Study of the effect of hypothyroidism on the serum cholesterol and albumin level in women in Najaf.

دراسة تأثير نقصان إفراز الغدة الدرقية على مستوى الكولسترول والألبومين في مصل النساء في محافظة النجف

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الخلاصة:
الهدف :لمعرفة تأثير نقصان إفراز الغدة الدرقية على مستوى الكولسترول وألالبومين في مصل النساء.
المنهجية:أجريت دراسة تطبيقية في مستشفى الصدر التعليمي للفترة من نيسان 2013 إلى أب 2013 حيث شملت الدراسة قياس تركيز الألبومين والكولسترول في مصل هم (65) من النساء المريضات بمرض نقصان إفراز الغدة الدرقية. واستخدم الباحث التحليل الإحصائي للبيانات المأخوذة.
النتائج:أظهرت نتائج البحث زيادة معنوية في معدل الكولسترول مقارنة مع مجموعة السيطرة ($P<0.05$) ولم تظهر أي فرق معنوي في معدل الألبومين مع مجموعة السيطرة ($P<0.05$).
الاستنتاجات:هرمونات الغدة الدرقية تؤثر على معدل الكولسترول والألبومين حيث ان نقصان الثايروكسين يؤدي الى تغيير معدل الكولسترول في الانسان.
التوصيات:توصي الدراسة بتقليل نسبة الكولسترول في الدم ممن لديهم نقص إفراز الغدة الدرقية بواسطة استخدام الثايروكسين للمرضى بنقص إفراز الغدة الدرقية لإرجاع الغدة الدرقية للعمل بشكل طبيعي.

Abstract:
Objectives: to study the impact of decreased thyroid secretion on level of serum cholesterol and albumin in serum women.
Methodology: a study in applied AL-sader educational hospital for the period from April 2013 to August 2013 including the study the measuring of concentration of cholesterol and albumin in serum blood of (65) women patient of hypothyroidism .the researcher of used statistical analysis of data.
Results: the search results showed significant increased in the rate of cholesterol compared to control group ($p<0.05$) and non-significant in the rate of albumin compared to control group ($p<0.05$).
Recommendation: the study recommends to decreased the high rate of cholesterol with patient of hypothyroidism by taking thyroxin to erect the thyroid gland to normal action.
Conclusion:
thyroid hormones regulated serum cholesterol and albumin. The decreased serum thyroxin is attributable to the presence of an abnormal human serum cholesterol.
Key words: hypothyroidism, cholesterol, albumin, serum level.

INTRODUCTION:

Thyroid gland is a small endocrine gland found in the front of the neck. It produces the hormones thyroxin (T4) and triiodothyronine (T3) and calcitonin and secretes them into the blood stream. Thyroxin and triiodothyronine important for the regulation of the body's metabolism, affecting heart rate , body temperature and help control the level of calcium in the blood. Every cell in the body depends upon thyroid for regulation of their metabolism(1). Thyroid hormone have a wide variety of action in virtually every organ system. They play a crucial roll in regulating important functions such as cardiac contractility vascular tone , water and normal function of the central nervous system(2). Hypothyroidism is a state in which the thyroid gland does not produce a sufficient amount of the thyroid hormones thyroxin and triiodothyoxin (T3). Iodine deficiency is often cited as the most common cause of hypothyroidism world wide but can be caused by many factors. It can result from the lack of a thyroid gland or from iodine-131 treatment and can also associated with increased stress, severe hypothyroidism in infants can result in cretinism. A 2011l study concluded that about 8% of women over 50 suffer from an underactive thyroid(3). Hypothyroidism is a common disorder in which the amount of hormone secreted by the thyroid gland is

inadequate to meet the body's. As the main function of thyroid hormone is to stimulate metabolism hypothyroidism results in a slower rate of metabolism and it's associated manifestation(4). Environmental iodine deficiency is the must common cause of hypothyroidism a world wide bases(5). Iodine deficiency is the most common cause of hypothyroidism world wide in iodine-replete area of the world, hypothyroidism is most commonly used by Hashimoto´s thyroiditis or other wise as a result of their an absent thyroid gland or a deficiency in stimulating hormones from the hypothalamus or pituitary congenital hypothyroidism is rare cause of hypothyroidism and may result from thyroid a genesis and has an incidence of approximately 1 in 4000 births(6). The decreased in the thyroid hormone causes body metabolism to decrease, which causes symptoms that include fatigue, weight, joint and muscle pain(7).

This study research aim is study thyroid gland hormones disorder (hypothyroidism) and it´s effect in the blood concentration of albumin and cholesterol in the women with hypothyroidism.

MATERIAL AND METHOD:

This study performed in AL-Sader educational hospital in AL-Najaf city during the period from April 2013 to August 2013 were following :

1- Patients group: the number of women (65), women age (20-50).
2- Control group : the number of women (65), women age (20-50).

Was withdrawn (5ml) from the blood and distribution as following:

1- Measure the cholesterol of serum according to Enzymatic colorimetric test (CHOD-PAP).
2- Measure the albumin of serum according to Bromo Gresol Green (BCG).

STATICAL ANALYSIS:

Results were analyzed using the test student T-test system in Excel where the extracted standard deviation (SD) and compare the results between patients and control group below the level ($p<0.05$) .

RESULTS:

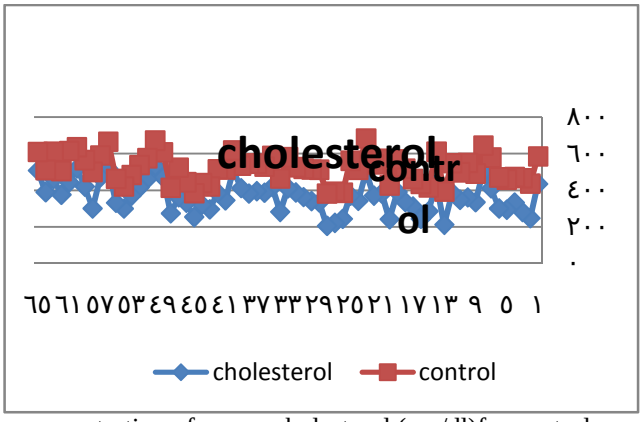
Comparison table shows the concentrations of Cholesterol and Albumin for the women with control group.

Test	Patient group	Control group
Cholesterol	211.92±11.7	165±36.5
Albumin	-26.5±0.95	58.3±31.8

Value represented the average ± standard deviation.

*A significant difference at the level of probability ($p<0.05$).

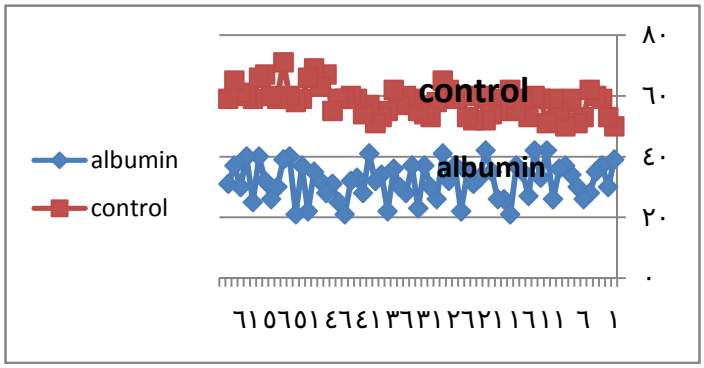
This table shows the(mean±standard deviation for patient group) and the (mean±standard deviation for control group) to albumin and cholesterol.



the concentration of serum cholesterol (mg/dl)for control group

Figure (1,2) shows the high concentration of Cholesterol & Albumin compared to the control group.

Figure (1) shows the high concentration of Cholesterol compared to the control group.



The concentration of serum albumin (mg/dl) for control group

Figure (2) shows the concentration of Albumin compared to the control group.

DISCUSSION:

Thyroid hormones are important for metabolism and growth of every cell in the body(8). Hypothyroidism is when not enough thyroid hormones are produced. When the condition occurs from birth is called congenital hypothyroidism . the adult form of this condition also known as myxodema affects 15 in every 1000 women and one in every 1000 men(9). Liver cells produces about 75% of total blood cholesterol. They need special protein to activate the receptor and thyroid hormones that regulated the expression of this protein(10). The thyroid regulated the basal energy expenditure through their effect or indirect effect by modification of their regulatory hormone such as insulin or catecholamine(11). When the thyroid gland is underactive the body's metabolism is slowed decreased the liver ability to remove cholesterol from circulation elevated cholesterol my be a sign of a diagnosed hypothyroidism. Hypothyroidism decreased the person's liver ability to remove cholesterol from circulation(12). During hypothyroidism the liver responds by decreasing it's production of receptor bad from cholesterol LDL receptors sit on the surface of liver cells and attach to cholesterol in the blood as it filters through. The sequestered cholesterol is then converted into bile acids or made into hormones or other substances with the over all effect of decreasing blood cholesterol levels(13). Hypothyroidism is associated with a atherosclerotic events, we investigated

the effect of oxidative stress and cholesterol on plasma viscosity in female patients with hypothyroidism(14). The majority of serum thyroid hormone (95-99%) are bound to the carrier proteins which are all synthesis in the liver. It seems thyroxin –binding globulin, pre-albumin and albumin carrier 75,20,5% of thyroid hormones with blood circulation respectively(15). The albumin's function is primary as a carrier and helps to maintain oncotic pressure(16). Some metabolites such a acetyl COA appear in the metabolic pathway and the reaction of metabolism can take place. The metabolic of lipid controlled via a complex set of hormonal signals simultaneously. The metabolic process within a given cell are regulated by signals from outside the cell by hormones, hormonal triggering can be added to other levels of control of metabolism(17).

RECOMMENDATION:

the study recommends to decreased the high rate of cholesterol with patient of hypothyroidism by taking thyroxin to erect the thyroid gland to normal action.

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