجعية باحتمال إحصائي ($P=0.022$). وأظهرت الدراسة أن هنالك بالفعل فرق له دلالة احصائية ($P=0.008$) بين مجموعات الدراسة، اذ وجد إن مستوى الفا اميليز في مجموعة مرضى الفشل الكلوي و السكري معا اقل منه في المجموعة التي تعاني من الفشل الكلوي المزمن فقط. كما خلصت الدراسة إلى وجود ارتباط بين مستوى الفا اميليز، مع مستوى الكرياتينين ومدة الإصابة بداء السكري باحتمال إحصائي ($P=0.031$)، ($P=0.008$) على التوالي. أخيرا لم تبين الدراسة أية ارتباط بين مستوى الفا اميليز ومستوى الجلوكوز ومدة الإصابة بالفشل الكلوي المزمن، كما انه لا تأثير للجنس أو العمر على مستوى الفا اميليز.

ACKNOWLEDGEMENT

My great thanks to my supervisor Dr: Adil Mahgoub Ibrahim for his supervision and support. I would like to thank all those offered me their assistance, and help me in whatever needed.

Special thanks to sisters, nurses and technologists at Khartoum Renal Dialysis Centre and The Sudanese Kidney Transplanted Association Medical Centre, for their assistance in collection of samples from the patients.

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LIST OF ABBREVIATIONS

CRF	Chronic Renal Failure
ESRD	End Stage Renal Disease
ARF	Acute Renal Failure
GFR	Glomerular Filtration Rate
BUN	Blood Urea Nitrogen
CT	Computerized Tomography
ADA	American Diabetes Association
GDM	Gestational Diabetes Mellitus
WHO	World Health Organization
POD	Peroxidase
GOD	Glucose Oxidase
PAP	Phenol- Aminophenazone
EDTA	Ethylene Diamine Tetra Acetic acid
CNP-G3	2-Chloro-4-nitrophenyl- α - maltotrioside