Sudan University of Science and Technology

Collage of graduate studies

Comparative Study for Thyroid Abnormalities Assessment using Tc-99m and RIA

دراسة مقارنة تقويمية لتغيرات الغدة الدرقية بواسطة التكنشيوم-99م و الفحص الهرموني المناعي الإشعاعي

A thesis submitted for partial fulfillment of the M.Sc. requirement in Diagnostic Radiologic Technology

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October, 2010

Dedication

To the soul of my father

To my mother

To my brothers and sisters

To my husband

To my uncles

To my teachers, friends and colleagues for their inspiration, Encouragement and guidance

Acknowledgement

My acknowledgements and gratefulness at the beginning and at last is to God who gave us the gift of the mind. Profound thanks and gratitude to everyone who encouraged me to complete this thesis. My gratitude is extended to my supervisor **Dr. Mohamed Elfadil** , for his advice, encouragement and for many helpful suggestions .

I wish to acknowledge and thanks **Dr.Yasar Albushra** for his scientific help to fulfill this project.

My gratitude is also extended to my colleagues in College of Medical Radiological Sciences, and special thanks for the continuous help. My gratitude extends to **Colonel . Tagelsir Altayeb** for their continuous help and support.

Finally I would like to warmly thank of my long-suffering family for never-ending support. May almighty God bless them.

Abstract

The study was conducted at the department of Nuclear Medicine at the Radiation and Isotope Center of Khartoum RICK during the period from October 2009 to June 2010 . The aim of the study was to evaluate the abnormal thyroid by using ^{99m}Tc uptake and Radioimmunoassay for 50 patients, they were selected randomly from the daily clinic to the department (39 female and 11 male) . The mean age of the patient was 41,8± 15,1 which is range from 12 to74 years. The result showed that, variable disorder like diffuse goiter , multi nodular goiter , diffuse simple goiter, cold nodule and hot nodule. There is higher incidence of thyroid abnormality in female than male 4:1, while 50% of patient their age range from 21-40. The shape of thyroid (i.e. regular and irregular) and homogeneity of radiotracer (i.e. homogeneous and inhomogeneous) has no effects on the T3, T4, TSH and uptake. But these quantities were affected by the age factor in a linear fashion; inversely with the TSH and uptake, and directly with T3 and T4. As well the thyroid uptake was linearly associated with the T3 and T4 inversely, while with TSH was directly.

الخلاصة

أجريت هذه الدراسة في المركز القومي للعلاج بالأشعة والطب النووي قسم التصوير بالنظائر المشعة (الخرطوم) في الفترة من إكتوبر 2009م ألي يونيو 2010م.

الهدف من الدراسة تقويم الغدة الدرقية بإستخدام التصوير التكنيشيوم المشع والفحص الهرموني .

تم إختبار خمسون مريضاٍ عشوائي من المرضي الذين يحضرون يومياً للقسم (تسعه وثلاثون إمراة وأحد عشرة رجلاً) في الفئة العمرية بين 12: 74 سنة.

اظهرت النتائج اضطرابات مختلفة مثل الدراق المنتشر والغدة متعددة الاورام و الدراق البسيط والعقيدات الباردة والعقيدات الساخنة.

هنالك انتشار لامراض الغدة الدرقية فى النساء اكثر من الرجال بنسبة 4 :1 . بينما نصف المرضى فى الفئة العمرية بين واحد وعشرون الى اربعون سنة . شكل الغدة (منتظم او غير منتظم) وتجانس المادة المشعة اوعدم التجانس ليس لهم تاثير فحص هرمونات الغدة . ولكن الهرمونات والامتصاص لها تاثير بالعمر تناسب عكسيا مع TSHوالا متصاص وطرديا مع T3وT4 .

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List of Abbreviations

ACTH	Adrenocorticotropin Hormone
APUD	Amine Precursor Uptake and Decarboxylation
CT	Computerized Tomography
FH	Family History
IDD	Iodine Deficiency Disorders
MEN	Multiple Endocrine Neoplasia
MNG	Multi Nodular Goitre
MRI	Magnetic Resonance Imaging
RIA	Radioimmunoassay
RICK	Radiation and Isotope Center of Khartoum
SPSS	Statistical Package for Social Sciences
TBG	Thyroxine-Binding Globulin
TFT	Thyroid Function Test
TSH	Thyroid Stimulating Hormone
T4	Thyroxine
T3	Triiodothyronine
WHO	World Health Organization

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