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THE PREVALENCE OF MICRO PAPILLARY THYROID CARCINOMA AND ITS CORRELATION WITH AGE, GENDER AND THE HISTOLOGICAL BACKGROUND

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ABSTRACT

Objectives: The aim of this study was to investigate the prevalence of micro papillary thyroid carcinoma in our Histopathology Department and their relation to age, gender and histological background in patients underwent total or near total and partial thyroidectomy for benign and malignant reasons. **Methods:** 1000 specimen's blocks examined for patients who had undergone total or near total and partial thyroidectomy for both non-neoplastic and neoplastic thyroid lesions, between January 2020 to May 2022 at Histopathology Department/Teaching Laboratories/Medical city/Baghdad/Iraq. **Results:** Out of 1000 thyroidectomy specimens, 103 (10.3%) cases with micro papillary thyroid carcinoma, from them 86 cases (83.4%) were with benign histological background and 17 cases (16.5%) were with low risk and malignant histological background. There were 11 males and 92 females with a male to female ratio of 1:8.3. The age ranged in males from 29 to 85 years with a mean age of 49.7 years and the age ranged in females from 17–70 years with a mean age of 40.9 years. In non-neoplastic lesions, the predominant histological background was the multi nodular goiter with 65 (63.1%) cases followed by Hashimoto thyroiditis with 12 (11.6%). In neoplastic lesions, papillary carcinoma was the commonest histological background lesion with 13 (12.6%) cases. Multifocal disease was present in 25 patients (24.2%). **Conclusion:** Nodular colloid goiter was the most common non–neoplastic histological background with micro papillary thyroid carcinoma with female predominance. Papillary carcinoma was the most frequent thyroid neoplastic histological background. The forth and fifth decade were the most common age group with incidental micro papillary thyroid carcinoma.

KEYWORDS: Nodular hyperplasia, thyroid, micro papillary thyroid carcinoma.

INTRODUCTION

Thyroid malignancy of the endocrine system is the most common malignancy with incidence of approximately 9/1,000,000 per year. The incidence of well differentiated papillary thyroid carcinoma has been increasing since the last 20-30 years.[1]

This increased incidence of such well differentiated cancers is largely due to the contributing factor of the increasing diagnostic rates of papillary thyroid micro carcinoma (PTM). Other factors like iodination programs in low iodine intake areas ,detailed histopathological examination of the excised thyroid tissue and the increasing rates of bilateral total excision of the thyroid gland during thyroid surgery have also been an attributing factor to the increasing rates of large (> 1 cm) and micro papillary carcinoma.[2]

Papillary thyroid micro carcinoma is an extremely common incidental finding largely depending on the thoroughness of the examination[3], it represents about one-third of all thyroid cancer, WHO on the largest dimension of 1.0 cm or less, over the past three decades cases Its incidence has significantly increased[4] and it is regarded as T1a.[5] In autopsy studies the prevalence of PTMC is about 7–36%.[6] At clinical examination most PTMC are not detectable and are incidentally diagnosed during pathologic examination of thyroid specimens after surgery for benign thyroid tumors or in autopsies. If malignancy is not suspected clinically, tumors that are discovered during the histopathological examination of specimen undergoing thyroidectomy surgeries are labeled as Incidental and the most common type of incidental thyroid carcinoma is PTMC[7],

In different series, the incidence of incidental thyroid carcinoma (ITC) ranges from 3 to 16% with the highest number in patients affected by multi nodular goiter [5].[8]

Association of micro papillary thyroid carcinoma with other type of thyroid carcinoma called "collision tumor" that is defined as the coexistence of two or more histologically distinct neoplastic morphologies separated by normal tissue in the same organ[9], which is very rare pathology.

PATIENTS AND METHODS

The study is a cross sectional retrospective study. It was conducted at the Histopathology Department, Teaching Laboratories, Baghdad Medical City during the period extending from the beginning of January 2020 to May 2022. 1000 biopsy blocks examined for patients who had undergone total or near total and partial thyroidectomy for both non-neoplastic and neoplastic thyroid lesions. The biopsies were stained with hematoxylin and eosin. Immunohistochemical stains were performed when needed.

The pathological reports concerning biopsies of micro papillary thyroid carcinoma were collected, recorded and analyzed using SPSS system (statistical package of social sciences) and Excel 2010 programs. Data including age, gender, and histological background were retrieved from electronic pathologic records. Various pathological features were studied. Frequencies, percentages, means and standard deviation were calculated. Tables and charts were constructed according to information obtained from the reports.

RESULTS

Out of 1000 thyroidectomy specimens, 103 (10.3%) cases with micro papillary thyroid carcinoma, from them 86 cases (83.4%) were with benign histological background and 17 cases (16.5%) were with low risk and malignant histological background (Fig 1). There were 11 (10.6%) males and 92 (89.3%) females with a male to female ratio of 1:8.3 (Table 1). The age ranged 17-85 with mean age 41.8, in males from 29 to 85 years with a mean age of 49.7 years and the age ranged in females from 17–70 years with a mean age of 40.9 years, and it mostly affect age group between 30-49 year (Table 1). In non-neoplastic lesions, the predominant histological background was the multi nodular goiter with 65 cases (75.5%) followed by Hashimoto thyroiditis with 12 (13.9%) (Table 2). In neoplastic lesions, papillary carcinoma was the commonest histological background lesion. Multifocal PTC observed in 25 case (24.2%).

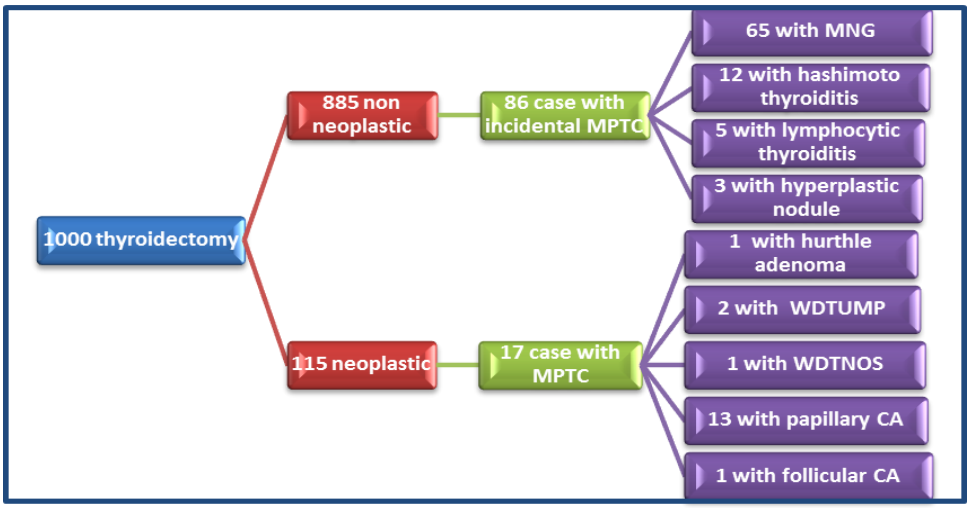

Fig (1): scheme of our study cases with micro papillary thyroid carcinoma.

Table (1): distribution of cases according to age group, nodular hyperplasia was the more common in-between age group of 30–49.

Age	No of cases	%	F/M	MNG	HT	LT	HN	HA	WDTUMP	WDTNOS	Papillary CA	Follicular CA
<20	1	0.9	1/-	1	_	_	_	_	_	_	_	_
20-29	8	7.7	7 /1	7	1	_	_	_	_	_	_	_
30-39	38	36.8	36 / 2	17	9	4	2	_	1	1	4	_
40-49	34	33	31 / 3	26	2	1	_	1	_	_	4	_
50-59	14	13.5	10 / 4	10	1	_	_	_	1	_	1	1
>60	8	7.7	6 / 2	4	_	_	_	_	_	_	4	_
Total	**103**	**100**	**92 / 11**	**65**	**12**	**5**	**3**	**1**	**2**	**1**	**13**	**1**

MNG: multi nodular goiter, HT: hashimoto thyroiditis, LT: lymphocytic thyroiditis, HN: hyperplastic nodule, HA: hurthle adenoma, WDTUMP: well differentiated tumor of undetermined malignant potential, WDTNOS: well differentiated tumor not otherwise specified.

Table (2): percentage of MPTC in thyroidectomy cases removed for benign reasons.

non neoplastic	number (n=)	%
MNG	65	75.5
hashimoto thyroiditis	12	13.9
lymphocytic thyroiditis	5	5.8
hyperplastic nodule	3	3.4
Total	**86**	**100**

DISCUSSION

- Papillary micro carcinoma is an extremely common incidental finding.[3] in our study the incidence of micro papillary thyroid carcinoma is (10.3%) which is in the same range (7-36%) described by Lang W et al .[6] and close to the results of other studies (8.01%) by Dr. Nimmy Venu and Dr. Manchu B Hassan from India with 329 case of throidectomy[10],
- The age of patients in our study ranged from 17 to 85 years (mean age = 41.85 ± 11.24), while the mean age at diagnosis was 41.7 ± 12.0 years in UAE[11], and 48.6 ± 14.6 in Poland.[12]
- There are 11 (10.6%) males and 92 (89.3%) females, in comparison to UAE with the majority were female (83.57%)[11] and in Poland female percentage were (91.7%).[12]
- 65 case (75.5%) with MPTC out of 86 associated with multi nodular goiter and (19.7%) for hashimoto and lymphocytic thyroiditis in thyroidectomy specimens for benign reasons, L Alecu et al said Incidence rate of occult thyroid carcinoma in his series was 6.9 % (10 out of 145 patients), 80 % of them being diagnosed with multi nodular goiter and two cases (20 %) with Hashimoto's lymphocytic thyroiditis[13], in Spain Nodular hyperplasia was (78%)[14], and in Greece a series of 27 patients with incidental PTMC , 20 were presented with multi nodular goiter.[15]
- In the present series, Multifocal PTMC is 25 case (24.2%),while in Seoul, Korea tumor multi focality was noted in 103 of 383 PTMCs (26.9 [16] and in Iran tumor multi focality was 28%.[17]
- From the 1000 thyroidectomy, there are 57 case diagnosed with papillary thyroid carcinoma, 13 cases (22.8%) associated with micro papillary thyroid carcinoma in the other lobe, in comparison to other literatures by Kwan Ju Lee et al. bilaterality was seen in 29.8 % of PTC patients[18], and Susan C.Pitt et al. the rate of contralateral disease in patients with primary PTC <1 cm is 24%.[19]
- While association of MPTC with follicular ca & other low risk neoplasm (WDTUMP & WDTNOS) is (1, 2, 1) cases respectively from our study, Kenko Cupisti et al. the simultaneous occurrence of different types of thyroid carcinoma in a single patient is an unusual event, he report the case of a 52-year-old man that his thyroidectomy specimen revealed 5 cm follicular carcinoma and a 0.3 cm papillary micro carcinoma in the right lobe as well as a 1.5 cm medullary carcinoma in the left lobe.[20] Mehdi Ferjaoui Et al. simultaneous papillary thyroid carcinoma (PTC) and follicular thyroid carcinoma (FTC) of the same thyroid lobe is a very rare pathology and he reported 2 cases of PTC and FTC on the same thyroid lobe, over a period of 21 years (2000-2020)[21], And in USA A 79-year-old man his histopathological examination for thyroid revealed two separate primary malignancies of PTC and FTC.[22]

CONCLUSION

PTMC is a common incidental finding after surgery for both non-neoplastic and neoplastic thyroid lesions, so thoroughness of the examination and dissection is advisable during gross examination of the thyroid specimen and both Pathologists and surgeons should be aware of the possibility of the simultaneous presence of PTC and FTC tumors to avoid possible misdiagnoses.

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