

ABSTRACT

A prospective study was conducted during the period 2001 to 2003 at Omdurman maternity, Khartoum teaching and Khartoum North teaching hospitals.

One hundred and twenty Sudanese pregnant women at different stages of pregnancy were chosen for this study. Forty non-pregnant women of the same age without endocrine disease were chosen as control. Thyroid hormones total (T_4 and T_3) and free (FT_4 and FT_3) were measured. In addition TSH, hCG and TG were also measured in both groups.

The Study group were divided according to the gestational age (weeks) into three subgroups: - First trimester 5 – 12 weeks, second trimester 13 – 27 weeks and third trimester 28 – 40 weeks. Determination of serum hormones concentration was carried out using a highly sensitive specific RIA technique.

The results of this study showed that there was an increase in concentration of total thyroid hormones (T_4 and T_3), but the increase did not proceed at steady level during the different trimesters both hormones increase significantly in all trimesters compared with control group and continued thereafter, but at slower rate.

Mean serum free T_4 increase significantly during the first trimester, while the increase in T_3 concentration was not significantly different compared to non-pregnant women. Free T_4 and free T_3 decreased significantly during second and third trimesters of pregnancy compared with non-pregnant women.

Thyroid stimulating hormones (TSH) level remained within the normal range throughout pregnancy period although pregnant women had suppressed

Below normal range in the first trimester(12.5%).

The concentration of human chorionic gonadotrophin hCG increased highly significantly in the first trimester, but decreased sharply in the second and third trimesters. Thyroglobulin increased in all three trimesters of pregnancy compared to control group, however the greatest elevation was detected during the first trimester.

The results of this study showed that the increase of hCG in the first trimester has stimulating effect on thyroid gland, although TSH remains within the normal range, this indicated that the increase of free thyroxine hormone concentration during pregnancy may be due to the increase in hCG only this indicated that the changes of thyroid hormones during pregnancy were physiological resulted from The pituitary gland has no stimulating effect on thyroid gland during normal pregnancy.

بسم الله الرحمن الرحيم

الخلاصة

اجريت هذه الدراسة في الفترة من 2001 وحتى 2003 حيث كان مكان الدراسة في مستشفيات (الولادة امدرمان، الخرطوم التعليمي وبحري التعليمي) فى هذه الدراسة تم الحصول على عينات مصل فردية من مائة وعشرون امرأة سودانية حامل فى مختلف فترات الحمل واربعون حالة غير حامل كتحكم فى نفس العمر وغير مصابات باى من امراض الغدد الصماء , لدى هؤلاء النسوة تم قياس هرمونات الغدة الدرقية الكلية "الثيروكسين والثيروكسين ثلاثى اليود" وكذلك الهرمونات الحرة "الثيروكسين الحر والثيروكسين ثلاثى اليودالحر" كما تم ايضا قياس الهرمون المحفز للغدة الدرقية وهرمون الحمل والثيروكلوبولين اثناء فترة الحمل والتي تم تقسيمها الى ثلاثة فترات اعتمادا على مدة الحمل وباللغة اربعون اسبوعا كما يلى الفترة الاولى (5 - 12 اسبوعا)الفترةالثانية (13 - 27 اسبوعا) و الفترة الثالثة (28 - 40 اسبوعا). عدد العينات فى كل طور بلغ اربعين عينة ولقياس هذه الهرمونات تم استخدام الطريقة العالية الحساسية والعالية الدقة وهى طريقة المقايسة المناعية الاشعاعية . اظهرت هذه الدراسة ان مستويات هرمونات الغدة الدرقية الكلية (الثيروكسين والثيروكسين ثلاثى اليود) تزداد خلال الحمل بصورة غير منتظمة , الثيروكسين الكلى والثيروكسين ثلاثى اليود الكلى ارتفعا بصورة ذات دلالة احصائية مقارنة بالنساء غير الحوامل واستمر الارتفاع بصورة بطيئة حتى نهاية الحمل.

متوسط هرمونات الغدة الدرقية الحرة (الثيروكسين الحر والثيروكسين ثلاثى اليود الحر)ارتفعا فقط فى الفترة الاول مقارنة بالنساء غير الحوامل والنساء فى كل من الفترتين الثانية والثالثة, ارتفاع الثيروكسين الحر كان ذا دلالة احصائية بينما لم يكن ارتفاع

الثيروكسين ثلاثى اليود الحر ذا دلالة احصائية مقارنة بالنساء غير الحوامل .

خلال الفترتين الثانية والثالثة من الحمل مستوى الهرمونات الحرة قد انخفض كثيرا بصورة ذات دلالة احصائية مقارنة بالنساء غير الحوامل والنساء فى الفترة الاولى ولكن بشكل متدرج اما الهرمون المحفز للغدة الدرقية فقد ظل فى مستواه الطبيعى فى كل فترات الحمل الثلاثة الا انه انخفض فى حوالى 12.5% من جملة الحالات فى الفترة الاولى من الحمل, بينما ارتفع هرمون الحمل بصورة كبيرة خلال الفترة الاولى ثم انخفض بشكل حاد فى الفترتين الثانية والثالثة على الترتيب. اما الثيروكلولين ارتفع فى كل فترات الحمل مقارنة مع النساء غير الحوامل رغم انه ارتفاعه كان ذا دلالة احصائية فى الفترة الاولى فقط .

خلصت الدراسة الى ان ارتفاع هرمون الحمل والذي وجد فقط اثناء الفترة الاولى من الحمل له تاثير محفز لهرمونات الغدة الدرقية اثناء الحمل مع وجود مستوى طبيعى للهرمون المحفز للغدة الدرقية مما يدل على ان التغير فى هرمونات الدرقية هى تغيرات فسيولوجية ونتاجة عن عدم تأثير الغدة النخامية على تحفيز افراز هرمونات الغدة الدرقية اثناء الحمل .

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LIST OF ABBREVIATION

<u>Abbreviation</u>	<u>Full name</u>
Ab	Antibody
Ag	Antigen
ATA	Anti Thyroid Antibodies
ATG	Anti Thyroglobulin
ATDS	Anti Thyroid Drugs
BMR	Basal Metabolic Rate
FSH	Follicular Stimulating hormone

FTF	Free Thyroxine Fraction
FT₃	Free Triiodothyronine
FT₃I	Free Triiodothyronine Index
FT₄	Free Thyroxine
FT₄I	Free Thyroxine Index
GD	Grave's Disease
GH	Grave's Hyperthyroidism
hCG	human Chorionic Gonadotrphin
IDD	Iodine Deficiency Disorders
IgA	Immunoglobulin A
IRMA	ImmunoRadioMetric Assay
KD	Kilo Dalton
LH	Lutinizing Hormone
NSB	Non Specific Binding
PPTD	Postpartum Thyroid Disorders
PTU	Propyl Thyrouracil
RAIU	Radio Active Iodine Uptake
RIA	RadioImmunoAssay
rT₃	reverse Triiodothyronin
SEM	Standard Error Mean
TBG	Thyroxine Binding Globulin
TBPA	Thyroxine Binding Prealbumin
TBP	Thyroxine binding proteins
TBP-T₄	T ₄ bound to thyroxine binding proteins
TG	Thyroglobulin
TG Ab	Thyroglobulin Antibody
THBR	Thyroid Hormone Binding Ratio
TM Ab	Thyroid microsomal Antibody
TPO	Thyroperoxidase
TRH	Thyroxine releasing hormone
TSA	Thyroid Stimulating Antibodies
TSH	Thyroid Stimulating Hormone
TSI	Thyroid Stimulating Immunoglobulin
TV	Thyroid Volumes

T₃	Triiodothyrynine
T₄	Total Thyroxine
U-TBP	Unoccupid T4-binding site on proteins
WHO	World Health Organization
βhCG	Human Chroionic Gonadotrophin

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