

الآية الكريمة

قال تعالى :

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(سورة طه)

Dedication

To my parents,

My wife,

My children,

My teachers,

And my friends

For giving me a never-ending gift of encouragement, love and patience.

Acknowledgement

I would like to thank everyone who assisted by one way or another to bring this study to the light. I would like to express my sincere gratitude to **Professor Dr. Bushra Hussein Ahmad** who has given me great advice and help in the whole process of my thesis, and my co-supervisor **Dr. Alsafi Ahmad Abdulla** and **Dr. Ibrahim Abass** for their fruitful day to day supervision, guidance, endless help and encouragement that built confidence in my work for their valuable and continuous help and guidance and for their patience through all the years that made this work possible for giving this opportunity of study, and for endless encouragement and unlimited support. My thanks extend also to colleagues in Radiology Department King Abdalaziz University Hospital, colleagues in Faculty of Applied Medical Sciences for participating in this study. Miss Yasmien for performing the computing serviced. Dr.Naushad A. Radiologist in the Diagnostic Radiology Department, My friends for their assistance in many social activities through all the periods of the study. My family for the generous and endless support through all my life.

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Abstract

This is a prospective, consecutive study of thyroid patients referred for ultrasound for the period of 2011 to 2014 at King Abdulaziz University hospital (KAUH) In Jeddah.

Problem of the study lies in the interest research that have been made about the role of ultrasound imagine in monitoring differentiate benign from malignant thyroid nodule and lack of diagnosis to see who should the biopsies sample and who need to follow medical only.

Importance of the study is to take advantage of the use of ultrasound system plasticity in description Thyroid disease monitoring predicting characteristics that indicate the presence of slag between thyroids nodules among patients in the study sample and comparing the results with results of cytology.

Objectives of study are:

- ◆To take advantage of the characteristics of the ultrasound description of Thyroid disease
- ◆To evaluate the elastographic appearances of thyroid nodules.
- ◆To determine whether ultrasound elastography (USE) may assist in differentiating benign from malignant thyroid nodules.
- ◆To evaluate the diagnostic utility of conventional US and real time ultrasound elastography in differentiating degenerating cystic thyroid nodule with malignancy.

The study monitored a sample of 300 patients (270 females, and 30 males). 300 nodules in 300 patient examined by B-mode Ultrasound and color flow Doppler showed 94 (31%) malignant nodules and 206 (69%) were benign with sensitivity of 72.4%, specificity of 78.7%, a positive predictive value of 93%, a negative predictive value of 41% .

170 patients from the total 300 patients were also examined by B-mode Ultrasound, color flow Doppler, ultrasound elastography and FNAC. Final diagnoses were obtained from fine needle aspiration.

Elastography showed 34 (20%) malignant nodules and 136 (80%) were benign. Sensitivity and specificity of the Ultrasound elastography for thyroid cancer diagnosis were 93.1% and 90.7 % respectively. The positive and negative predictive values were 72% and 98%, respectively. The accuracy of the technique was 91%.

Color flow Doppler showed 25 (15%) malignant nodules and 145 (85%) were benign. Specificity of the Ultrasound Doppler for thyroid cancer diagnosis was 86% and 77 %.

Cytology diagnosed 29 (17%) as malignant (MN) and 141(83%) as benign nodules (BN),

المستخلص

هذه دراسة متتالية استباقية لعينة مكونة من جميع مرضى الغدة الدرقية المحالين للموجات فوق الصوتية للفترة من عام 2011 وحتى 2014 م بمستشفى الملك عبد العزيز الجامعي- جدة - المملكة العربية السعودية.

مشكلة الدراسة تكمن في فائدة الموجات الصوتية في رصد وتوقع الخبث في العجيرات الدرقية وذلك باستخدام الموجات فوق الصوتية - الدوبلر ونظام اللدونه وقلة التشخيص للعجيرات الدرقية لمعرفة اى منها يجب ان تؤخذ منها عينة وای منها يحتاج لمتابعة طبية فقط.

اهمية الدراسة تتمثل في الاستفادة من استخدام الموجات فوق الصوتية - الدوبلر ونظام اللدونه في وصف امراض الغدة الدرقية وتوقع رصد الخصائص التى تشير الى وجود الخبث بين العجيرات الدرقية بين المرضى فى عينة الدراسة ومقارنتها بنتائج فحص عينة خلايا الابريرة الرفيعة. اهداف الدراسة :

- الاستفادة من خصائص الموجات فوق الصوتية فى وصف امراض الغدة الدرقية
 - الاستفادة من نظام التصوير باللدونه فى الموجات فوق الصوتية فى تمييز وتحديد وتقييم العجيرات الدرقية كموشرات لرصد الخبث من الحميد.
 - تقييم خصائص الموجات الصوتية والتصوير باللدونه فى تشخيص العجيرات الدرقية الخبيثة.
- استخدم الباحث الاستبيان لجمع المعلومات فى عينة البحث و فى التحليل تم استخدام برنامج التحليل الاحصائى **SPSS** ومن ثم رصد الخصائص المرئية لوصف امراض الغدة الدرقية.
- أجريت الدراسة علي عينة مكونة من 300 مريض (270 امراه 30 رجل). ومن اصل 300 عجيبة مشتبهة في أن بها خبث من 300 مريض فحصوا بالموجات فوق الصوتية والدوبلر الملون، شخصت بعدد 94 عجيبة (31%) بعجيرات خبيثة وعدد 206 عجيبة (69%) بعجيرات حميدة. بحساسية (72.4%) ودقة تحديد النوع (78.7%) والقيمة التنبؤية الايجابية 93% والقيمة التنبؤية السلبية (41%). كما تم فحص 170 مريض- وهم الذين حضروا للكشف بكل الوسائل الفحصية مجتمعة- بواسطة الموجات فوق الصوتية وموجات اللدن (elastography) وتمت المقارنة مع نتائج التشخيص النهائي لعينة خلايا الابريرة الرفيعة و حيث وجد ان عدد 34 (20%) عجيبة خبيثة و عدد 136 (80%) عجيبة حميدة. مع حساسية ونوعية (93.7%) و (92%) على التوالي، وكانت القيم التنبؤية الايجابية والسلبية (72%) و (98%) على التوالي. و تم فحص نفس الحالات بالموجات الصوتية - نظام الدوبلر

وتم التشخيص النهائي ان عدد 25 (14.7%) عجيرات خبيثه (145) (85.3%) حميده مع حساسيه ودقة النوع بنسبة 86% و 77% على التوالي.

والتشخيص الهائى بالابره الرفيعه اثبت ان 29 عجيرات خبيثه (17%) و 141 عجيرات حميده (83%)

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List of Terminology

Abbreviation	Name
US	Ultrasound
CDI	Color Doppler Imaging
FNNA	fine needle nonaspirationbiopsy
CFI	Color Flow Mapping
CPD	Color Pixel Density
FNAB	Fine Needle Aspiration Biopsy
FTC	Follicular Thyroid Carcinoma
HV	Hounsfield Unit
ICD	International Classification of Disease
ITA	The Inferior Thyroid artery
PTC	Papillary Thyroid Carcinoma
PTH	Parathyroid Hormone
PW	Pulse Wave Doppler
TC (THC)	Thyroid Cancer
TSH	Thyroid Stimulation Hormone
UTA	The Upper Thyroid artery
TRF	Thyroid Releasing Factor
T4	Thyroxine
T3	Triiodothyronine
TRH	Thyrotropin Releasing Hormone
Hz	Hertz
PEI	precutaneous ethanol injection
PLA	precutaneous laser ablation
PGI	precutaneous glucocorticoid injection

L	Length
D	Depth
W	Width
Vol	The volume
CDUS	color Doppler US
TRF	Thyroid releasing factor
MNG	Diffuse and multinodular goiter
TSI	Thyroid-stimulating immunoglobulin's
MEN.	Multiple endocrine neoplasia
APUD	Amine Precursor Uptake and Decarboxylation
ACTH	Adrenocorticotropin
TDC	Thyroglossal cyst
kPA,)	Kilopascals