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Study of Lipid Profile and Leptin hormone and Adiponectin hormone hypertensive patients in Najaf Governorate

Noor Al-houda D. Al-garawi [1], Ammar A. Suhail[2], Hassan Ayad Kareem[3] and Ghadeer Sabah Bustani[4*]

[1]Faculty of Medical and Health Techniques, University of Alkafeel, Najaf, Iraq.
[2]Faculty of Medical and Health Techniques, Al-Zahrawi University College, Karbala, Iraq
[3]Department of Microbiology, Al-Toosi University College, Najaf, Iraq.
[4]Department of physiology, College of Density, The Islamic University, Najaf, Iraq.
* Corresponding; bustani@iunajaf.edu.iq

Abstract:

Worldwide, hypertension is the major cause of cardiovascular illness and early mortality. Global mean blood pressure (BP) has stayed steady or reduced somewhat during the last four decades due to the widespread usage of antihypertensive drugs. This Study was Conducted on patients with hypertension disease at Al-Sadr City Medical From 5-3-2022 to 15-3-2022. This Study included 40 samples of patients, aged between 31-60 years, and the different variables were compared with the same variables in 40 healthy. This study was conducted to find out the most important changes in the parameters of lipids, leptin hormone and Adiponectin associated with hypertension among patients with high blood pressure in Al-Sadr Medical City and comparing the results with the local and international results, after conducting a statistical analysis of the variables. During this study, an increase in the levels of cholesterol, VDL, LDL and LIPTEN HORMONE was observed, while T.G and ADIPONECTIN HORMONE decreased in both disease groups compared with the control group.

The necessary medical measures must be taken when blood pressure increased for fear of developing the disease, addition to following a special diet to maintain blood pressure in normal range and the diet should be low in lipid.

Kaywords: hypertension, Lipid Profile, Leptin hormone and Adiponectin hormone.

Introduction:

Lipids are essential in the formation of cellular architecture and play critical functions in a variety of cellular activities (Fessler, et al., 2016). It is well recognized that lipid metabolism has a direct impact on inflammatory processes (Im et al,. 2011). Thus, disturbance in lipid metabolism is at the root of many diseases, including cardiovascular disease and diabetes, which are aggravated by chronic inflammation in a number of situations. (Tall et al,. 2015). Cholesterol is a lipid that is necessary for cellular balance. Apart from being a precursor for steroid hormones and a key component of plasma membranes, it also contains lipid rafts and is involved in intracellular signal transduction (Ikonen et al,. 2008; Alibraheemi et al., 2021). Cholesterol is largely generated in the liver and delivered to cells throughout the body as a low density lipoprotein (LDL)-bound form via the circulation. LDL enters cells by clathrin-mediated endocytosis and is transported to lysosomes via the endocytic pathway, where it is digested to release free cholesterol molecules, which are then

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shuttled to the cell membrane and other cell membrane–bound organelles. (Kuzu, et al 2016; Bustani et al., 2022).

Leptin is a satiety factor that is a 16 kDa protein. It is produced by adipocytes and binds to the hypothalamic leptin receptor (Ob-R) to enhance metabolism and decrease hunger, resulting in greater energy expenditure and lower calorie intake. It is a product of the ob gene and is associated with obesity because increasing adipose tissue mass leads to higher leptin levels (Zeidan et al,. 2006). Adiponectin, also known as adipocyte complement-related protein of 30 kDa (Acrp30), AdipoQ, apM1, or GBP28, is an adipokine produced and secreted by both white and brown adipose tissue. In humans, it amounts for around 0.01 percent of total plasma protein (Bambace et al., 2011). In healthy lean individuals, the adiponectin serum levels range between 5 and 30 μg/mL . Adiponectin levels are negatively associated with cardiovascular and metabolic disorders (Bambace et al., 2011), suggesting adiponectin's relevance in the cardiovascular system. Unlike other adipokines like leptin, adiponectin levels in the blood are inversely related to obesity and directly related to insulin sensitivity (Zhu et al., 2008). As a result, significant plasma adiponectin concentrations are necessary to carry out normal physiological processes in the cardiovascular system (Ghantous et al., 2015).

The aim of this study is to determine the levels of lipids and Leptin hormone and adiponectin hormone in hypertensive patients compared with healthy controls.

Materials and Methods

Data were collected from Al-Sadr Medical City of hypertension patient. In Najaf province during 2022. The result Were analyzed by Statistical Analysis System program (SPSS) to study the effects Chi-squared test was used.

Results and Discussion

Data related to samples were collected from the laboratories of Al-Sadr Medical City. The first group is a control group because people in this group do not suffer from blood pressure and for different age groups and for both sexes, males and females, while the rest of the data were divided into two groups and depending on the age group as well as the levels of blood plasma lipid parameters represented by total cholesterol, triglycerides, high and low-density fats, in addition to hormones (Adiponectin and Leptin), as it appears in the following table and the related figures that represent the average values of the lipid parameters and the hormones adiponectin and Leptin for all the data collected and compiled with these figures and the table that the first group showed normal levels for all parameters represented by total cholesterol and triglycerides, as well as each of the good cholesterol transporters, which is High-density lipoprotein, LDL, and the bad cholesterol carrier represented by pro-lipids Low-density lipoprotein (HDL) to the hormones adiponectin and Leptin in both sexes, males and females, as well as all subjects whose data was obtained (Table 1, Figure 1).

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Table1: Representing the average values of the profile lipid parameters and each of the hormones leptin and adiponectin in normal people as well as those with high blood pressure

Age groups	Sex	Cholesterol mg/dl	T.G mg/dl	LDL mg/dl	HDL mg/dl	Leptin	Adiponectin
Control group	Male	163.3±11.6	94.1±6.6	97.5±25.1	52.9±2.2	24.5±3.3	25.1±3.5
	Female	165±15.4	90.3±8.8	97.7±23.3	51.5±4.6	24.4±2.3	26.5±2.4
	Total	164.4±15.9	92.2±7.7	97.6±24.2	52.7±3.4	24.5±4.1	25.8±3.4
Hypertensions patients (30Y)	Male	243.1±35.5	183.1±9.5	190.7±18.5	32.4±6.6	44.9±4.1	16.6±1.5
	Female	248.1±34.6	186.2±11.1	189.3±20.5	31.6±5.8	45.8±3.9	16.3±1.6
	Total	245.5±1.3	184.7±10.3	189.5±19.2	31.8±6.3	45.7±4.1	16.9±1.5
Hypertensions patients (60 Y)	Male	343.2±32.5	206.1±16.3	213.5±25.2	20.9±3.1	58.6±5.4	12.6±2.2
	Female	351.6±31.3	209.2±15.6	214.6±25.2	22.5±3.3	61.2±4.5	12.3±2.3
	Total	347.4±32.2	208.6±15.5	214.1±25.5	21.7±3.2	59.9±4.9	12.4±2.2

While the data related to all of the above-mentioned criteria for one year group and for both sexes showed that there was a significant increase in blood pressure in the second group, whose ages ranged between 30y, total cholesterol, triglycerides, lipoproteins and L-density lipoproteins, as well as the hormone leptin, but it decreased high-density lipoprotein For both sexes when compared to the control group, while the rate of adiponectin hormone decreased in both males and females and the total sum of all data taken from patients, if these results were compared to the first control group, and there were no significant differences in the rates of the values of the mentioned criteria between the sexes for the same age group despite the slight increase of some criteria in favor of males of the same age group, this result agreed with (Kwaifa et al., 2020; Bustani and Baiee 2021). As for the last group, which represents the second pressure group for people over the age of sixty years, the results showed a significant increase in total cholesterol when compared to the first pressure group and for both sexes, as well as for triglycerides, while high-density protein fats decreased for both sexes when compared to the control group on the one hand and the group and the first pressure group, on the other hand, while the rates of the values of low-density lipoprotein and low-density lipoprotein, which are considered the carriers of bad cholesterol, increased if they transport cholesterol from the places where it is made in the liver or from the places where it is absorbed in the walls of the alimentary canal to the blood vessels and circulatory system, which may contribute to the increase in blood pressure is exacerbated by the deposition of this cholesterol on the lining of the arteries (Chang et al., 2006). The internal atherosclerosis, which causes hardening of the arteries, which is called atherosclerosis, was directly proportional to the increase in the level of leptin hormone with the increase in the levels of

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cholesterol and triglycerides, as well as protein and low-density lipids, and inversely with the rate of high-density lipoproteins, as the increase in the rate of leptin was a significant increase when comparing its rates With its counterparts in both the control group and the first stress group for people whose ages ranged between thirty-one and sixty-one years, but the average values of the hormone adiponectin for the same people mentioned for the last group decreased significantly and significantly if compared with their counterparts for the same values of this hormone in both the control group and the group the first pressure, and it is worth mentioning here that all the criteria mentioned did not show significant differences for the same group and for both sexes and for the entire group members(Table 1, Figure 1).

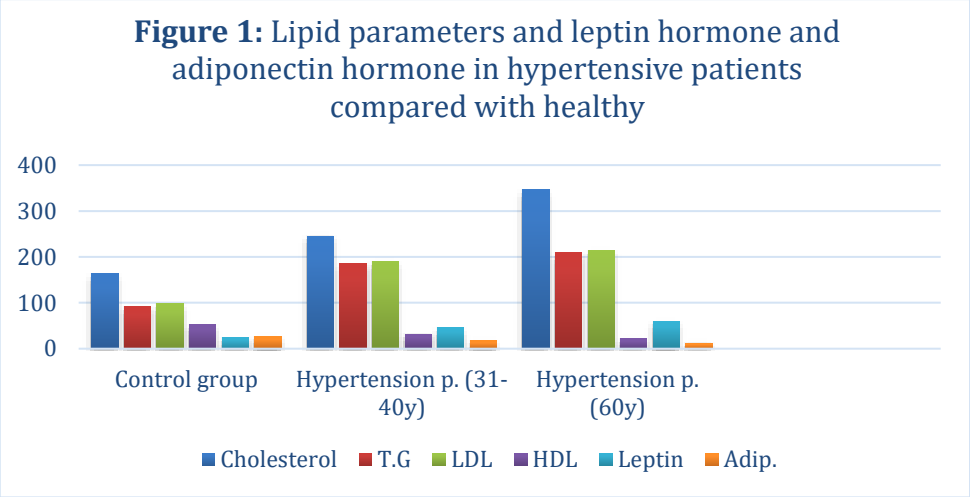

Figure 1: Lipid parameters and leptin hormone and adiponectin hormone in hypertensive patients compared with healthy

Conclusions:

1. We conclude from the current study that many people with hypertension have a significant increase in the level of cholesterol, LDL and T.G, as well as the level of leptin hormone.
2. We conclude from the current study that many people with high blood pressure have a significant decrease in the rate of HDL and Adiponectin hormone.

Authors' Contributions

A.D. N. and S. A.A contributed to the design and implementation of the research, analysis of the results, and preparation of the manuscript.

Conflict of Interest

The authors declare that there were no conflicts of interest in the authorship or publication of this research.

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