



**Republic of Iraq
Ministry Of higher education & scientific research
University of Babylon
College Of nursing**

Study Liver Function Tests and Hyperuricemia in Hypertension Patients and non-Hypertension Persons.

Submitted to the Department of Dentistry / University of Babylon college of nursing Partial Fulfillment of the Requirements for The Degree of Bachelor of nursing

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا
الْعِلْمَ دَرَجَاتٍ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ"

صدق الله العلي العظيم

سورة المجادلة الآية (١١)

إهداء

إلى كل من أضاء بعلمه عقل غيره

أو هدى بالجواب الصحيح حيرة سائله

فأظهر بسماحته تواضع العلماء

وبرحابته سماحة العارفين.

إهداء

أهدي هذا العمل المتواضع إلى أبي الذي لم يبخل علي يوماً بشيء

وإلى أمي التي ذودتني بالحنان والمحبة

Dedication

To his fragrant biography, and enlightened thought; He was the first credit for my attainment of higher education (My beloved father), God prolong his life.

To the one who put me on the path of life, and made me calm, She nursed me until I was big (My dear mother), God bless her soul.

To my brothers; Those who had a great impact on many obstacles and hardships. To all my honorable teachers; Who did not hesitate to extend a helping hand to me

I dedicate my research to them ..

Acknowledgment

I present to you the most wonderful expressions of thanks and appreciation from a loving heart full of love, tenderness, respect and appreciation for your tireless efforts with us. Since God does not thank those who do not thank people, and since you deserve thanks and praise.

This paper and the research behind it would not have been possible without the exceptional support of my supervisor...His enthusiasm, knowledge and keen attention to detail have been inspiring and kept my work on track from the first real beginning of this research all the way to the bibliography.

Abstract:

Objective: This study aimed to study liver function tests (GOT and GPT) and hyperuricemia in hypertension patients and normal groups, as well as to find out the association among uric acid, blood pressure (systolic and diastolic blood pressure), GOT, GPT, BMI, gender and age. **Methods:** 50 patients were selected as hypertension patients and 50 subjects were selected as non-hypertension subjects and all the information of these participants were recorded by helping these participants and the results of laboratory staff, the age and gender were recorded from the participant, BMI was calculated by using the following equation: $BMI = \text{weight Kg} / \text{Height m}^2$. Systolic and diastolic blood pressure were measured by sphygmomanometer. GOT, GPT and blood uric acid is provided by the recording results of the laboratory in AL-Hindia Hospital. **Results:** The result of this study revealed that there was no significant difference in liver function tests and uric acid levels in the blood of hypertension patients and non-hypertension subjects, while there was a significant ($P < 0.01$) positive relation between blood systolic pressure and uric acid level, as well as there was the same significant ($P < 0.01$) positive relation between both of GPT, GOT level and uric acid level. **Conclusion:** The association between blood systolic pressure and uric acid as well as between GPT, GOT level and uric acid were positive in the hypertension patients.

Keywords: uric acid, blood pressure, hypertension, systolic blood pressure, diastolic blood pressure, GOT, GPT.

Title	Page No.
Introduction	11
methodology	12
Results	13
Discussion	15
Conclusion and Recommendation	16
References	17-20

List of Tables

Title	Page No.
Table 1	13
Table 2	14

1. Introduction:

The prevalence of hyperuricemia and gout is approximately 20% and 4%, respectively [1]. Hyperuricemia is identified when uric acid levels >6.8 mg/dL is widely accepted in the general population [2]. However, there are gender-specific differences in the hyperuricemia criteria with serum urate levels of ≥ 7 mg/dL for men and ≥ 6 mg/dL for women designated as elevated levels [1]. Hyperuricemia or elevated levels of uric acid is a metabolic disorder that is known to be a major precursor for an inflammatory condition called gout. The formation of urate crystals from elevated uric acid levels and subsequent precipitation of those crystals trigger development of gout [3]

Liver function is critical for biosynthesis/metabolism of endogenous compounds as well as elimination of xenobiotics. Hepatic stress from endogenous or exogenous substances initiates liver cell growth which can stimulate liver enzymes such as alanine aminotransferases (ALT), aspartate aminotransferases (AST) and alkaline phosphatase (ALP) [4]. For uric acid biosynthesis, liver is the primary site with the highest protein expression of xanthine oxidase which is the main enzyme responsible for uric acid formation [5]. Thus, hepatocytes are consistently exposed to uric acid at a very high level. Cell culture studies with hepatocytes suggest that uric acid has the capability to cause mitochondrial oxidative stress and thus potentially trigger liver dysfunction [6]. Hypertension affects an estimated 1.13 billion people worldwide and the World Health Organization reports that it is implicated in 13% of deaths.

Objective of the study:

The aim of this study to analyze and find out the links between blood pressure, hyperuricemia and liver function.

Methodology

Patients and method:

The case records of all participant in this study were attending to AL-Hindia Hospital, 50 patients were selected as hypertension patients and 50 subjects were selected as non- hypertension subjects and all the information of these participants were recorded by helping these participants and the results of laboratory staff, the age and gender were recorded from the participant, BMI was calculated by using the following equation:

$$\text{BMI} = \frac{\text{weight Kg}}{\text{Height m}^2}$$

Systolic and diastolyic blood pressure were measured by sphygmomanometer . GOT , GPT and blood uric acid is provided by the recording results of the laboratory in AL-Hindia Hospital.

Statistical analysis:

The data were analyzed by using T test, mean and standard deviations calculation through SPSS program version 23.

Results:

The result of this study revealed that there was no significant difference in liver function tests and uric acid levels in the blood of hypertension patients and non-hypertension subjects, as shown in table 1.

Table1: Liver Function Tests and Uric Acid Levels in the Blood of Hypertension Patients and non-Hypertension Subjects.

Parameter	Hypertension Patients			non-Hypertension Subjects		
	mean	Std. Deviation	p-value	mean	Std. Deviation	p-value
Got	38.255	11.008	N.S	40.210	17.683	N.S
Gpt	35.255	18.782	N.S	40.448	19.202	N.S
uric acid						
<8	7.738	0.937	N.S	7.886	1.018	N.S
≥8	8.093	1.320	N.S	8.059	1.046	N.S

N.S mean no significant difference

The results of correlation among studied parameters revealed that there was a significant ($P < 0.01$) positive relation between blood systolic pressure and uric acid level, as well as there was the same significant ($P < 0.01$) positive relation between both of GPT, GOT level and uric acid level, as shown in Table 2 .

Table 2: The correlation among studied parameters.

Correlations ^c									
		Systolic pressure	Diastolic pressure	Got	Gpt	BMI	Uric acid	age	gender
Systolic pressure	Pearson Correlation	1	.488**	.068	.277	-.036-	.543**	-.294-	-.248-
	Sig. (2-tailed)		.007	.725	.146	.855	.002	.121	.195
Diastolic pressure	Pearson Correlation	.488**	1	-.082-	-.113-	-.151-	.315	-.382-	-.142-
	Sig. (2-tailed)	.007		.671	.559	.433	.096	.061	.463
Got	Pearson Correlation	.068	-.082-	1	.594**	-.154-	.276**	.108	-.381-*
	Sig. (2-tailed)	.725	.671		.001	.426	.047	.578	.041
Gpt	Pearson Correlation	.277	-.113-	.594**	1	-.005-	.483**	-.087-	-.309-
	Sig. (2-tailed)	.146	.559	.001		.981	.008	.653	.102
BMI	Pearson Correlation	-.036-	-.151-	-.154-	-.005-	1	-.033-	-.138-	.036
	Sig. (2-tailed)	.855	.433	.426	.981		.864	.476	.852
Uric Acid	Pearson Correlation	.543**	.315	.276	.483**	-.033-	1	-.392-*	-.264-
	Sig. (2-tailed)	.002	.096	.147	.008	.864		.035	.167
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Discussion:

Hyperuricemia can cause cellular toxicity [27]. In this study the significant positive correlation between uric acid level and liver function as determined by GOT and GPT is agree with another study [28] concluded that elevated uric acid levels pose a higher risk of developing liver cirrhosis and its related severity . the mechanism of uric acid-driven liver dysfunction can be complex and multifaceted and appears to occur through inflammation-related pathways, but we thought this result may be due to the role of hyperuricemia in inducing the oxidative stress, leading to liver cell death or decrease in functional hepatocytes . These events reduce the liver's functional capacity resulting in elevated levels of liver enzyme functions (GOT and GPT) . We can conclude that hyperuricemia may be consider as a high risk of having elevated liver enzyme levels and adults with hyperuricemia need to be appropriately monitored and managed for their liver functions and to prevent associated morbidities.

Conclusion and recommendation

Conclusion

- 1- uric acid is a good predictor for liver function tests and the elevated serum uric acid levels are associated with abnormal liver function.
- 2- There is an association between blood pressure and uric acid level .

Recommendation

adults with hyperuricemia need to be appropriately monitored and managed for their liver functions and to prevent associated morbidities.

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الملخص:

الهدف: تهدف هذه الدراسة إلى دراسة اختبارات وظائف الكبد (GOT) و (GPT) وفرط حمض يوريك الدم في مرضى ارتفاع ضغط الدم والمجموعات الطبيعية، بالإضافة إلى معرفة الارتباط بين حمض اليوريك وضغط الدم (ضغط الدم الانقباضي والانبساطي) و GOT ومؤشر كتلة الجسم والجنس والعمر. الطرق: تم اختيار ٥٠ مريضاً كمرضى ارتفاع ضغط الدم وتم اختيار ٥٠ شخصاً كمواضيع غير ارتفاع ضغط الدم وتم تسجيل جميع معلومات هؤلاء المشاركين من خلال مساعدة هؤلاء المشاركين ونتائج موظفي المختبر، وتم تسجيل العمر والجنس من المشارك، وتم حساب مؤشر كتلة الجسم باستخدام المعادلة التالية: مؤشر كتلة الجسم = الوزن كجم / الطول م^٢. تم قياس ضغط الدم الانقباضي والانبساطي بواسطة مقياس ضغط الدم. يتم توفير GOT و GPT وحمض اليوريك في الدم من خلال نتائج تسجيل المختبر في مستشفى الهند. النتائج: كشفت نتيجة هذه الدراسة أنه لم يكن هناك فرق كبير في اختبارات وظائف الكبد ومستويات حمض اليوريك في دم مرضى ارتفاع ضغط الدم والأشخاص غير المصابين بارتفاع ضغط الدم، في حين كانت هناك علاقة إيجابية كبيرة ($P > 0.01$) بين الضغط الانقباضي في الدم ومستوى حمض اليوريك، فضلاً عن وجود نفس العلاقة الإيجابية الكبيرة ($P > 0.01$) بين كل من GP والارتباط بين الضغط الانقباضي في الدم وحمض اليوريك وكذلك بين GOT level و GPT وحمض اليوريك إيجابياً في مرضى ارتفاع ضغط الدم.

الكلمات المفتاحية: حمض اليوريك، ضغط الدم، ارتفاع ضغط الدم، ضغط الدم الانقباضي، ضغط الدم الانبساطي، GOT، GPT



وزارة التعليم العالي والبحث العلمي
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دراسة اختبارات وظائف الكبد وارتفاع اليوريا بالدم في مرضى ارتفاع ضغط الدم والاشخاص السليمين

مشروع تخرج مقدم الى كلية التمريض جامعة بابل ضمن متطلبات الحصول على
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