

Dedication

To my lovely family.....father, mother, sisters and brothers

To.....

Friends and colleagues, who stood firm behind me and gave me a great push forward

To.....

People who participated fully and helped me a lot to achieve this work

To.....

Everyone from whom I learned

Elmahdi I sam Eldien

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Abstract

This study was carried out during the period (August 2010-May2012) in the order to evaluate the levels of lipids and lipoproteins in the serum of 102 patients suffering thyroid disorder. Three groups were involved in this study. 50 patients suffering hypothyroidism and 52 patients suffering hyperthyroidism and 50 subjects apparently healthy and control group have no any history of thyroid disorder. All the participants were meat at Khartoum teaching hospital and Omdurman Friendship hospital (Chinese hospital), in which all the clinical assessment were done by professional physicians. The biomedical analysis of the samples was performed at the Chinese Hospital, by used spectrophotometer (Bio System BTS-310) and ELISA instrument (Map Lap plus).

The findings obtained from the questionnaire and clinical date of the patients revealed that the two groups of patients under thyroxin replacement therapy or thyroxin lowering drugs.

It is appeared that majority of thyroid disease patients suffering from classical symptoms of the thyroid disorder disease such as fatigue and lack of energy, horse voice, muscle clamp, paraesthesias, cold intolerance and facial puffiness. The study finding also showed that the majority of patients are females and the patients repressing the age of 20-45 years.

In hyperthyroidisms, the levels of T3 and T4 showed significant increase over control value of about 5.0 and 2.5 fold was obtained for T3 and T4 respectively, but TSH hormones showed a reduction of about 92% of control.

In hypothyroidism patients, the opposite results were obtained; T3 and T4 were significantly reduced from control value. A reduction of about 62% and 54% for T3 and T4 respectively was evident. TSH hormone on the other hand was significantly increased up to 300% from control.

When comparing the concentration of T3 and T4 hormones in hyperthyroidism and hypothyroidism patients, the results indicated that T3 and T4 were significantly decreased with an increase of TSH hormone. In hyperthyroidism the opposite situation was seen, an increase in T3 and T4 levels and decrease in TSH level.

The study also showed that no effect of sex and age of the patients on the levels of these hormones.

When screening the lipids levels in hypothyroidism patients compared with hyperthyroidism patients, In hypothyroidism the levels of total cholesterol and LDL-cholesterol were significantly elevated (P.value 0.000 and P.value 0.000 respectively) than control and exceeded the reference normal values, but Triglyceride and HDL-cholesterol remained unchanged and within the normal values (P.value 0.48 and P.value 0.72 respectively).

Under hyperthyroidism condition all lipid parameters remained with remarkable alteration and within the normal reference values.

The study also indicated that sex and the age of the thyroid disorder patients had no effect on the levels of all lipids and change of significant values were seen between the values of patients and control.

The results of this study also showed that the thyroid hormones T3 and T4 were positively correlated in the thyroid disorder patients, but negatively correlated with TSH hormones. Also the hormones T3 and T4 were negatively correlated with Total cholesterol and LDL-cholesterol, and no any correlation occurred between the thyroid hormones and Triglyceride and HDL-cholesterol.

It believed that the cause of LDL-cholesterol in hypothyroidism patients, and this may be attributed to the increase oxidation, insulin- like growth factor was also complicated in the increase of LDL-cholesterol.

From this study it is recommended that patients having hypothyroidism should be treated for hyperlipidemia.

مخلص

أجريت هذه الدراسة خلال الفترة (أغسطس 2010-مايو 2012) لتقييم مستويات الدهون والبروتينات الدهنية في الدم من 102 مريض يعانون مرض اضطراب الغدة الدرقية. وشاركت ثلاث مجموعات في هذه الدراسة. 50 مريضا يعانون قصور الغدة الدرقية، و 52 مريضا يعانون فرط نشاط الغدة الدرقية و 50 شخصا صحتهم جيدة وليس لديهم أي تاريخ من اضطرابات الغدة الدرقية. وجميع المشاركين في الدراسة في مستشفى الخرطوم تعليمي ومستشفى الصداقة أم درمان (المستشفى الصيني)، وقد تم التقييم السريري من قبل أطباء إستشاريي باطنية. وقد أجريت التحاليل الطبية الحيوية للعينات في المستشفى الصيني. وتم إستخدام جهاز التحليل الضوئي (Bio System BTS-310) و جهاز (Map Lab plus) ELISA.

وكشفت النتائج التي تم الحصول عليها من تاريخ الاستبيان للمرضى أن المجموعتين من المرضى تحت العلاج ببدائل تيروكسينية أو مضادات تيروكسينية وأدوية.

وأظهرت الدراسة أن الغالبية العظمى من مرضى الغدة الدرقية لديهم الأعراض الكلاسيكية لمرض اضطرابات الغدة الدرقية مثل التعب ونقص الطاقة، صوت الحسان، و إنقباض في العضلات، وانتفاخ في الوجه. وأظهرت الدراسة أيضا أن الغالبية العظمى من المرضى هم من الإناث.

أظهرت الدراسة أن في مرضى فرط نشاط الغدة الدرقية، إرتفاع مستويات T3 و T4 مقارنة مع مجموعة التحكم على حوالي 5.0 و 2.5 أضعاف التي تم الحصول عليها عن T3 و T4 على التوالي، ولكن في هرمون TSH أظهرت أن هناك انخفاضا حوالي 92% من التحكم.

و أظهرت الدراسة أن في مرضى قصور الغدة الدرقية، أن هناك إنخفاضا بشكل كبير في T3 و T4 مقارنة مع مجموعة التحكم. وكان هناك إنخفاضا حوالي 62% و 54% ل T3 و T4 على التوالي. و من ناحية أخرى حدثت زيادة كبيرة في هرمون TSH تصل إلى 300% من التحكم.

و أشارت النتائج عند مقارنة تركيز هرمونات T3 و T4 في المرضى الذين يعانون فرط نشاط الدرقية وقصور الغدة الدرقية، والتي كانت انخفضت بشكل ملحوظ T4 و T3 مع زيادة هرمون TSH في قصور الغدة الدرقية. فيما كان ينظر إلى الوضع المعاكس، أي بزيادة في مستويات T3 و T4 وانخفاض في مستوى TSH في حالة فرط نشاط الغدة الدرقية.

وأظهرت الدراسة أيضا أنه لا يوجد أي تأثير للجنس والسن في المرضى على مستويات هذه الهرمونات. و أشارت النتائج عند فحص مستويات الدهون في مرضى قصور الغدة الدرقية مقارنة مع مرضى فرط الغدة الدرقية، في قصور الغدة الدرقية كانت مستويات الكوليسترول الكلي والكوليسترول قليل الكثافة، مرتفعة بشكل

ملحوظ من التحكم (P.value 0.000 , P.value 0.000) على التوالي وتجاوز القيم المرجعية طبيعي، ولكن الدهون الثلاثية والكوليسترول عالي الكثافة، بقيت على حالها، وضمن القيم الطبيعية. أما تحت حالة فرط الغدة الدرقية ظلت جميع الدهون والدهون البروتينية لم تتغير تغيير ملحوظ، وضمن القيم المرجعية الطبيعية. وأشارت الدراسة إلى أن الجنس والعمر من مرضى اضطراب الغدة الدرقية لم يكن لها أي تأثير على مستويات جميع الدهون. نتائج هذه الدراسة أظهرت أيضا أن هناك علاقة إيجابية على هرمونات الغدة الدرقية T3 و T4 في المرضى الذين يعانون اضطرابات الغدة الدرقية، ولكن عكسيا مع هرمونات TSH. أيضا كانت هناك علاقة سلبية على الهرمونات T3 و T4 مع الكوليسترول و الكوليسترول قليل الكثافة، وليس هناك أي ارتباط بين هرمونات الغدة الدرقية والدهون الثلاثية والكوليسترول مرتفع الكثافة.

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Abbreviations

Anti-TPO	Antithyroid peroxidase
Apo	Apo lipoprotein
CHD	Coronary Heart Disease
HDL-c	High Density Lipoprotein – Cholesterol
HRP	Horseradish peroxidase
IDL	Intermediate Density Lipoprotein – Cholesterol
IHD	Ischemic Heart Disease
LDL-c	Low Density Lipoprotein – Cholesterol
Lp	Lipoprotein
LPL	Lipoprotein Lipase
OD	Optical Density
SLE	Systemic Lupus Erythematosus
T3	Triiodothyronine
T4	Tetraiodothyronine
TC	Total Cholesterol
TG	Triglyceride
TMB	Tetramethylbenzidin
TRH	Thyrotropin Releasing Hormone
TSH	Thyroid Stimulation Hormone
VLDL	Very Low Density Lipoprotein – Cholesterol