

Dedication

I dedicate this research:

To:

My Parents who have never failed to give me financial and moral support, for giving all my need during the time we developed and for teaching me that even the largest task can be accomplished if it is done one step at a time.

To:

My brothers

To:

My little sister

To:

My friends for their support.

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Allah enabled me to conduct this study by his blessing therefore thanks for my god **Allah** firstly and lastly.

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Abstract

Hypertension is a common health problem throughout the world. Some evidence suggests that Vitamin D may reduce hypertension prevalence through its action on Renin-Angiotensin System (RAS), intracellular calcium homeostasis, and regulation of vascular smooth muscle contractility

This is a descriptive cross-sectional study carried out to evaluate serum uric acid levels among hypertensive vitamin D deficient patients, and to correlate serum vitamin D and uric acid to the study variables (age, body mass index, gender and duration).

Eighty eight hypertensive patients were enrolled in this study was done in Khartoum state during the period of March to July 2014, Serum vitamin D level for patients was estimated using ELISA competitive assay, serum uric acid level was estimated by spectrophotometer method, data analyzed using T-test and Pearson correlation in SPSS computer program.

The results showed equal percentage of hypertension among females (52.3%) than of the males (47.7%), overweight group (80.4% males, 66.7% females) were more frequent than normal weight group (19.6% males, 33.3% females), vitamin D deficient females (81.0%) were more than males (45.0%), vitamin D deficiency in the males (74.7% in the normal weight group, 50.0% in the overweight group), in females (64.3% in the normal weight group, 89.3% in the overweight group), females and overweight group expose to vitamin D deficiency more than males and normal weight group, (P value 0.000, 0.033) respectively, vitamin D level decreased (P value 0.041) with duration of hypertension.

The correlation analysis between vitamin D and uric acid resulting in weak positive correlation (Pearson's r : 0.019 P value =0.033).

In conclusion hypertension is associated with vitamin D deficiency which affected by gender and weight, further studies is needed to determine the effect of uric acid on the hypertension and study variables.

ملخص الدراسة

ارتفاع ضغط الدم هو مشكلة صحية شائعة في جميع انحاء العالم وتشير بعض الأدلة على ان فيتامين (د) قد يقلل من انتشار ارتفاع ضغط الدم من خلال عمله على نظام الرنين انجيوتنسين وضبط البيئة الداخلية للكالسيوم وتنظيم انقباض العضلات الملساء في الاوعية الدموية.

واجريت دراسة مستعرضة وصفية من اجل تقويم مستوى حمض اليوريك في الدم لدى مرضى ارتفاع ضغط الدم فاقدى فيتامين (د) وربط مستوى فيتامين (د) حمض اليوريك مع متغيرات الدراسة (العمر , الجنس, مؤشر كتلة الجسم ومدة المرض).

التحق ثمانية وثمانين مرضى ارتفاع ضغط الدم في هذه الدراسة تم إجراء هذه الدراسة في ولاية الخرطوم خلال الفترة من مارس حتى يوليو 2014 وقدر فيتامين (د) في مصل الدم للمرضى بواسطة تقنية الانزيم المناعي المرتبط بينما تم قياس مستوى حمض اليوريك في الدم بالطريقة المعتمدة على الطيف الضوئي وتحليل البيانات تم باستخدام اختبار (ت) وارتباط بيرسون تحليل البيانات تم باستخدام برنامج الكمبيوتر الحزمة الاحصائية للعلوم الاجتماعية.

أظهرت النتائج نسبة ارتفاع ضغط الدم متساوية تقريبا بين الإناث قدرها (47.7%) ونسبة (52.3%) من الذكور , وكانت نسبة مجموعة الوزن الزائد (80.4% من الذكور و 66.7% من الاناث) اكثر من نسبة مجموعة الوزن الطبيعي (19.6% من الذكور و 33.3% من الاناث), ونسبة الاناث فاقدرات فيتامين (د) كانت 81.0% مقابل 45.0% للذكور , كان نقصان الفيتامين عند الذكور (74.7% في مجموعة الوزن الطبيعي و 50.0% في مجموعة الوزن الزائد), وعند الاناث (64.3% في مجموعة الوزن الطبيعي و 89.3% في مجموعة الوزن الزائد), واطهر متوسط الفيتامين عند الاناث والذكور فرقا معبرا وكانت ققيمة بيرسون تساوي (0.000), كانت نسبة الاناث والمجموعة زائدة الوزن اكثر عرضة لنقصان الفيتامين من الذكور والمجموعة طبيعية الوزن, قيمة بيرسون ساوت (0.00 و 0.033 علي التوالي) مستوى الفيتامين ينخفض كلما زادت مدة المرض وقيمة بيرسون تساوي (0.041).

كانت نسبة الارتباط بين فيتامين (د)و حمض اليوريك موجبة ضعيفة بمعامل ارتباط (0.033) و قيمة بيرسون (+0.288).

في الختام فان مرض ارتفاع ضغط الدم مرتبط بنقص فيتامين (د) الذي يتاثر بالجنس والوزن و مزيدا من الدراسات مطلوب لتحديد العلاقة بين حمض اليوريك ومتغيرات الدراسة (الجنس , العمر, الوزن , ومدة المرض).

Lists of Content

Content	Page No
Dedication	I
Acknowledgements	II
Abstract	III
ملخص الدراسة	IV
List of Contents	V
List of Figures	VIII
List of Tables	IX
List of Abbreviations	X
Chapter One: Introduction and Literature Review	
1.1 Hypertension	1
1.1.1 Epidemiology	1
1.1.2 Classification of Hypertension	1
1.1.2.1 Essential Hypertension	2
1.1.2.2 Secondary Hypertension	2
1.1.3 Complications and Target Organ Damages of Hypertension	2
1.1.4 Diagnosis of Hypertension	3
1.1.4.1 Blood Pressure Measurement	3
1.1.4.2 Laboratory Investigations	3
1.1.5 Treatment of Hypertension	3
1.1.6 Prevention of Hypertension	3
1.2 Vitamin D	3
1.2.1 Structure	4
1.2.2 Nomenclature	4
1.2.3 Chemical Properties	4
1.2.4 Isolation of Vitamin D Metabolites	5
1.2.5 Physiology of Vitamin D	5
1.2.6 Absorption	5
1.2.7 Synthesis of Vitamin D	5
1.2.8 Transport by Vitamin D Binding Proteins (Vitamin DBP)	6

1.2.9 Storage of Vitamin D	6
1.2.10 Metabolism of Vitamin D	6
1.2.11 Catabolism and Excretion of Vitamin D	7
1.2.12 Physiological Action of Vitamin D	7
1.2.12.1 Action of Vitamin D in Endocrine System	7
1.2.12.2 Non Genomic Action of Vitamin D	7
1.2.12.3 Vitamin D in Non -classical System	8
1.2.12.4 Specific Functions of Active Vitamin D	8
1.2.13 Nutritional Requirements and Dietary Allowance of Vitamin D	9
1.2.14 Food Sources of Vitamin D	9
1.2.15 Vitamin D Deficiency	9
1.2.16 Hyper vitaminosis D	10
1.2.17 Vitamin D and hormone D	10
1.2.18 Biological Mechanisms Relating Vitamin D with Hypertension	10
1.2.18.1 Vitamin D and Renin- Angiotensin System (RAS)	10
1.2.18.2 Vitamin D and Intracellular Calcium homeostasis	10
1.2.18.3 Vitamin D and Other Vascular Mechanisms	11
1.2.18.4 Secondary hyperparathyroidism	11
1.3 Uric acid	11
1.3.1 Physiology	11
1.3.2 Clinical significance	12
1.3.2.1 Hyperuricemia	13
1.3.2.2 Hypouricemia	13
1.3.3 Relationship between hypertension and uric acid	14
1.4 Rationale	16
1.5 General Objective	17
1.6 Specific Objectives	17

Chapter Two: Materials and Methods	
2.1 Materials	18
2.1.1 Study Design	18
2.1.2 Study Area	18
2.1.3 Study Population	18
2.1.4 Inclusion Criteria	18
2.1.5 Exclusion Criteria	18
2.1.6 Collection of Samples	18
2.1.7 Ethical Considerations	18
2.2 Methods	18
2.2.1 Vitamin D Estimation	18
2.2.1.1 Principle	18
2.2.1.2 Procedure	19
2.2.1.3 Calculation of Results	19
2.2.1.4 Detection Limit	20
2.2.1.5 Linearity	20
2.2.2 Uricase /peroxidase for uric acid estimation	20
2.2.2.1 Principle	20
2.2.2.2 Reagent	20
2.2.2.3 Procedure	20
2.2.2.4 Statistical analysis	20
Chapter Three: Results	
Results	21
Chapter Four: Discussion	
Discussion	35
Conclusion	38
Recommendations	38
References	39
Appendices	42

Lists of Figures

Figure	Title	Page No
Figure 3.1	Fig.3.1 Showed frequencies of gender.	21
Figure 3.2	Fig.3.2 Shows mean of uric acid level in study subgroups classified according to vitamin D level.	25
Figure 3.3	Fig.3.3 Shows mean of uric acid level in study group classified as male and female.	26
Figure 3.4	Fig.3.4 Shows mean of uric acid level in study group classified as normal weight ($BMI \leq 25 \text{ kg/m}^2$ and over weight ($BMI > 25 \text{ kg/m}^2$).	27
Figure 3.5	Fig.3.5 Shows mean of uric acid level in study group classified as 40 years and less and more than 40 years.	28
Figure 3.6	Fig.3.6 Shows mean of uric acid level in study group classified as group with disease for 5 years and less and other with disease for more than 5 years.	29
Figure 3.7	Fig.3.7 Shows mean of vitamin D level in study group classified as male and female.	30
Figure 3.8	Fig.3.8 Shows mean of Vitamin D level in study group classified as normal weight ($BMI \leq 25 \text{ kg/m}^2$) and over weight ($BMI > 25 \text{ kg/m}^2$).	31
Figure 3.9	Fig.3.9 Shows mean of Vitamin D level in study group classified as 40 years and less and more than 40 years.	32
Figure 3.10	Fig.3.10 Shows mean of Vitamin D level in study group classified as group with disease for 5 years and less and other with disease for more than 5 years.	33

Lists of Tables

Table	Title	Page No
Table.3.1	Table.3.1 shows frequencies of BMI normal weight ($\text{BMI} \leq 25 \text{ kg/m}^2$) and over weight ($\text{BMI} > 25 \text{ kg/m}^2$) in study group classified as male and female.	22
Table.3.2	Table.3.2 Shows frequencies of gender (male and female) in study subgroups classified according to vitamin D level.	23
Table.3.4	Table.3.4 Shows frequencies of vitamin D level in study group classified as gender that have normal weight and other who have over weight.	24
Table3.4	Table3.4 Shows Pearson correlation analysis showed the correlation between vitamin D and uric acid.	34

List of Abbreviations

Abbreviation	Full Name
A	Absorbance
ATP	Adenosine Tri phosphate
BP	blood pressure
°C	degree Celsius
CD	Cluster of Differentiation
EGTA	Ethylene Glycol Tetra Acetic Acid
GFR	Glomerular Filtration Rate
HLA	Human Leukocytes Antigens
HTN	Hypertension
IUPAC	International Union of Pure and Applied Chemists
PTH	Parathyroid Hormone
PCT	proximal convoluted tubule
RAS	Renin- Angiotensin System (RAS)
Rpm	Round Per Minute
SPSS	Statistical Package of Social Science
TMB	Tetramethylebenzidine
VDR	Vitamin D Receptor