Clinico-Pathological Feaures of Differentiated Thyroid Cancer And Their Impacts on Prognosis

Thesis

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By

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Ali Layth Ahmed

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List of Abbreviations

Abbrev.	Full-term
AACE	: American Association of Clinical Endocrinologists
AGES	: Age, grade of tumor, extent, size
AJCC	: American Joint Committee on Cancer
AMES	: Age, metastases, extent, size
ATA	: American Thyroid Association
ATC	: Anaplastic thyroid carcinoma
CT	: Computed tomography
DTC	: Differentiated thyroid carcinoma
DxWBS	: Diagnostic whole body scan
EBRT	: External Beam Radiotherapy
EORTC	: European Organization for Research on Treatment of Cancer
ETA	: European Thyroid Association
FDG-PET	: Fluorodeoxyglucose positron emission tomography
FNAB	: Fine needle aspiration biopsy
FSH	: Follicle stimulating hormone
FTC	: ollicular thyroid carcinomas
FV-PTC	: Follicular variant of PTC
Gbq	: Gigabecquere
I^{123}	: Iodine 123
I^{131}	: Iodine 131
IHC	: Immunohistochemistry
LAP	: Lymphadenopathy

MACIS : Metastases, age, completeness of resection, invasion, size
Mci : Millicuri
MNG : Multinodular goiter
MRI : Magnetic resonance imaging
MSKCC : Memorial Sloan-Kettering cancer center
MTC : Medullary thyroid carcinomas
NCCN : National Comprehensive Cancer Network
OS : Overall survival
PFS : Progression-free survival
PTC : Papillary thyroid carcinomas
Ptmc : Papillary Thyroid Microcarcinomas
RAI : Radioactive iodine
RET/PTC : Rearranged in Transformation/Papillary Thyroid Carcinoma
rhTSH : Recombinant human TSH
RRA : Radioiodine remnant ablation
RxWBS : Post-therapeutic I131 whole body scan
STN : Solitary thyroid nodule
Tc99m : Technetium
Tg : Thyroglobulin
TgAb : Thyroglobulin Antibody
TSH : Thyroid Stimulating Hormone
U/S : Ultrasound
UICC : Union for International Cancer Control
WBS : Whole-body scan
WHO : World Health Organization

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Introduction

Thyroid cancer is the most common endocrine malignancy and presenting the fifth most common cancer among women and incidence has been increased in the last three decades [(1)].

Differentiated thyroid cancer (DTC) is the most common type of thyroid cancer, accounting for >90% of all cases and usually has an excellent prognosis .DTC include two subtypes, papillary thyroid cancer (PTC) which is the commonest and follicular thyroid cancer (FTC) [(2)].

DTC is usually asymptomatic for long periods of time. However solitary thyroid nodule is the common presentation, where thyroid cancer could be found in 7%–15% of these nodules, depending on age, sex, radiation exposure history, family history, and other factors [(3)].

The thyroid stimulating hormone (TSH) level, ultrasound results and clinical features are used to determine whether is it necessary to do fine-needle aspiration (FNA) of the nodule or whether there is a low risk of malignancy, where FNA consider the procedure of choice for evaluating suspicious thyroid nodule [(4)].

Surgery is the mainstay of the treatment of DTC patients with or without radioactive iodine therapy and lifelong TSH suppression [(5)].

Histological type of carcinoma and the extent of local and regional spread determine the recommended extent of primary surgical resection of DTC, in contrast, secondary factors that could affect the individual prognosis, such as age of the patient or the molecular status of the tumor play no role in the current guidelines' recommendations for the surgical treatment of DTC [(6)].

Disparity can be found in the guidelines in their recommendations about adjuvant radioactive iodine therapy for low-risk thyroid carcinomas, however [(5)], it is clearly indicated for the treatment of metastases that take up iodine and are not amenable to curative resection like in lungs and bone metastases [(7)].

Despite the fact that many advances were achieved in the diagnosis and therapy of both thyroid nodules and DTC, but clinical controversy still exists in many areas. A long history of insufficient peer reviewed research funding for high quality clinical trials in the field of thyroid neoplasia may be an important contributing factor to existing clinical uncertainties [(8)].

Aim of the Work

This is a retrospective study which aims to analyze the clinical and pathological features of DTC and their impacts on the prognosis for patients with differentiated thyroid cancer who attended the Department of Clinical Oncology and Nuclear medicine in Ain Shams University Hospital between the years (2011-2016).

Chapter One
Epidemiology of Thyroid Cancer

Incidence:

Thyroid cancer is the most common endocrine malignancy, from all malignant tumors it forms about 1-2%.In recent decades the increment in its incidence has been reported word widely and many studies have confirmed this rising in its incidence in Europe, Canada and the United states of America [9,10].

The incidence of thyroid cancer is about three to four times higher among females than males over the world, ranking the sixth most common malignancy diagnosed in women. Although thyroid cancer may occur at any age, However it is rare in childhood, tumors are usually diagnosed during third to sixth decade of life [11].

In United states Approximately 60,220 new cases of thyroid cancer are diagnosed annually with female to male ratio about 3:1 [12].

In Europe thyroid cancer is the 18th most common cancer, with around 53,000 new cases diagnosed in 2012 (2% of the total) [13].

In Egypt, thyroid cancer represents about 1.5% of all cancers and constitutes about 30% of endocrine malignancies. The rate among Egyptian females is 0.0027% with female to male ratio is less than 3:1 (8).

Generally Thyroid cancer incidence rates are highest in Northern America and lowest in Western and Middle Africa, but this partly reflects varying data quality worldwide (14). Figure (1) below showing incidence rate of thyroid cancer according to gender world widely.

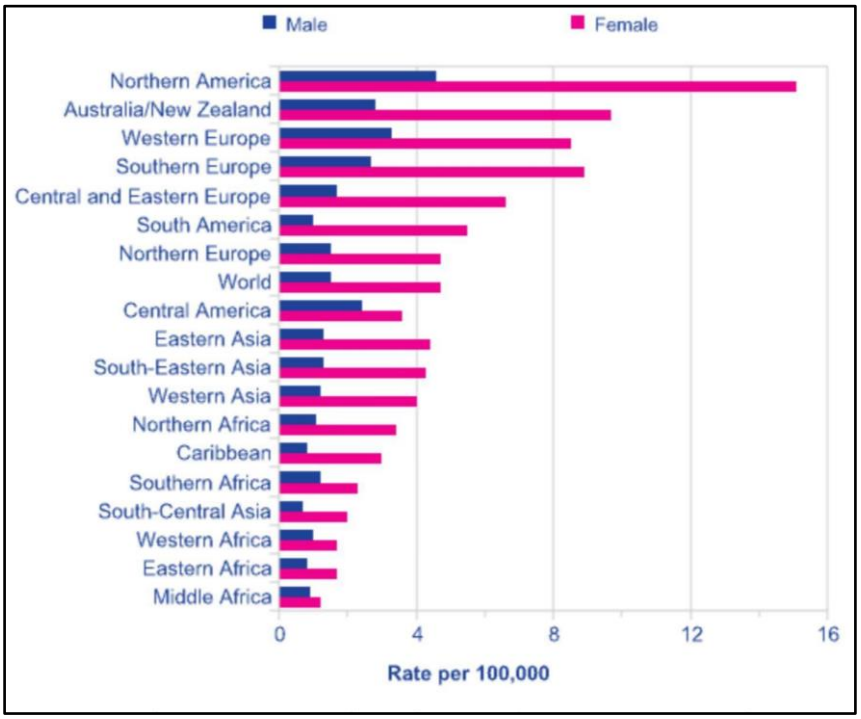

Figure (1): Incidence rate of thyroid cancer between male and female in worldwide [15]

Risk factors:

- Ionizing radiation:

The most established risk factor for Thyroid cancer is the exposure to ionizing Radiation during infancy or early childhood, where the ability to concentrate iodine and the