

Dedication

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

I

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.

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

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

(9.45 ± 3.77) versus (0.83 ± 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 المقطعيه خلال الفتره من نوفمبر 2008 حتى يونيو 2009 حيث تمت مقارنة مستويات الماغنيزيوم، اليورات والكرياتينين عند 50 من المرضى السودانيين المصابين بداء الفشل الكلوي المزمن مع 03 من المتطوعين الاصحاء غير المصابين بداء الفشل الكلوي المزمن (مجموعه ضابطه) كل المشاركون فى هذه الدراسة كانوا متماثلين من ناحية العمر والجنس كما أن كل المشاركون فى هذه الدراسة كانوا من مركز د.سلمى لزراعة وغسيل الكلى، مستشفى ابن سينا ومستشفى إبراهيم مالك التعليمى. تم فياس مستويات الماغنيزيوم، اليورات والكرياتينين باستخدام جهاز التحليل الذاتى من شركة بايوسيستم الالمانيه.

كان هناك ارتفاع ملحوظ ذو دلالة احصائيه معنويه فى مستويات الماغنيزيوم، اليورات والكرياتينين حيث كان الاحتمال الاحصائي 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 كالاتى:

المستوى الوسطى \pm الانحراف المعياري عند مجموعة مرضى الفشل الكلوى (المزمن مقارنة بالمجموعه الضابطه) على التوالى مقابل (0.14 ± 1.90) ملجرام/ ديسيلتر بالنسبة للماغنيزيوم فى (2.22 ± 0.20) مصلى الدم.

مقابل (1.32 ± 4.17) ملجرام/ ديسيلتر بالنسبة لليورات فى مصلى الدم.

مقابل (0.16 ± 0.83) ملجرام/ ديسيلتر بالنسبة للكرياتينين فى (9.45 ± 3.77) مصلى الدم.

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

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

Contents

Dedication.....	I
Acknowledgements.....	II
Abstract (English).....	III
..... ملخص الدراسة	
..... IV	
List of tables.....	IX
List of figures.....	X
Abbreviations.....	XI
CHAPTER ONE. INTRODUCTION AND LITERATURE REVIEW...1	
1.1The kidney.....	1
1.1.2 Renal functions.....	1
1. 1.3 Investigation of renal function.....	3
1.1.4 Renal failure.....	5
1.1.4.1 Acute renal failure.....	5
1.1.4.2 Chronic renal failure.....	6
1.1.5 Magnesium.....	9
1.1.5.1 Role of magnesium.....	9
1.1.5.2 Regulation of blood magnesium.....	10
1.1.5.3 Hypermagnesemia.....	11
1.1.6 Urate.....	11
1.1.6.1 Sources of urate	12
1.1.6.2 Hyperuricaemia.....	13

1.1.7 Creatinine.....	14
1.2 Rationale.....	17
1.3 Objectives.....	18
1.3.1 General objective.....	18
1.3.2 Specific objectives.....	18
CHAPTER TWO. MATERIALS AND METHODS	
2. Materials and methods.....	19
2.1 Study design.....	19
2.2 Study area.....	19
2.3 Study period.....	19
2.4 Target population.....	19
2.5 Inclusion criteria.....	19
2.6 Exclusion criteria.....	19
2.7 Sample size.....	19
2.8 Ethical consideration.....	19
2.9 Data collection and clinical assessment.....	20
2.10 Methodology.....	20
2.10.1 Instrument.....	20
2.10.2 Measurement of serum magnesium.....	21
2.10.3 Measurement of serum urate.....	22
2.10.4 Measurement of serum creatinine.....	23
2.11 Quality control.....	24
2.12 Statistical analysis.....	24
CHAPTER THREE. RESULTS.....	25
CHAPTER FOUR. DISCUSSION.....	38

VII

CHAPTER FIVE. CONCLUSION AND RECOMMENDATIONS	41
REFERENCES.....	42
APPENDICES.....	45

Appendix (1) Questionnaire.

Appendix (2) The method used for measurement of serum magnesium

Appendix (3) The method used for measurement of serum urate.

Appendix (4) The method used for measurement of serum creatinine.

VIII

List of Tables

Table (3-1): Comparison of the means of the serum magnesium levels of the test group and the control group.....	27
Table (3-2): Comparison of the means of the serum urate levels of the test group and the control group.....	30
Table (3-3): Comparison of the means of the serum creatinine levels of the test group and the control group.....	33

List of Figures

Figure (3-1): The means of the serum magnesium levels of the test group and the control group.....	28
Figure (3-2): A scatter plot shows correlation between the duration of the disease and the plasma levels of magnesium.....	29
Figure (3- 3): The means of the serum urate levels of the test group and the control group.....	31
Figure (3-4): A scatter plot shows correlation between the duration of the disease and the plasma levels of urate	32
Figure.(3- 5): The means of the serum creatinine levels of the test group and the control group.....	34
Figure (3-6): A scatter plot shows correlation between the duration of the disease and the levels of the serum creatinine	35
Figure (3-7): A scatter plot shows correlation between the serum levels of creatinine and magnesium	36
Figure (3-8): A scatter plot shows correlation between the serum levels of creatinine and urate.....	37

Abbreviations

ADH	Antidiuretic Hormone
APRT	Adenine phosphoribosyl Transferase
ARF	Acute renal failure
AVP	Arginine vasopressin
CAPD	Continuous ambulatory peritoneal dialysis
CKD	Chronic kidney disease
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