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EVALUATING THE LEVEL OF LAMININ, ADH, AND SOME BIOCHEMICAL VARIABLES IN PEOPLE WITH HYPERTENSION

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Abstract:
The ongoing study aimed to evaluate the levels of laminin and ADH and a number of biochemical variables in people with high blood pressure. The study collected 90 samples from both sexes, including 60 samples from sick people and 30 from healthy people. Specialised doctors diagnosed the patients. Their ages included (25-70) years. The specimens were collected from the cardiovascular centre in Balid General Hospital Salah Al-Din, hypertensive patients from 1/10/2023 until 20/12/2023.
This study evaluates the level of laminin, antidiuretic hormone and some biochemical parameters, including- Lipid profiles (Cholesterol(cho), Triglycerides (TG), Low-density lipoprotein cholesterol (LDL-C), High-density lipoprotein cholesterol (HDL-C) and Very low-density lipoprotein cholesterol (VLDL-C)) and Atherosclerosis content.
The results showed that Laminin, Antidiuretic hormone, Total cholesterol, Triglycerides, Low-density lipoprotein cholesterol (LDL-C), Very low-density lipoprotein cholesterol (VLDL-C) and Atherosclerosis content saturation were significantly elevated in the hypertensive patients sample compared with normotensive persons. At the same time, the High-density lipoprotein cholesterol (HDL-C) level shows a significant decrease in hypertensive patients compared with normotensive persons. So, we can conclude that hypertension may affect the laminin level, but ADH, lipid profile and atherosclerosis content increase the blood pressure level.

Keywords: Hypertension disease, Laminin, ADH, lipid profile, Atherosclerosis content.

Introduction

Blood Pressure (BP) is the pressure resulting from the force generated by the heart to pump blood through the circulatory system and blood pressure is considered one of the basic vital signs of life (Yancy *et al*., 2016). High blood pressure is a genetic disease that is defined as the level of arterial blood pressure that can double the risk of cardiovascular disease in the long term (WHO, 2021). Hypertension is one of the most widespread diseases in the world, according to the classification of the World Health Organization. It was and still is one of the

most fatal diseases to humanity, as the death rate due to its complications reaches (5-7) million people annually; therefore, studies and research have given great attention and a wide area to the relationship of this disease, Chronic disease with various biochemical variables because it has broad effects on all body functions as a result of causing metabolic dysfunction in various body functions (Benjamin *et al*., 2017; Whelton *et al*., 2018). According to a WHO report, around the world, about 1.28 billion individuals between the ages of (30- 79) have high blood pressure (Hypertension, 2023). Most people with high blood pressure may not feel any symptoms, but the symptoms identified include headache, blurred vision, chest pain, and other symptoms (Arnett *et al*., 2017). Extremely high blood pressure for a long duration of time may be the main risk factor for causes of heart disease (heart attacks and heart failure), stroke, kidney failure and brain bleeding. and a significant contributor to dementia, disability, premature death, and healthcare costs (Campbell *et al*., 2020; Fuchs *et al*., 2020).

High blood pressure is classified into two types: type 1, which is primary or essential hypertension, and type 2, which is secondary hypertension, where primary high blood pressure is the result of environmental or genetic causes or it may be linked to secondary causes, and it It has many causes, including renal, vascular, and endocrine causes. Primary or essential hypertension represents 90-95% of adult cases, and secondary hypertension represents 2-10% of cases (Kario K, 2022 ; Manosroi & Williams, 2019). Laminin (LN): It is a non-collagenous glycoprotein found in the basement membrane of the ECM. It was first discovered and named by Timpl et al. in 1979 (Timpl *et al*., 1979). LN has Important functions, including adhesion, migration, cell differentiation, cell growth, and inflammatory response, and it also plays an important role in maintaining the basement membrane structure (Yao, 2017). Several studies have shown that LN is closely associated with cardiovascular disease (Xu *et al*., 2022). Antidiuretic hormone(ADH), also called (vasopressin), It is a hormone secreted in the brain from the hypothalamus and stored in the posterior lobe of the pituitary gland. It is essential in controlling the body's osmotic balance, regulating blood pressure, sodium balance, and kidney function. Its increase enhances the reabsorption of water in the kidneys, and in high concentrations, it will also cause vasoconstriction (Boone & Deen, 2008; RW, 1981). Studies have shown that a high increase in vasopressin leads to increased blood pressure. blood (Bankir *et al*., 2005).

Materials & Methods

Design of the study and Subjects: Ninety samples of serum were collected from the Cardiovascular centre in Balid General Hospital in Salah Al-Din City; this was collected from ninety people (sixty serum samples for hypertensive patients and thirty samples for normotensive persons). The time for collecting is from 1/10/2023 to 20/12/2023, and the ages of individuals are between (25-70) years. Specmens were collected before eating (in the morning) due to has lipid sample.

This study includes evaluation of serum Laminin concentration, Antidiuretic hormone, Lipid profiles (Triglycerides (TG)- Total cholesterol(cho)- High-density lipoprotein cholesterol(HDL-C)- Low-density lipoprotein cholesterol(LDL-C) and Very Low-density

lipoprotein cholesterol(VLDL-C)) and calculation of Atherosclerosis content do this in the using of standard methods.

Statistical work:

In this study, we used the SPSS statistical program to analyze the results obtained, and this was done by using a random design for the results using of Duncan test to identify of the variance to identify the differences between the study results at probability levels $p \leq 0.05$, $p \leq 0.01$.

Results:

Rates of Sera Laminin glycoprotein & Antidiuretic hormone (ADH):

The results of **Laminin** and **Antidiuretic hormone** obtained from this study are recorded in table -1**.**

Table-1 appears that the **Laminin** rates significantly elevated at probability $p \leq 0.05$ in hypertensive patients group as compared to the standard group(control), also significantly elevated in **Antidiuretic hormone** levels at probability $p \leq 0.01$ in hypertensive patients group compared to the control group.

Table-1 : Mean ± SD of the level of Laminin and Antidiuretic hormone at the studying group

Groups / Parameters	Mean ± SD		t-value	P-value
	Control	Patients		
Laminin	2145.695±569.617	3754.126±4285.056	2.041	0.044*
ADH	41.503±7.392	84.558±57.155	5.740	0.0001**

The concentration of the Serum Lipid Profiles and Athersclerosis content:

This study also evaluated blood fat levels in the serum of the sample, the Lipid profiles composed from (Triglycerides- Total cholesterol- HDL-C and LDL-C) and Atherosclerosis content in the serum of specimens of hypertensive patients and the normotensive group; the results obtained from this study are recorded in table -2**.**

This study shows a significant increase in the concentration of (Triglycerides- Total cholesterol- LDL-C- VLDL-C and Athersclerosis content) at the level of probability $p \leq 0.01$ between the hypertensive and normotensive group noticed in Table- 2, with significant decrease in the level of high-density lipoprotein-cholestrol at probability $p \leq 0.01$ between the hypertensive and normotensive group was noticed in Table 2.

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Table-2: Mean ± SD of sera Triglycerides, Total cholesterol, HDL-C, LDL-C,VLDL-C and Atherosclerosis content level at the studying group

Groups / Parameters	Mean ± SD		t-value	P-value
	Control	Patients		
Chol	159.60±38.192	281.95±61.689	9.937	0.0001**
TG	112.77±34.514	233.10±99.089	8.438	0.0001**
HDL	54.50±9.913	39.02±6.706	7.718	0.0001**
LDL	82.547±38.583	196.313±60.270	9.406	0.0001**
VLDL	22.553±6.902	46.620±19.817	8.438	0.0001**
Atherogenic	0.329±0.182	0.746±0.245	8.909	0.0001**

Discussion:

The results of the study that were conducted indicated some variables, namely: laminin is show significantly increase in the serum of persons who diagnostic as hypertensive patients compared with control group, studies that doing in the Previous not refer to a study of the laminin with hypertension, but doing it with cardiac disease (Xie *et al.*, 2023) showed a raised in the level of laminin with heart failure, (Cai *et al.*, 2021) who indicate an increase in the level of laminin with cardiovascular disease(hypertension) cases report for the type of this study, but (Favero *et al.*, 2018) disagree with the current study. The significant elevation in ADH in the current study may be a diagnostic for hypertension; this study agrees with the results of (Schill *et al.*, 2021), who found that the antidiuretic hormone raised in patients with hypertension, while the current study disagrees with (Shimamoto *et al.*, 1976) study who refer to decrease in the ADH level in the hypertensive patients.

The level of lipids was also measured in this study, which revealed many results and differences in hypertensive patients compared with normotensive, including significantly elevated of (Total Cholesterol and triglycerides) in the sera of hypertensive patients compared to a control group that agreed with different studies, including (Yeasmin *et al.*, 2019; Zaid *et al.*, 2021), showed significantly elevated in the total cholesterol and triglycerides, so this result are associated with hypertension and increase risk of cardiovascular defect. The significant raised in the (low-density lipoprotein(LDL-C), and very low-density lipoprotein(VLDL-C)) in this study may be a marker for hypertension, this result agrees with the result of (Nayak *et al.*, 2020; Zaid *et al.*, 2021) who indicated that the LDL, VLDL raised in hypertensive patients compared to the control group. The significant low in the high-density lipoprotein in the current study agrees with the different of studies, including (Nayak *et al.*, 2020 Murtadha *et al.*, 2017; Zaid *et al.*, 2021), which indicated a significant decrease in HDL in hypertensive patients compared to the control group, decrease in the level of HDL and increase in the level of LDL, VLDL increase risk of Atherosclerosis due to accumulation of the LDL on the walls of the blood vessels and reduces the elasticity of blood vessels (Tangvarasittichai., 2015).

The results of this study noted a significant rise in the level of atherosclerosis content in the hypertensive patients compared to a control group that agreed with the number of studies

including (Essiarab et al., 2014; Li et al., 2021), that show significantly elevated in the atherosclerosis content. The atherosclerosis content is related to the percentage of lipids; therefore, a high-fat level poses a risk of hypertension (Nansseu *et al.*, 2016; Wyszyńska *et al.*, 2023).

Conclusion:

Based on the results of this study conducted on blood pressure patients, it can be discussed that hypertension may affect the laminin level, but ADH, lipid profile and atherosclerosis content increase the level of blood pressure.

References

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Conclusion:

Based on the results of this study conducted on blood pressure patients, it can be discussed that hypertension may affect the laminin level, but ADH, lipid profile and atherosclerosis content increase the level of blood pressure.

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