

# **Dedication**

**To my parents, sister and brothers  
To all teachers & colleagues  
Who have had positive  
Impacts on my life**

## **Acknowledgments**

All and first thanks to the almighty ALLAH.

My all and deepest thanks to my family for their support, bearing, and encouragement; especially my father who gave me the moral support, my mother for her prayers.

Deep thanks to my supervisor Dr. Badar Eldien Hassan Alabid for his great effort and patience.

Also great thanks to my friends who pushed me forwards and encouraged.

My gratitude to all staff in Dr.Salma center for kidney transplantation and dialysis, Ibn sina hospital and Ibrahim Malik teaching hospital for their great assistance.

At last and not to forget my great thanks to all people who helped me in this work.

## **Abstract**

A cross-sectional study conducted during the period November 2008 to June 2009, compared serum levels of magnesium, urate and creatinine of 50 Sudanese patients with chronic renal failure (CRF) (as a test group), and 30 apparently healthy volunteers (as a control group). Participants in this study were from Dr.Salma Center for Kidney Transplantation and Dialysis, Ibn Sina Hospital and Ibrahim Malik Teaching Hospital. Age and gender of the test group were matched with the control group. The serum levels of magnesium, urate and creatinine were measured using, Biosystem BTS-310 analyzer, Germany.

Serum magnesium, urate and creatinine were significantly raised in the test group compared to the control group. Mean  $\pm$  SD for the test group versus the control group:

( $2.22 \pm 0.20$ ) versus ( $1.90 \pm 0.14$ ) mg/dl ( $p = 0.03$ ); for serum magnesium.

( $6.12 \pm 1.52$ ) versus ( $4.17 \pm 1.32$ ) mg/dl ( $p = 0.01$ ); for serum urate.

( $9.45 \pm 3.77$ ) versus ( $0.83 \pm 0.16$ ) mg/dl ( $p = 0.001$ ); for serum creatinine.

In the test group, serum magnesium, urate and creatinine showed no correlation with the duration of the disease ( $r = 0.00$ ). Serum magnesium and urate showed a weak positive correlation with serum creatinine ( $r = 0.35$ ) ( $r = 0.33$ ) respectively.

From this study, it is concluded that; in Sudanese patients with CRF the serum levels of magnesium, urate and creatinine were raised. In addition, serum magnesium, urate and creatinine are not correlated with the duration of CRF, whereas serum magnesium and urate are weak positively correlated with serum creatinine.

## ملخص الدراسة

اجريت هذه الدراسة المقطعية خلال الفتره من نوفمبر 2008 حتى يونيو 2009 حيث تمت مقارنة مستويات الماغنيزيوم، اليورات والكرياتينين عند 50 من المرضى السودانيين المصابين بداء الفشل الكلوى المزمن مع 03 من المتطوعين الاصحاء غير المصابين بداء الفشل الكلوى المزمن (كمجموعه ضابطه) كل المشاركين فى هذه الدراسة كانوا متماثلين من ناحية العمر والجنس كما أن كل المشاركين فى هذه الدراسة كانوا من مركز د.سلمى لزراعة وغسيل الكلى، مستشفى إبن سينا ومستشفى إبراهيم مالك التعليمى. تم قياس مستويات الماغنيزيوم، اليورات والكرياتينين باستخدام جهاز التحليل الذاتى من شركة بايوسستم الالمانيه.

كان هناك ارتفاع ملحوظ وذو دلالة احصائية معنويه فى مستويات الماغنيزيوم، اليورات والكرياتينين حيث كان الاحتمال الاحصائى اقل من 0.05 فى كل المستويات الوسيطه للماغنيزيوم، اليورات (ملح الحامض البولى) والكرياتينين وذلك عند مقارنة المستوى الوسطى عند المرضى مقارنة بمجموعة: التحكم وكانت النتائج كالآتى:

المستوى الوسطى  $\pm$  الانحراف المعيارى عند مجموعة مرضى الفشل الكلوى (المزمن مقارنة بالمجموعه الضابطه) على التوالى مقابل (0.14  $\pm$  1.90) ملجرام/ ديسلتر بالنسبه للماغنيزيوم فى (0.20  $\pm$  2.22) مصلى الدم.

مقابل (1.32  $\pm$  4.17) ملجرام/ ديسلتر بالنسبه لليورات فى مصلى (1.52  $\pm$  6.12) الدم.

مقابل (0.16  $\pm$  0.83) ملجرام/ ديسلتر بالنسبه للكرياتينين فى (3.77  $\pm$  9.45) مصلى الدم.

من هذه الدراسة نخلص للآتى: مرض الفشل الكلوى المزمن يؤدى الى ارتفاع مستويات الماغنيزيوم، اليورات والكرياتينين فى مصل الدم ، كما انه لا يوجد ارتباط بين مستويات الماغنيزيوم

اليورات والكرياتينين فى مصل الدم مع مدة المرض، ويوجد ارتباط ايجابى ضعيف بين مستويات الماغنيزيوم واليورات مع مستوى الكرياتينين فى مصل الدم.

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## Abbreviations

ADH	Antidiuretic Hormone
APRT	Adenine phosphoribosyl Transferase
ARF	Acute renal failure
AVP	Arginine vasopressin
CAPD	<b>Continuous ambulatory peritoneal dialysis</b>
<b>CKD</b>	<b>Chronic kidney disease</b>
CRF	Chronic renal failure
ESR	Erythrocyte sedimentation rate
ESRD	End stage renal disease
GFR	Glomerular filtration rate
HGPRT	Hypoxanthine – guanine phosphoribosyl transferees
PRPP	Phosphoriboseyl pyrophosphate
PTH	Parathyroid hormone
S D	Standard deviation