

Dedication

To..

*My life beats , for whom I work to make their dreams , my parents ,
Fatima , Taj Elsir ...*

To ..

*My life half .. with him all my imaginations become a fact .. with him
I hope to see my hearts walk on feet .. my husband .. **Muamer ..***

To ..

*My life brightness , without whom I could not continue smile , my
brothers **Almutaz Bellah , Ali , Abu Bakr ..***

To ..

*My life flavor , me and her shared our way to be one way , my sister
Rehab ..*

To ..

*My life **friends** , they are filling all my days ..*

To ..

*The absolutely necessary person .. the gentle **reader ..***

Reem

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

Eighty eight hypertensive patients were enrolled in this study this study was done in Khartoum state during the period of March to May 2014, Serum vitamin D level for patients was estimated using ELISA competitive assay, serum magnesium level was estimated by spectrophotometer method, data analyzed using t-test and Pearson correlation in statistical package of social science (SPSS)computer program.

Among study population, females (52.3%) and 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 as duration of hypertension increased (P value 0.041).

The correlation analysis between vitamin D and magnesium resulting in no correlation (Pearson's r : 0.019, P value =0.862).

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

ملخص الدراسة

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

وأجريت دراسة مستعرضة وصفية من اجل تقييم مستوى المغنيسيوم في الدم لدى مرضى ارتفاع ضغط الدم فاقد فيتامين (د) وربط مستوى فيتامين (د) والمغنيسيوم مع متغيرات الدراسة (العمر , الجنس, مؤشر كتلة الجسم ومدة المرض).

التحق ثمانية وثمانين من مرضى ارتفاع ضغط الدم في هذه الدراسة التي اجريت في ولاية الخرطوم خلال الفترة من مارس حتى مايو 2014 وقدر فيتامين (د) في مصل الدم للمرضى بواسطة تقنية الإنزيم المناعي المرتبط بينما تم قياس مستوى المغنيسيوم في الدم بالطريقة المعتمدة على جهاز الطيف الضوئي وتم تحليل البيانات باستخدام اختبار (ت) وارتباط بيرسون وذلك باستخدام برنامج الكمبيوتر الحزمة الإحصائية للعلوم الاجتماعية.

أظهرت النتائج ان 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 فاقدات 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), 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). أظهرت النتائج عدم وجود علاقة بين المغنيسيوم وفيتامين (د) وقيمة بيرسون ساوت (0.862). في الختام خلصت الدراسة الى ان مرض ارتفاع ضغط الدم مرتبط بنقص فيتامين (د) الذي يتأثر بالجنس والوزن و مزيدا من الدراسات مطلوب لتحديد العلاقة بين المغنيسيوم ومتغيرات الدراسة (الجنس , العمر, الوزن , ومدة المرض).

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List of Abbreviations

Abbreviation	Full Name
A	Absorbance
BP	Blood Pressure
CD	Cluster of Differentiation
CNS	Central Nervous system
ELISA	Enzyme Linked Immunosorbant Assay
EGTA	Ethylene Glycol Tetra Acetic Acid
GFR	Glomerular Filtration Rate
GI	Gastrointestinal
HTN	Hypertension
HLA	Human Leukocytes Antigens
IU	International Unit
IUPAC	International Union of Pure and Applied Chemists
IV	Intra Venous
PCT	proximal convoluted tubule
PTH	Parathyroid Hormone
SPSS	Statistical Package of Social Science
TMB	Tetramethylebenzidine
UV	Ultra violet
VDR	Vitamin D Receptor