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Histopathologic Subtypes of Surgically Resected Papillary Thyroid Carcinomas in Malatya Region+

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Abstract: Retrospective analysis of histologic subtypes of papillary thyroid carcinoma (PTC).
Material and Method: Histopathology reports at the Department of Pathology, Inönü University, Medical School Malatya, Turkey revealed 33 papillary thyroid carcinoma (PTC) cases in a nine year period.
Results: The demographic findings (23 females, 10 males with an average age of 45) were similar to previous reports but the distribution of the PTC subtypes showed some variation. The number and percentage of the PTC subtypes were as following: encapsulated 8 (24%), tall cell 7(21%), follicular 7 (21%), macrofollicular 5 (15%), oncocytic 3 (9%) and micro-carcinoma 3 (9%). Though the total number of the cases is not suitable for a statistical analysis incidence of the aggressive variant i.e. tall cell subtype is remarkable when compared to other series published. Lymph node metastasis was detected predominantly in the oncocytic (66.7%) and tall cell (%57.1%) subtypes.
Conclusion: Tall cell and oncocytic PTC must be distinguished in the surgical pathology reports precisely for clinical evaluation due to high frequency of lymph node metastasis.
Key Words: Thyroid Cancer, Histopathology, Papillary Thyroid Carcinoma

Malatya Bölgesinde Cerrahi Uygulanmış Tiroid Papiller Kanserlerinin Histopatolojik Alt Grupları

Amaç: Papiller tiroid kanseri (PTK) alt gruplarının retrospektif analizi.
Gereç ve Yöntem: Malatya İnönü Üniversitesi Tıp Fakültesi, Patoloji Laboratuarı arşivinde dokuz yıllık zaman dilimi içinde cerrahi girişimle tiroidektomi uygulanmış 33 adet PTK olgusu değerlendirildi.
Bulgular: Demografik verilerin (23 kadın, 10 erkek, ortalama 45 yaş) daha önce bildirilmiş özelliklere uyduğu görüldüyse de PTK histopatolojik alt gruplarında farklılıklar tespit edildi. PTK alt gruplarında sıklık sırasıyla, kapsüllü 8 (%24), yüksek hücreli 7 (%21), folliküler 7 (%21), makrofolliküler 5 (%15), onkositik 3 (%9) ve mikrokarsinom 3 (%9) izlendi. Toplam hasta sayısı istatiksel analize olanak vermese de kötü gidişli kabul edilen yüksek hücreli alt grup yayınlanmış serilerdekilerden fazladır. Lenf düğümü metastazları en fazla sırasıyla onkositik (%66.7) ve yüksek hücreli (%57.1) gruplarda izlendi.
Sonuç: PTK içinde sık lenf düğümü yayılımı nedeniyle onkositik ve yüksek hücreli alt grupların patoloji raporlarında ayırd edilerek belirtilmesi ve klinik değerlendirmenin gerekliliği ortaya çıkmaktadır.
Anahtar Kelimeler: Tiroid Kanseri, Histopatoloji, Papiller Tiroid Kanseri

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Introduction

Papillary thyroid carcinoma (PTC), is an indolent malignancy with an overall mortality rate of less than 1% per year and as in any other malignant disease the most important prognostic factor is the clinical stage.[1-4] Beside clinical stage there has been various attempts for identifying various adverse prognostic factors such as age, gender, size, extrathyroideal extension and tumour histology. The World Health Organization (WHO) recognizes a subcategory of biologically aggressive PTC that includes tall cell, columnar cell and diffuse sclerosing variants which were also recognised in the earlier AFIP classification.[1-5] Totally or partly encapsulated papillary thyroid carcinoma has a predominantly follicular pattern with diagnostic PTC nuclear features and this subtype most commonly is referred as encapsulatted follicular variant.[5,6] There is not any previously published series of PTC subtypes in Malatya region.

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Materials and Methods

A retrospective analysis of surgically resected 33 PTC cases diagnosed at the Pathology Department of Inönü University,

Medical School in a nine year period between the years 1995-2003 was made. Hematoxylin and eosin stained slides were reviewed by pathologists independently and

demographic data with relevant clinical knowledge were found from the pathology reports.

Since our medical center is mainly a tertiary care hospital with high ratio of intensive care beds these surgically operated cases may reflect a biased group of patients that might yield results that could not be applied to the general population living in this region. Due to this fact prognostic parameters related to stage and clinical presentation were not assessed but lymph node metastatic rate was taken as an objective finding in comparing subtypes of PTC. Subtypes of PTC as delineated in AFIP and WHO classifications detailed elsewhere were made [1,2,5,6] We also preferred using the term encapsulated[2,6] to the well known expansive well delineated predominantly follicular PTC shaving complete or incomplete fibrous capsule. This total or incomplete encapsulation is a phenomenon seen especially with follicular pattern and has also been referred as encapsulated follicular PTC variant.[2,6] Due to the small number of cases any precise statistical evaluation could not be made.

Results

Among the 33 PTC cases 23 were female, 10 were male yielding a female to male ratio of 2.3 (Figure 1).

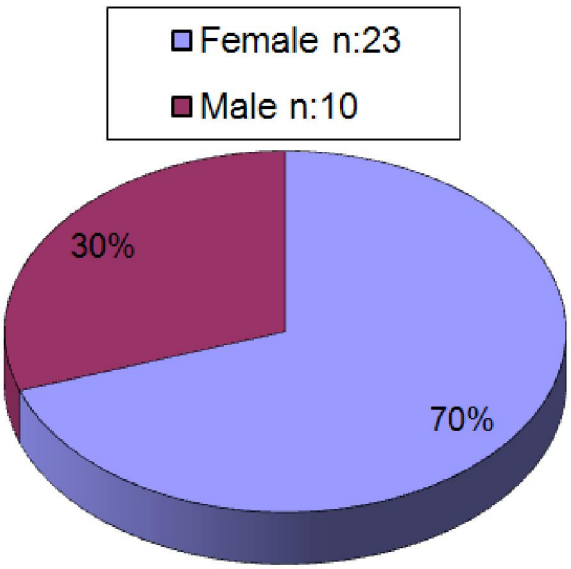

Figure 1. Sex distribution of PTC cases

Age range was between 24 and 85 years with a mean of 45±4 years. Location in the gland was predominantly in the right lobe in 42%, followed by the left lobe in 33% and in the isthmic region in 6% of the cases. The frequency of histopathological subtypes were as follows; encapsulated (EC) 8, follicular (F) 7, tall cell (TC) 7, macrofollicular (MF) 5, microcarcinoma (MC) 3, oncocytic (O) 3 cases (Figure 2). These histopathological subtypes revealed a similar distribution related to the overall incidence of female preponderance with a ratio ranging from two to three (Figure 3). There were 12 cases of PTC showing lymph node metastasis, revealing a high over all incidence of 36.4%. However, PTC lymph node metastasis rate was a strikingly predominant finding in O and TC histopathological subtypes when compared to other subtypes (Figure 4), as 66.7% and 57.1 respectively.

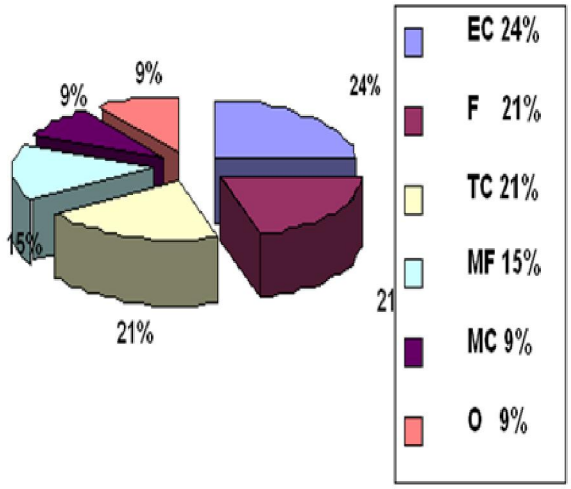

Figure 2. Distribution of histopathologic subtypes of PTCcases. EC: Encapsulated, F: Follicular, TC: Tall cell, MF: Macrofollicular, MIC: Microcarsinoma, O: Oxyphilic.

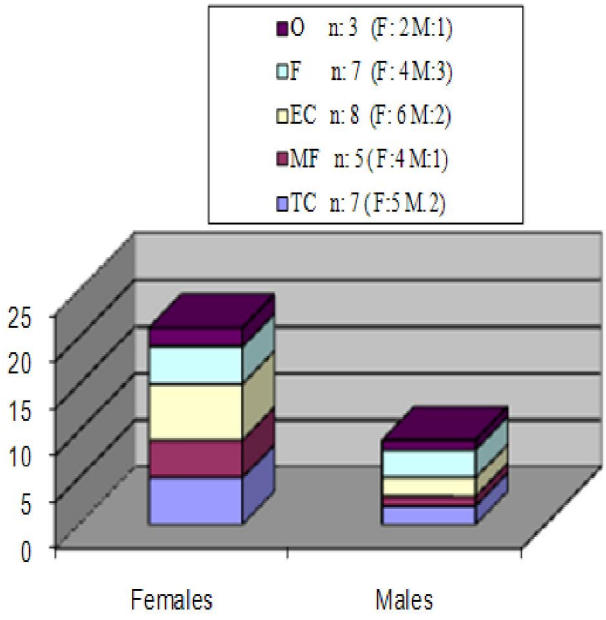

Figure 3. Distribution of PTC subtypes among sex groups, EC: Encapsulated, F: Follicular, TC: Tall cell, MF: Macrofollicular, O: Oncocytic.

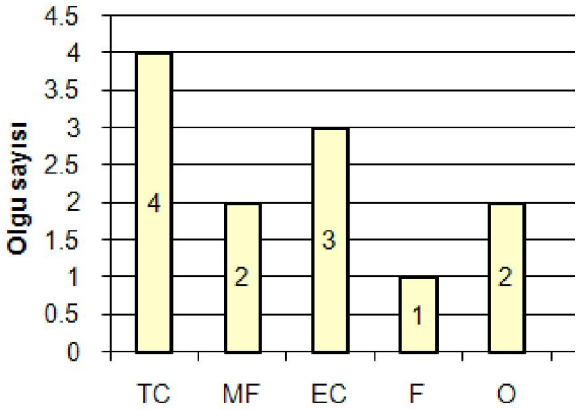

Figure 4. Number of cases among PTC subtypes showing lymph node metastasis (none of the 2 MC cases showed metastasis or lymphovascular invasion).

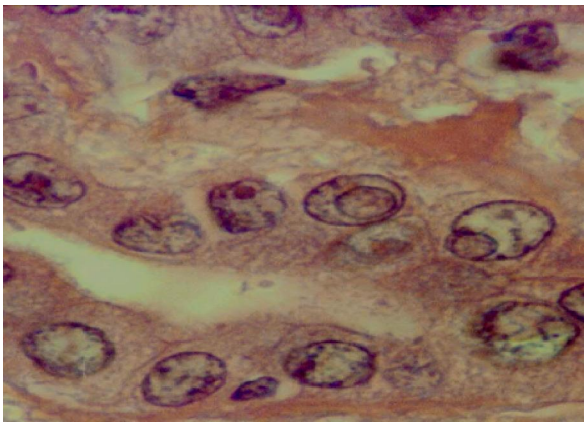

Figure 5. Characteristic diagnostic features of PTC with clear nuclei showing prominent intranuclear inclusions, (Hematoxylin and eosin X400).

Discussion

Papillary carcinoma is a well-differentiated malignant tumor of thyroid follicular cells that shows a set of characteristic nuclear features.[1-6] Although, a papillary growth pattern is frequently seen, it is not required for the diagnosis. Papillary carcinoma is the most common type of thyroid cancer and its incidence in absolute numbers as well as in proportion to other thyroid tumors has been steadily increasing.[7,8] The cells typically have a cuboidal or low columnar shape and rest on the basal membrane that borders papillary stalks and neoplastic follicles. The cells are larger than adjacent non-neoplastic thyrocytes generally with abundant, pale, eosinophilic cytoplasm and nuclei exhibiting characteristic microscopic changes that serve as a core requirement for the diagnosis of papillary carcinoma.[1-6] The following main diagnostic nuclear features are recognized:1- nuclear enlargement 2- nuclear overlapping and crowding 3- chromatin clearing 4- irregularity of nuclear contours 5- nuclear grooves 6- nuclear pseudoinclusion (Figure 5).

The tall cell variant is characterized by predominance (more than 50%) of tall tumor cells whose height is at least 3 times their width (Figure 6).[5,6]

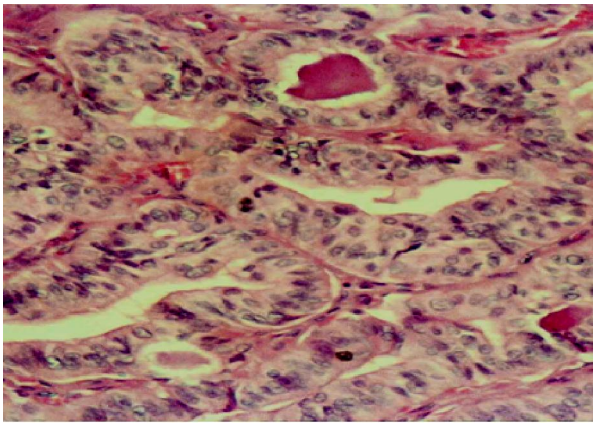

Figure 6. Tall cell subtype of PTC with cells having height three times their width, (Hematoxylin and eosin X200).

Though, the demographical findings are comparable with previous data[1-6], the PTC subtypes in our series are unique in regard to the emergence of the TC and EC

Table. Frequency of tall cell PTC in previously reported series compared with ours.

Series and location	Number of Papillary carcinoma	Number of tall cell subtype	% of tall cell subtype
Terry JH et al, NY, USA	183	19	10.4
Pilotti S et al, Milan, Italy	227	42	18.5
Segal K, Tikva, Israel	381	19	5
Muzaffar MA, et al, Pakistan	82	3	3.7
Khan AR, et al, S. Arabia	35	3	8.6
Present series, Malatya, Turkey	33	7	21

variants as predominant types. EC subtype shows predominantly follicular growth pattern and is generally categorized among follicular PTC.[1,5] Due to this fact our present figure could not be compared with previously published reports. The incidence of TC variant of PTC has been reported from different locations such as, New York, USA, 10.4%; (9), Tikva, Israel, 5% (10), Milan, Italy, 18.5% (11), Saudi Arabia, 8.6%[12], Pakistan, 3.1%.[13] The present series from our medical center in Malatya has revealed a frequency of 21% (see Table).

These data from previously published series reveal a high frequency only from Milan, Italy similar to Malatya, both locations are in Mediterrenean region which might reflect a similar etiological factor. However, we are not able to comment any further since clinical patient details were not avaliable but this subject may be investigated for similar results from different localities. The patient population of our series is unique since our hospital is a referral centre (i.e. tertiary care and oncological surgical centre) in the area. We can not comment further since patient statistics of other hospitals in this region are not avaliable to us. The small number of patients also pose another problem and prevents statistical evaluation. However, we would like to emphasize that one of the prognostically adverse variant of PTC, i.e. tall cell variant was detected in a high number with a striking lymph node metastasis. We suggest that pathologic criteria must be searched for the TC variant of PTC and must be reported in the pathology reports in order to emphasize the aggresiveness of the cancer for stringent clinical follow up and treatment. In regard to the oncocytic PTC subtype the number of cases could not be compared with others due to the low number in our series but again the rate of lymph node metastasis is also striking (66.7%). That means in this subtype warrants further evaluation with prospective studies.

In regard to the precise pathologic diagnosis of some follicular PTCs having a partial or total encapsulation both clinical and microscopic underestimation may yield a false impression of follicular adenoma when the nuclear features of PTC is subtle.[14] In an effort to prevent this, we also would like to use the term encapsulated as some pathologists to emphasize this subgroup separating them from the follicular PTCs.[2, 6] The average rate for regional lymph node metastasis in PTC is around 30-50% at the time of initial diagnosis.[1,2,5,6] There were 12 cases of PTC showing lymph node metastasis, revealing an incidence of 36.4% in the present series from Malatya region. However, lymph node metastasis rate was a strikingly predominant finding in O and TC histopathological subtypes when compared to other subtypes (Figure 4), as 66.7% and 57.1 respectively. The lymph node metastasis rate for the EC subtype in our series also yields an important rate of %37.5 revealing the aggressive behaviour in contrast to the well demarcated appearance of the primary lesion. We agree with similar observations that EC (predominantly follicular) PTC subtype is not an indolent variant [14]

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