

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

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

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الخلاصة:

الأهداف: لمعرفة تأثير زيادة إفراز الغدة الدرقية على مستويات الكولسترول والألبومين في مصل النساء.
منهجية البحث: أجريت دراسة تطبيقية في مستشفى الصدر التعليمي للفترة من آذار 2011 إلى آب 2011 حيث شملت الدراسة قياس تركيز الألبومين والكولسترول في مصل دم (53) من النساء المريطات بمرض فرط الغدة الدرقية. واستخدم الباحث التحليل الإحصائي للبيانات المأخوذة.
النتائج: أظهرت نتائج البحث نقصان معنوي في معدل الألبومين مقارنة مع مجموعة السيطرة ($p < 0.001$). ونقصان معنوي في معدل الكولسترول مقارنة مع مجموعة السيطرة ($p < 0.001$).
التوصيات: توصي الدراسة بتعويض نقصان الألبومين والكولسترول في الدم ممن لديهم زيادة إفراز الغدة الدرقية بتناول المتممات الغذائية والغذاء الصحي المناسب لكل حالة.

Abstract:

Objectives: to study the impact of increased thyroid secretion on levels of serum cholesterol and albumin in serum women.

Methodology: a study in applied AL-Sader educational hospital for the period from March 2011 to August 2011 including the study the measuring of concentration of cholesterol and albumin in serum blood of (53) women patients of hyperthyroidism. The researcher used statistical analysis of data.

Results: the search results showed significant decrease in the rate of albumin concentration compared to control group ($p < 0.001$). And a decrease in cholesterol concentration compared with the control group ($p < 0.001$).

Recommendations: the study recommends compensation decrease blood cholesterol and with increased thyroid secretion by addressing the complementary and healthy food appropriate for each situation.

Key words: hyperthyroidism , albumin , cholesterol ,serum level.

Introduction:

Thyroid gland one of the largest glands in the body weight (15-20g) and color with a red butterfly-like shape as consisting of two lobes located in front of the throat on the trachea to the isthmus. extended above the surface of the ante and gland secretion ability to store a quantity greater than any Of her endocrine gland. This gland represents the basis for the generation of energy in the body but it can be said controls the functions f the body as a whole(1). It produce two principle hormones (thyroxin T4 and triiodothyroxin T3) and the secretion of these hormones is regulated by the pituitary gland and the hypothalamus gland(2).

Hormones have wide-ranging effects on the body's metabolism, heart rate, blood pressure and among other functions. Thyroid hormone maintains the rate of body uses fats and carbohydrate, burn calories, and helps in production of protein(3). Hyperthyroidism describes the thyroid gland overactive(4). Hyperthyroidism is common, affecting approximately 2 percent of women and 0.2 percent of mean (5). The increase in thyroid hormone causes body metabolism to increase, which causes symptoms that include heart palpitations, increased heart rate, nervousness, breathlessness, insomnia, muscle weakness, fatigue, weight loss and increased bowel movements. Inflammation of thyroid a condition called thyroidities, can cause hyperthyroidism Grave's disease, a condition that occurs when the immune system creates antibodies against the thyroid gland, also causes hyperthyroidism(6).

This study research aim is study thyroid gland hormones disorder (hyperthyroidism) and it's effect in the blood concentration of Albumin and Cholesterol in the women with hyperthyroidism.

Material and method:

This study was performed in AL-Sader educational hospital in AL-Najaf city during the period from March 2011 to August 2011 as follow :

- 1- Patients group: the number of women (53), women age (20-50).
- 2- Control group : the number of women (53), 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).

Statistical 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 ($p < 0.001$).

Results

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

Test	Patient group	Control group
Cholesterol	143.78±19.061	157.07±19.84
Albumin	34.38±5.58	38.31±7.02

Value represented the average \pm standard deviation.

*A significant difference at the level of probability ($p < 0.001$).

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

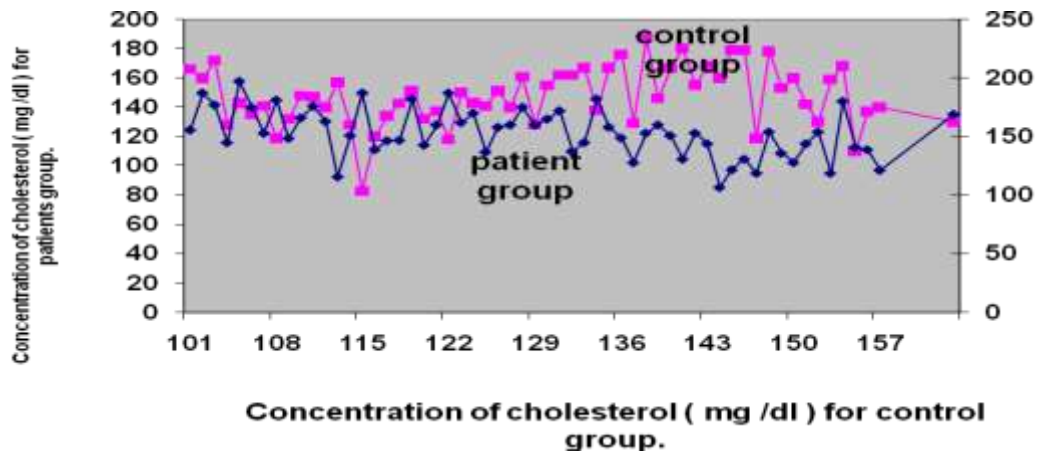


Figure (1) shows the low concentration of Cholesterol compared to the control group.

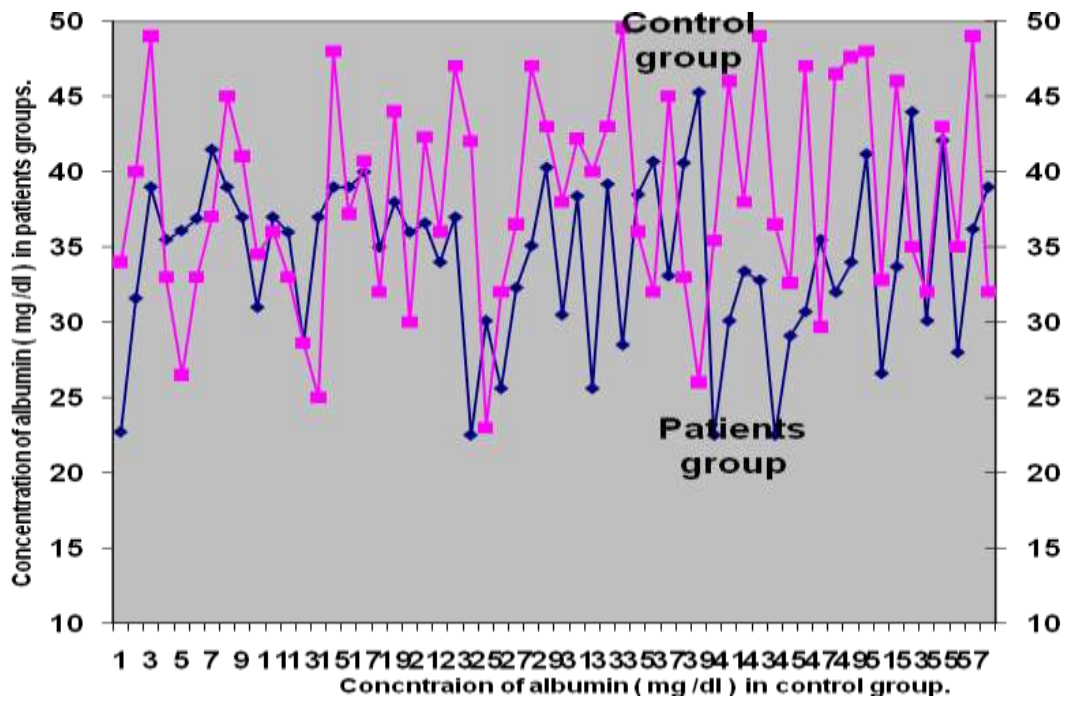


Figure (2) shows the low concentration of Albumin compared to the control group.

Discussion

Thyroid hormones are important for metabolism and growth of every cell in the body (7). The thyroid hormones act directly on mitochondria and control the transformation of the energy into a form of utilizable by the cell (8). The subclinical hyperthyroidism is defined as low TSH (9). The increase in thyroid hormones causes metabolic to increase which cause symptoms that include heart palpitation ,increased heart rate ,insomnia ,muscle weakness ,fatigue ,weight loss and increased bowel movement. The majority of serum thyroid hormones (95-99%) are bound to the carrier proteins which are all synthesis in the liver. It seems thyroxin-binding globulins, pre-albumin and albumin carrier 75,20,5% of thyroid hormones with blood circulation respectively (10). The albumin s' function is primarily as a carrier and helps to maintain oncotic pressure (11). The liver has an important role in thyroid hormone metabolism and the level of thyroid hormones is also important to normal hepatic function and bilirubin metabolism. The liver is the manufactures of proteins that bind thyroid hormone such as thyroxin-binding globulin ,pre-albumin and albumin (12). The increased serum thyroxin is attributable to the presence of an abnormal human serum albumin (HAS) species with enhanced affinity for thyroxin (13). A high albumin level indicates dehydration a low albumin level associated with liver disease. Albumin helps carry some medicines and other substances through the blood and is important for tissue growth and healing. The result in our study of albumin level show that the is decreased with hyperthyroidism that corresponding to (14). Liver cells produces about 75 percent of total blood cholesterol , they need special protein to activate the receptors and thyroid hormones that regulate the expression of this protein. In hyperthyroidism and over protein , the more receptors bind to cholesterol which result in more cholesterol being removed from the blood (15). Thyroid function disorder lead to changes in lipoprotein metabolism that decreased in hyperthyroidism (16). Our result corresponding to fowler result (17). This may be occur because the thyroid hormone regulated the basal energy expenditure through their effect on protein and lipid metabolism. This might be direct effect or indirect effect by modification of other regulatory hormones such as insulin or catecholamine (18). The thyroid hormones regulated serum cholesterol levels at the level of cholesterol catabolism into bile acid in the liver. The liver enzyme catalyzed the first and rate-limiting step in the conversion of cholesterol to bile acids (19). Some metabolites such acetyl-COA appear in the metabolic pathway and the reactions of metabolism can take place. The metabolism of lipid controlled via a complex set of hormonal signals simultaneously. The metabolic processes 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 (20).

Conclusion :

Thyroid hormones regulated serum cholesterol levels and albumin. The increased serum thyroxin is attributable to the presence of an abnormal human serum albumin and cholesterol.

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