

Updates in Ultrasound and Dopplar Studies of Thyroid Nodules

Essay

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Radiodiagnosis*

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وَقُلْ اَعْمَلُوا فَسَيَرَى اللَّهُ
عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ

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Contents

Chapter	Page
Introduction and aim of the work	1
Anatomy of Thyroid Gland	3
Pathology of Thyroid Nodules	14
Physics and technique of US and Doppler scan of thyroid gland	29
US and Doppler findings of Thyroid nodules	36
Summary and conclusion	79
References	82
Arabic summary	١

LIST OF ABBREVIATIONS

Abbreviation	Name
2D	Two dimensionals
3D	Three-dimensional
3D US	Three dimensional Ultrasound
AJCC	American Joint Committee on Cancer
ATA	American Thyroid Association
CEUS	Contrast enhanced ultrasound
CT	Computed Tomography
FNA	Fine Needle Aspiration
FNAB	Fine Needle Aspiration Biopsy
LN / LNs	Lymph node / s
MHz	Mega Hertiz
ML	Milliliter
MM	Millimeter
MRI	Magnetic resonance imaging
PI	Pulsality Index
PSV / SPV	Peak systolic velocity / systolic peak velocity
RI	Resistive index

SD	Standard deviation
UICC	Union Internationale contre le Cancer
US & U/S	Ultrasonography

List of figures

Chapter 1 "Anatomy of Thyroid Gland"		
Figure 1.1	Graph illustrates thyroid gland anatomy	4
Figure 1.2	Graph illustrates muscular covering of the thyroid gland	4
Figure 1.3	Graphic lateral view showing posterior and medial relations of thyroid gland	5
Figure 1.4	Graphic Posterior view showing medial and posterior relations of thyroid gland	6
Figure 1.5	Graph illustrates Blood supply of thyroid gland	8
Figure 1.6	Graph illustrates Distribution of thyroid arteries and veins	8
Figure 1.7	The imaging-based nodal classification	10
Figure 1.8	Normal U/S anatomy of thyroid in transverse view	11
Figure 1.9	Normal U/S appearing thyroid in longitudinal view	12
Figure 1.10	Normal U/S measurements appearing thyroid gland	13
Chapter 2 "Pathology of the Thyroid Nodules"		
Figure 2.1	Gross picture of follicular adenoma	15
Figure 2.2	Microscopic picture of follicular adenoma	16
Figure 2.3	Gross & microscopic picture of colloid nodule	17
Figure 2.4	Gross picture of Hashimoto's thyroiditis	18
Figure 2.5	Gross picture of multinodular goiter	19
Figure 2.6	Microscopic picture of multinodular goiter	20
Figure 2.7	Gross picture of papillary carcinoma	22
Figure 2.8	Microscopic picture of papillary carcinoma with psammoma bodies	23
Figure 2.9	Gross picture of follicular carcinoma	24
Figure 2.10	Microscopic picture of follicular carcinoma	24

Figure 2.11	Gross picture of medullary carcinoma	25
Figure 2.12	Gross picture of Anaplastic carcinoma	26
Chapter 3 " Physics & technique of US and Doppler scan of thyroid "		
Figure 3.1	Color Doppler of the superior thyroid artery in oblique sagittal plane	32
Figure 3.2	Color Doppler of the inferior thyroid artery in oblique transverse plane	33
Chapter 4 "US and Doppler findings of Thyroid nodules"		
Figure 4.1	U/S of ovoid to rounded shape	38
Figure 4.2	U/S of taller than wide nodule	39
Figure 4.3	U/S of irregular shape nodule	39
Figure 4.4	U/S features of different thyroid margins	41
Figure 4.5	US features of solid and predominantly solid nodules	42
Figure 4.6	US features of mixed solid and cystic nodule	43
Figure 4.7	US features of predominantly cystic & cystic nodules	43
Figure 4.8	US findings of spongiform appearance	44
Figure 4.9	Micro-calcification within nodule as echogenic focus	45
Figure 4.10	U/S picture of comet tail and ring down artefacts	46
Figure 4.11	Macrocalcification (arrow) in center of nodule	47
Figure 4.12	Rim calcification in small nodule (calipers)	48
Figure 4.13	Types of peripheral calcification in U/S	49
Figure 4.14	U/S feature of marked hypoechoic nodule	50
Figure 4.15	U/S feature of hypoechoic nodule	51
Figure 4.16	U/S feature of isoechoic nodule	51
Figure 4.17	U/S feature of hyperechoic	52
Figure 4.18	U/S shows hypoechoic halo of thyroid nodule	53
Figure 4.19	U/S & CT of thyroid tumor with invasion	57
Figure 4.20	US features for malignant LNs	59

Figure 4.21	Papillary carcinoma and cystic lymph node metastasis in U/S & CT	60
Figure 4.22	Doppler findings of different vascular patterns of flow in thyroid arteries	63
Figure 4.23	Follicular carcinoma with central vascularization	65
Figure 4.24	B-Mode, Doppler & CEUS of Hyperplasia nodule	77
Figure 4.25	B-Mode & CEUS of papillary thyroid carcinoma	77
Figure 4.26	B-Mode, Doppler & CEUS of hyperplasia nodule	78
Figure 4.27	B-Mode & CEUS of hyperplasia nodule with old hemorrhage	78

List of cases

Case 1	Benign Nodular Hyperplasia	66
Case 2	Follicular Adenoma	67
Case 3	Benign Colloid Nodule	68
Case 4	Nodular Thyroiditis	69
Case 5	Papillary Carcinoma	70
Case 6	Follicular Carcinoma	71
Case 7	Medullary Carcinoma	72
Case 8	Anaplastic Carcinoma:	73
Case 9	Thyroid Metastases	74
Case 10	Lymphoma	75

List of Tables

Chapter 2 "Pathology of the Thyroid Nodules"		
Table 2.1	Classifications of most common Thyroid Nodules	14

Introduction

The thyroid gland plays a critical role in the regulation of several metabolic functions including cardiac rate and output, lipid catabolism, and skeletal growth, as well as oxygen and heat production. It is shield-shaped consists of right and left lobes that are usually joined by the isthmus. It is situated with its upper margin near the oblique line on the thyroid cartilage and its lower margin at the level of the fourth or fifth tracheal cartilage (*Loevner, 2003*)

Nodular thyroid disease is commonly seen in daily practice. Its prevalence varies according to the diagnostic approach. Palpable nodules occur in 4% to 7% of the general population. However, in studies using ultrasonography, the prevalence has been reported to be as high as 67.2%. In autopsy findings, the prevalence of thyroid nodules is 50.3%. Approximately 5% of thyroid nodules are malignant (*Iared et al., 2010*).

The main pathologic types of thyroid carcinoma are papillary, follicular, medullary, and anaplastic. Papillary and follicular thyroid carcinomas both have an excellent prognosis. Medullary thyroid carcinoma is more aggressive. Anaplastic thyroid carcinoma has an extremely poor prognosis. Risk factors for thyroid carcinoma include age of less than 20 years or more than 60 years, a history of neck irradiation, and a family history of thyroid cancer (*Hoang et al., 2007*).

High-resolution ultrasonography (US) is commonly used to evaluate the thyroid gland (*Hoang et al., 2007*).

Many sonographic features have been described and studied individually as potential predictors of thyroid malignancy. These features include rapid changes in size,