

HISTOPATHOLOGICAL ANALYSIS OF FEATURES OF PAPILLARY THYROID CARCINOMA

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Abstract

Background: To assess histopathological features of papillary thyroid carcinoma. **Materials and Methods:** Seventy thyroid tissues obtained in the department of general pathology for a period of one year from general surgery department were recruited in the study. All histopathological diagnosis was made based on the World Health Organisation (WHO) classification. PTCs were further divided into three groups based on the predominant histological pattern: solid, follicular, and classic papillary. **Results:** It was found that 25 had capsules and 45 had not. Tumour size was 1-10 mm in 27 and 11-50 mm in 43 cases. Pattern was papillary in 23, follicular in 37 and solid in 10 cases. Histopathological variant was papillary in 21, follicular in 35, solid in 10, diffuse-sclerosing in 3 and warthin like in 1 case. Tumour focality was unifocal in 42 cases and multifocal in 28 cases. Lymph nodes involvement was present in 32 and absent in 38 cases. Distant metastasis was present in 16 and absent in 54 cases. The difference found to be significant ($P < 0.05$). **Conclusion:** In our study, follicular pattern was observed in maximum cases. Maximum cases were unifocal with no distant metastasis.

INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common type of thyroid cancer, accounting for about 80% of all thyroid cancer cases.^[1] It primarily affects the cells that produce and store thyroid hormones in the thyroid gland.^[2] The exact cause of papillary thyroid carcinoma is unclear, but certain risk factors may increase the likelihood of developing the condition. Despite being age-neutral, it commonly affects adults between the ages of 30 and 50.^[3] People who have been exposed to radiation, particularly during childhood, are at an increased risk of getting PTC. The risk is increased if thyroid cancer or specific genetic disorders run in the family.^[4,5]

Papillary thyroid cancer may not exhibit any signs in its early stages. As the tumor spreads, people may feel a benign thyroid mass or nodule, typically at the front of the neck, swelling or growth of the neck's lymph nodes, voice alterations or hoarseness brought on by the vocal chords, swallowing difficulties or the sensation of a "lump in the throat" and a sore neck.^[6]

According to the 2017 WHO classification, there are numerous subtypes of PTC. Architecture, cytologic characteristics, the presence or absence of a capsule,

and growth size all play a role in subtyping.^[7] The most prevalent mutation, particularly in classic and tall cell subtypes, is BRAFV600E.^[8] The present study was conducted to assess histopathological features of papillary thyroid carcinoma (PTC).

MATERIALS AND METHODS

A sum total of seventy thyroid tissues obtained in the department of general pathology from general surgery department in a tertiary care hospital, Tamilnadu were recruited in the study. The duration of the study was 1 year. All histopathological diagnosis was made based on the World Health Organisation (WHO) classification.

PTCs were further divided into three groups based on the predominant histological pattern: solid, follicular, and classic papillary. According to the WHO classification, PTCs were further divided into the following main histological variants: classic papillary, follicular, solid, diffuse-sclerosing, Warthin-like (when >80% of the slide's surface had the corresponding structure), or mixed (when the tumour was made up of at least two patterns combined in nearly equal amounts). Results thus obtained were subjected to statistical analysis using

chi-square test. P value less than 0.05 was considered significant.

RESULTS

Table 1: Thyroid samples distribution

Total- 70		
Gender	Male	Female
Number	24	46

Out of 70 samples, 24 were of males and 46 were of females (Table 1, graph 1).

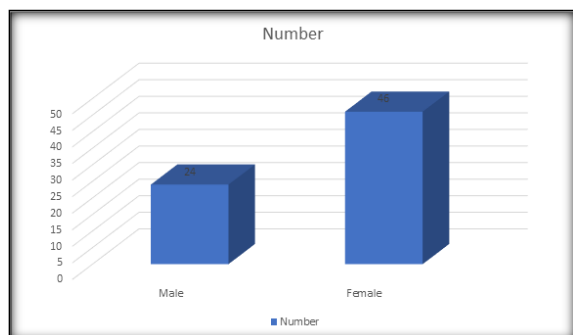


Figure 1: Thyroid samples distribution

Table 2: Histopathological characteristics of thyroid lesions

Parameters	Characteristic	Number	P value
Presence of capsule	Yes	25	0.03
	No	45	
Tumour size	1-10 mm	27	0.03
	11-50 mm	43	
Pattern	Papillary	23	0.02
	Follicular	37	
	Solid	10	
Histopathological variant	Papillary	21	0.05
	Follicular	35	
	Solid	10	
	Diffuse-sclerosing	3	
	Warthin like	1	
Tumour focality	Unifocal	42	0.02
	Multifocal	28	
Lymph nodes involvement	Yes	32	0.94
	No	38	
Distant metastasis	Present	16	0.01
	Absent	54	

It was found that 25 had capsules and 45 had not. Tumour size was 1-10 mm in 27 and 11-50 mm in 43 cases. Pattern was papillary in 23, follicular in 37 and solid in 10 cases. Histopathological variant was papillary in 21, follicular in 35, solid in 10, diffuse-sclerosing in 3 and warthin like in 1 case. Tumour focality was unifocal in 42 cases and multifocal in 28 cases. Lymph nodes involvement was present in 32 and absent in 38 cases. Distant metastasis was present in 16 and absent in 54 cases. The difference found to be significant ($P < 0.05$) (Table 2).

DISCUSSION

The most frequent endocrine malignancy is thyroid carcinoma. The incidence per 100,000 people varies from 0.5 to 10 instances annually.^[9] The majority of authors claim that the thyroid has a role in about 1% of all cancers.^[10] The majority of thyroid cancers

manifest as solitary thyroid nodules that are difficult to diagnose because they are clinically difficult to distinguish from benign neoplasms and non-neoplastic nodules.^[11]

Around 80–85% of thyroid cancers are PTC. These typical tumors typically have a favourable prognosis and a physiologically indolent tendency.^[12] They can happen at any age, however congenital tumor diagnosis is rare. Patients are typically diagnosed with tumors during the 3rd- 5th decades of life.^[13] Women are affected the most, and the ratio of women to men is between 2:1 and 4:1. PTC is similar to other products in certain ways. A central core of fibrovascular tissue is present in the neoplastic papillae, which is bordered by one or occasionally many layers of cells with densely packed oval nuclei.^[14,15] In addressing this diagnostic conundrum and assisting clinicians in the management of these patients, FNAC and histology

play a significant role.^[16] The present study was conducted to assess histopathological features of papillary thyroid carcinoma.

Our study comprised of 70 cases, of which 24 were of males and 46 were of females. Almukhtar ZK.^[17] observed that the conventional variant was most prevalent (40.1%), followed by the papillary microcarcinoma variant, with the mean age being (39.29) years and a female predominance (86.3%). Of the 197 cases, 197 (86.8%) were classified as having low to intermediate malignant potential, and 30 cases (13.2%), as having high malignant potential. When compared, there is no significant correlation between the tumour stages, tumour focality, native capsular invasion, lymph node involvement, presence or absence of vascular invasion, extrathyroid extension, and distant metastasis, whereas there is a significant correlation between them and tumour size.

Our results showed that 25 had capsules and 45 had not. Tumour size was 1-10 mm in 27 and 11-50 mm in 43 cases. Pattern was papillary in 23, follicular in 37 and solid in 10 cases. Histopathological variant was papillary in 21, follicular in 35, solid in 10, diffuse-sclerosing in 3 and warthin like in 1 case. Tumour focality was unifocal in 42 cases and multifocal in 28 cases. Lymph nodes involvement was present in 32 and absent in 38 cases. Distant metastasis was present in 16 and absent in 54 cases. Bogdanova et al.^[18] in their study, iodine-131 dose and overall tumour invasiveness (existence of extrathyroidal extension, lymphatic/vascular invasion, and regional or distant metastases) were found to have a marginally significant linear-quadratic correlation ($P=0.063$). In contrast to tumors without chromosomal rearrangements or tumors with BRAF or RAS point mutations, tumors with chromosomal rearrangements were more likely to exhibit lymphatic/vascular invasion, regardless of dosage ($P=0.020$). The amount of lymphatic/vascular invasion ($P=0.005$), overall invasiveness ($P=0.026$), and decreasing tumour size ($P=0.001$) all showed significant time trends once age was taken into account.

Kunjumon et al.^[19] studied thyroidectomy specimens received in the department of pathology. There were 41 PTC cases examined. This study concluded that although the percentage of cells exhibiting these features varied from tumour to tumour, ground glass nuclei, nuclear grooving, and nuclear overcrowding were the most frequent features seen in all (100%) instances. Less commonly (42%–95%) were other qualities mentioned above. In a study by Evan et al.^[20] of the columnar variant, cells showed stratified, hyperchromatic nuclei, with inconspicuous nuclear grooves and single prominent nucleoli. Psammoma bodies were absent. According to Mishra et al.^[21], the oncocytic form of papillary thyroid carcinoma is a rare tumour with poorly characterized clinicopathological characteristics and biological activities. They described a case of an oncocytic papillary thyroid cancer and

accompanying lymphocytic thyroiditis in a 36-year-old female. Manjula et al.^[22] conducted a study using on fine needle aspiration cytology of thyroid lesions, 155 cases were included in the study; category 2 was the most common constituting 76%, followed by category 6 which was 35%. Frequency of various nuclear features of papillary carcinoma in other thyroid categories varied from 10% to 33%.

CONCLUSION

In our study, follicular pattern was observed in maximum cases. Maximum cases were unifocal with no distant metastasis.

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