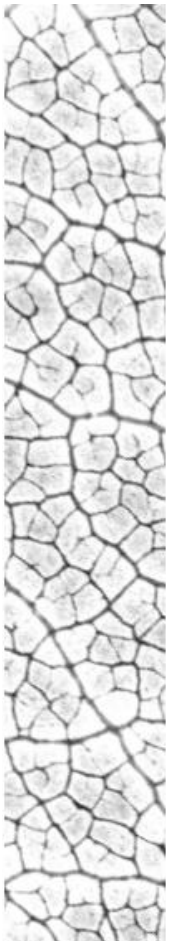

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The relationship between lipid profile levels in women with heart risk factor diseases

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Abstract
The research aims to study the level of fat in the blood of women and clarify the relationship between the different forms of fats in women with heart risk factors diseases. The study included collecting blood samples for 100 females with severe heart disease and 50 healthy females as a control group in Kut city of Iraq. The study presented a elevated concentration of cholesterol, triglycerides, low density-lipoprotein (LDL). and very-low-density-lipoprotein (VLDL) with decreased level of high-density-lipoprotein (HDL) in the group of women with severe cardiac disease compared to the control group. In addition, study found the highest mean concentration of lipid profile was in the group of patients with arteriosclerosis.

Keywords: lipid profile, angina pectoris, hardening of the arterioles, myocardial infarction, high blood pressure

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INTRODUCTION

Heart diseases is frequently believed to be a problem for males. Although, it is the most public reason of death for both males and females in the word (Millett, et al., 2018). Since many heart diseases symptoms in female may differ from those in males (Leening, et al., 2014). The most public symptoms that afflict females with a heart attack are the same as those for males (McDonnell, et al., 2014). Women often describe it as pressure or tightness. It is possible to have a heart attack without chest pain, athrosclerosis is the primary problem in circulatory system where the accumulation of lipid and carbohydrates from blood and blood products, and fibrous tissue from sediment calcium was accompanied by changes in the middle layer of arterioles This stiffness reduces the elasticity of the arterioles, which is one of the factors that contribute to the emergence of high blood pressure (Forouzanfar, et al., 2017). Elevated blood pressure is a chronic disorder in which the blood pressure in the arteries is high. This elevation needs the heart to work harder than usual in order to be able to push blood into the blood vessels (Peters, et al., 2018). Myocardial infraction is an acute, life-threatening heart disease that happens because blood retention as a result of a obstruction in one of the coronary arteries, resulting in injury or complete death to part of the heart muscle (Peters, et al., 2018). There are a number of risk factors that cause a myocardial infarction, such as high blood pressure, smoking, and smoking Exercise, obesity, and hypercholesterolemia in the blood (Richards, et al., 2001). Angina pectoris is a common heart disease, a condition in which there is an imbalance between the oxygenated blood supplying the heart muscle and the heart muscle's needs for oxygenated blood (Hemingway, et al., 2008; Zakharova et al., 2018). Body fat consists of total-cholesterol, TG, high-density lipoprotein (HDL) and low-density-lipoprotein (LDL) and very-low-density-lipoprotein (VLDL) (Ou, et al., 2017). Cholesterol comes from two sources. The first is autogenously from the body itself, as it is made by the liver at a rate of 80%. The second source comes from. the foods at the rate of 20% (Campos, et al., 2010).

MATERIALS AND METHODS

The study included 100 women with severe heart disease and 50 healthy women, for the period between the end of February 2019 until the beginning of September 2019, blood samples were taken from 50 healthy women between the ages (21-52). Likewise, 100 blood samples were collected for women with severe heart disease whose ages ranged between (36 - 71). Blood drawn for patients with heart disease after being examined by specialist doctors and the patients were divided to four groups. The first-group: involved patients

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Table 1. Comparison of Lipid profile parameters for patients with different cardiac diseases with a control group

Disease	Cholesterol.	T.G.	HDL	LDL	VLDL
Hypertension	228.37 ± 39.58	177.98 ±68.63	31.48±5.64	161.29±20.21	35.60±13.73
thrombosis	230.88 ± 42.55	204.60±59.88	31.85±7.86	158.11±22.71	40.92±11.98
Angina pectoris	212.92 ± 34.67	169.89±56.51	32.65±7.98	146.29±11.39	33.98±15.39
Arteriosclerosis	248.65 ± 33.78	228.45±65.21	28.79±4.44	174.17±13.07	45.69±16.27
Control	170.54 ± 26.66	132.59±20.96	45.70±6.87	98.32±15.6	26.52±4.19

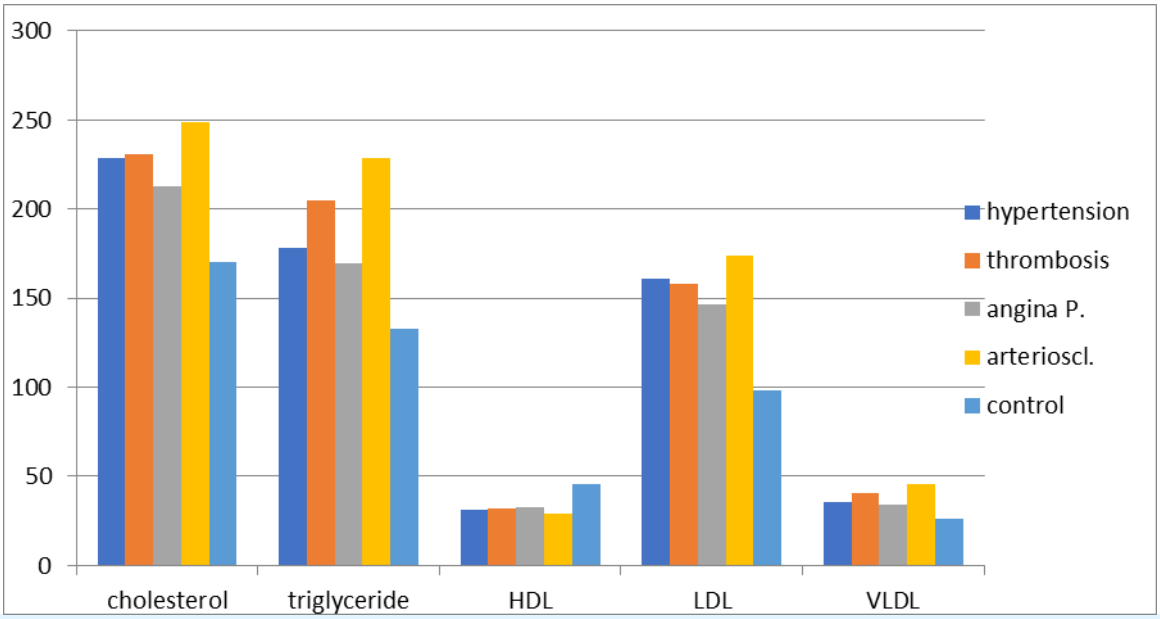

Fig. 1. Comparison of Lipid profile parameters for patients with different cardiac diseases with a control group

with cardiac disease (high blood pressure), and their number reached 27 patients. The second-group: comprised patients with a traumatic heart disease (thrombosis) and their number reached 23 patients.

The third-group: Comprised patients with a disease (angina pectoris), and their number reached 30 patients.

The fourth-group: comprised patients suffering from cardiac disease (arteriosclerosis) and their number reached 20 patients. After obtaining blood from all groups, serum separated into new tubes, the level of cholesterol, triglycerides and HDL was estimated by colorimetric enzyme reagent supplied by Spanish linear chemicals company. Equation was used to calculate the LDL concentration and this equation is: LDL cholesterol. (Mg / dl) = Total cholesterol - (VLDL + HDL). VLDL was calculated by use this equation: VLDL. cholesterol (mg/dl)=Triglyceride(mg/dl)/5 (Warnick, et al., 1990).

RESULTS AND DISCUSSION

The results showed an increase in the levels of total cholesterol (CH), triglycerides (TG), low-density lipoprotein (LDL) and very low-density lipoprotein (VLDL), and a clear decrease in the level of high-density lipoprotein (HDL) in females with severe heart disease compared to their levels in the control group. The females had the highest level of CH, TG, LDL, and VLDL those with arteriosclerosis, whose levels reached (248.65, 228.45, 174.17, 45.69) mg / dL respectively, while the control group was (170.54, 132.59, 98.32, 26.52) mg / dL. While the lowest level of HDL appeared in people with Arteriosclerosis, as it was (28.79) mg / dl, while in the control group (45.70) mg / dl (**Table 1**, **Fig. 1**). This increase is attributed increase in the CH level, there are several causes, including the degradation of the low-density lipoprotein LDL, or the inefficiency of the LDL protein part receptors in tissue also indicates the activity of the enzyme cholesterol acyl transferace, which is responsible for absorption of cholesterol in the intestine, in addition to increasing its synthesis internally in addition to the consumption of meals rich in saturate fat (Nigam, 2011). The increase in the level of TG in the blood, it may be due to the increased activity of the lipase enzyme in the fat cells, causing an increase in the decomposition of stored fats and the release of large quantities of glycerol and fatty acids into the blood Some of them are converted into phospholipids and glycerol, which are transported with triglycerides formed in the liver into the blood, thus resulting in an increase in lipid levels in the blood, as the effectiveness of Lipoprotein lipase (LPL) decreases and leads to a decrease in the removal of TG in serum The high levels of TG in heart patients may be due to metabolic problems in the body or to eating foods rich in fat (Olivecrona., 2016) The decrease in the level of HDL in the body, it may be caused by a defect in the function of the liver as a result of some disease, or due to the high level of CH, TG and LDL in the body, because the function of HDL is to

transport CH from the tissues to the liver (Trigatti, 2017), because the increased concentration These parameters in the blood and tissues lead to a decrease in the efficiency of HDL in transporting cholesterol. Decrease in HDL levels is associated with the risk of coronary heart disease, as the risk of developing coronary heart disease increases when the HDL level falls below 40 mg / dL, and high HDL levels are a protective factor against heart disease risk factors (Wang and Smith, 2014). The high level of LDL in the body in patients with heart disease is an indication of developing coronary heart disease. The function of LDL is to transport cholesterol from the liver to the tissues so that it does not accumulate in the liver (Schmidt, et al., 2016). The body increases the amount of CH in the food that reaches the liver, which leads to a decrease in the efficiency of LDL in transporting cholesterol, and it is believed that it inhibits the process of building LDL receptors, which leads to the gathering of LDL particles in a high concentration in the blood, then they are deposited on the artery wall, causing increase hardening of the arteries (Hyun, et al., 2017), and increased synthesis and formation of this type of lipoprotein and the low removal of it from the plasma. Also, increased triglyceride TG in the liver inhibits the production of APO B and causes an increase in the level of VLDL and an increase in the level of glucose and non-essential fatty acids that affect the regulation of VLDL exit from the liver.

CONCLUSION

Increase level of total cholesterol and triglycerides in women who have heart diseases due to increase level of harmful cholesterol (LDL) and decrease level of beneficial cholesterol (HDL) when compared with women who do not have heart disease.

RECOMMENDATION

Treating high levels of total cholesterol and triglycerides by eating healthy food and doing exercises.

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