Dedication

To .....

The light that illuminates our path to success...Fathers.

To.....

Those who taught us to stand no matter how circumstances change... Mothers.

To.....

Everyone his knowledge lights up others mind.

Ali Mahjoub.

Acknowledgment

Praise to *Allah* how given us the health strength and patience to conduct this study. Sincere gratitude goes to our supervisor Dr. Nassr Eldin M.A Shrif indebted to all staff of clinical chemistry department in Sudan University for useful advises and encouragement. We would like also to express our appreciation and gratitude to all of the laboratory staff in Khartoum hospital for their help .Very special thank to Sudanese chronic renal failure patients how allow us to take blood sample for this study. Last special thank to all friends for their helps.

Abstract

- Descriptive cross-sectional study was conducted in the Renal Center for Kidney Dialysis, Khartoum state, The aim of the present study is to assessment the plasma zinc and magnesium levels among haemodialysis patients (before and after haemodialysis) with controls (age & sex &duration of dialysis).

- A total of 40 individual with chronic renal failure were enrolled in this study, in addition to 20 healthy volunteers' subjects as a control group. Method: atomic absorption spectroscopy device was used for measurement of zinc. spectrophotometeric assay was used calcium estimation, then data were analyzed by Statistical (SPSS version 16) computer software.

- The results of the present study showed a significant increase in the mean of zinc level in hemodialysis patients before dialysis(4.5±1.19) when compared with control group (0.95±0.17) and significant decreased after dialysis (4.03±0.99) with (*P-value* < 0.001).

- Result of magnesium indicated significant increased when compared mean of hemodialysis patients before and post dialysis (2.08±0.12), (2.09±0.16), (1.8±0.35) when compared with control group respectively with (*P-value* < 0.001).

In this study there was no correlation between zinc and age (r = 0.012, p.value =0.34)& duration of dialysis (r = 0.009, p.value = 0.93).

Also there was no correlation between magnesium and age (r = 0.057, p.value = 0.033)& duration of dialysis (r = 0.187, p.value = 0.098).

- In Conclusions plasma zinc and magnesium levels are significantly increased in hemodialysis patients than in controls. No significant difference in plasma magnesium level between pre

and post hemodialysis and significantly decreased zinc level between after hemodialysis patients.

مستخلص البحث

هذه دراسة وصفية مقطعية أجريت في مركز غسيل الكلى بالخرطوم.

الغرض من هذه الدراسة هو تقويم مستوى كل من الزنك والمغنسيوم في البلازما لدى المرضى الخاضعين لغسيل الكلى.

شارك في هذه الدراسة 40 مريضا يقومون بعمل غسيل كلوي بشكل منتظم وكذلك 20 من الأصحاء كمجموعة ضابطة. وقد تم قياس الزنك بواسطة جهاز الإمتصاص الذري للزنك وجهاز المطياف الضوئي للمغنسيوم وتم تحليل البيانات عن طريق برنامج التحليل الإحصائي النسخة 16.

النتائج:وجد زيادة ملحوظة في مستوى الزنك في بلازما المرضى قبل الغسيل (4.5± 1.19) مقارنة بمجموعة الأصحاء (0.95±0.17). وكذلك وجد انخفاض واضح في الزنك بعد الغسيل (4.03±0.99).

وكذلك هنالك زيادة في مستوى المغنسيوم في مرضى الغسيل الكلوي قبل وبعد(2.09±0.16) , (2.08±0.12) الغسيل على التوالي مقارنة بالمجموعة الضابطة (1.8±0.35) .

لم يكن هنالك إرتباط بين مستوى الزنك والعمر ((r = 0.012, p.value =0.34) ومدة الغسيل (r = 0.009, p.value = 0.93)).

وكذلك ليس هنالك إرتباط بين مستوى المغنسيوم والعمر

(r = 0.187, p.value = 0.098).

ومدة الغسيل (r =0.057 , p.value =0.033)

الخلاصة:

نستخلص من هذه الدراسة أن مستوى الزنك والمغنسيوم يزيد في مرضى الغسيل الكلوي .

مستوى الزنك يتأثر بعد الغسيل في مجموعة المرضى بالنقصان.

Contents

Chapter two Materials and Methods		
No	**Text**	**Page**

List of abbreviations		
abbreviations	Means	Page
AI	Adequate Intake	7
AE	Acrodermatitis enteropathica	8
CKD	Chronic kidney disease	1
DNA	Deoxy ribonucleic acid	7
Da	Dalton	5
DV	Daily Value	12
DRIs	Dietary Reference Intakes	13
FDA	The Food and Drug Administration	12
GFR	Glomerular filtration rate	19
HDF	Hemodiafiltration	22
HD	Hemodialysis	1
(IGF)-I	Insulin-like growth factors	9
Mg	Milligrams	12
MTF1	Metal-regulatory transcription factor 1	5
Mt	Metallothionein	5
NSAIDs	Non-steroidal anti-inflammatory drugs	21
PD	Peritoneal dialysis	22
pm	Picometers	28
RNA	Ribonucleic acid	7
RDA	Recommended Daily Allowance	7
SPSS	Statistical package for social sciences	29
UL	Upper Intake Levels	13
US	United States	14

List of table		
No	**Text**	**Page**

List of figure		
No	**Text**	**Page**