Are there any differences between demographic characteristics, preoperative ultrasonographic findings, and cytological results of patients with thyroid tumors of uncertain malignant potential and papillary thyroid carcinoma of classical and non-encapsulated follicular variants?

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Introduction

➢ Thyroid tumors of uncertain malignant potential (TT-UMP) has been accepted as a subgroup of follicular-patterned thyroid tumors for which benignancy or malignancy cannot be assessed exactly. We aimed to evaluate demographic characteristics, ultrasound (US) findings, and cytological results of patients with TT-UMP and compare these findings with the classical variant of papillary thyroid carcinoma (CV-PTC) and non-encapsulated follicular variant of PTC (NEFV-PTC) patients, and also to evaluate the immunohistochemical characteristics of patients with TT-UMP.

Methods

➢Twenty-four patients with TT-UMP, 672 with CV-PTC, and 132 with NEFV-PTC were included to the study. .

Results

➢ Mean longitudinal nodule size and median nodule volume were higher in TT-UMP group compared to CV-PTC and NEFV-PTC groups ($p<0.001$ and $p<0.001$ for CV-PTC; $p<0.001$ and $p=0.008$ for NEFV-PTC).

➢ Presence of halo and peripheral vascularization were observed more frequently in TT-UMP group compared to CV-PTC group ($p=0.002$ and $p=0.024$). Nodule localization, texture, echogenicity, presence of microcalcification, and presence of macrocalcification were similar in TT-UMP and CV-PTC groups (Table 1).

➢ US findings and cytological results were similar in TT-UMP and NEFV-PTC groups (all, $p>0.05$) (Table 2).

➢ Benign and follicular neoplasm/suspicious for follicular neoplasm cytological results were higher in TT-UMP group compared to CV-PTC group ($p=0.030$ and $p=0.001$).

➢ Median tumor size was higher in TT-UMP group than CV-PTC and NEFV-PTC groups (25 mm *vs* 6 mm, $p<0.001$ and 25 mm *vs* 14.4 mm, $p=0.006$, respectively).

➢ In TT-UMP group, positive expression of HBME-1, CK-19 and Gal-3 was found as 50%, 33.3% , and 25%, respectively.

Table 1 Ultrasonographic features and fine-needle aspiration biopsy results of patients in thyroid tumors of uncertain malignant potential and classical variant of papillary thyroid carcinoma groups

	TT-UMP (n=24)	CV-PTC (n=347)	p
Nodule longitudinal diameter (mm)	38.52±24.10	16.07 ±11.74	**<0.001**
Nodule volume (mL)	8.26 (0.22-121.32)	0.51(0.01-116.05)	**<0.001**
Nodule localization			
Right lobe	14 (58.3%)	200 (57.5%)	0.726
Left lobe	10 (41.7%)	138 (39.9%)	
Isthmus	0	9 (2.6%)	
Texture			
Solid	24 (100%)	338 (97.4%)	0.727
Cystic	0	6 (1.7%)	
Mixed	0	3 (0.9%)	
Echogenicity			
Isoechoic	12 (50%)	115 (33.1%)	0.091
Hypoechoic	2 (8.3%)	92 (26.5%)	
Isoechoic+hypoechoic	10 (41.7%)	140 (40.3%)	
Microcalcification	7 (29.7%)	168 (48.4%)	0.068
Macrocalcification	5 (20.8%)	118 (34%)	0.185
Hypoechoic halo	11 (45.8%)	66 (19%)	**0.002**
Irregular margins	12 (50%)	241 (69.5%)	**0.045**
Peripheral vascularization	6 (25%)	26 (7.5%)	**0.024**
FNAB	***n=23***	***n=337***	
Nondiagnostic	3 (13%)	41 (12.2%)	**<0.001**
Benign	7 (30.4%)	41 (12.2%)	
AUS/FLUS	7 (30.4%)	55 (16.3%)	
FN/SFN	3 (13%)	4 (1.2%)	
Suspicous for malignancy	3 (13%)	91 (27.0%)	
Malignant	0	105 (31.2%)	

TT-UMP: thyroid tumors of uncertain malignant potential, CV-PTC: classical variant of papillary thyroid carcinoma, FNAB: fine-needle aspiration biopsy, AUS/FLUS: atypia of unknown significance/follicular lesion of unknown significance, FN/SFN: follicular neoplasm/suspicious for follicular neoplasm

Table 2. Ultrasonographic features and fine-needle aspiration biopsy results of patients in thyroid tumors of uncertain malignant potential and non-encapsulated follicular variant of papillary thyroid carcinoma groups

	TT-UMP (n=24)	NEFV-PTC (n=119)	p
Nodule longitudinal diameter (mm)	38.52±24.10	24.20±15.68	**<0.001**
Nodule volume (mL)	8.2 (0.22-121.32)	2.12 (0.15-86.08)	**0.008**
Nodule localization			
Right lobe	14 (58.3%)	71 (59.7%)	0.628
Left lobe	10 (41.7%)	44 (37.0%)	
Isthmus	0	4 (3.4%)	
Texture			
Solid	24 (100%)	117 (98.3%)	0.815
Cystic	0	1 (0.8%)	
Mixed	0	1 (0.8%)	
Echogenicity			
Isoechoic	12 (50.0%)	56 (47.1%)	0.819
Hypoechoic	2 (8.3%)	15 (12.6%)	
Isoechoic+hypoechoic	10 (47.0%)	48 (40.3%)	
Microcalcification	7 (29.2%)	51 (42.9%)	0.202
Macrocalcification	5(20.8%)	37(31.1%)	0.303
Hypoechoic halo	11 (45.8%)	47 (39.5%)	0.608
Irregular margins	12 (50%)	56 (47.1%)	0.886
Peripheral vascularization	6 (25%)	23 (19.3%)	0.305
FNAB	***n=23***	***n=116***	
Nondiagnostic	3(13%)	25(21.6%)	0.327
Benign	7(30.4%)	29(25.0%)	
AUS/FLUS	7(30.4%)	25(21.6%)	
FN/SFN	3(13%)	6(5.2%)	
Suspicous for malignancy	3(13%)	20(17.2%)	
Malignant	0	11(9.5%)	

TT-UMP: thyroid tumors of uncertain malignant potential, NEFV-PTC: non-encapsulated follicular variant of papillary thyroid carcinoma, FNAB: fine-needle aspiration biopsy, AUS/FLUS: atypia of unknown significance/follicular lesion of unknown significance, FN/SFN: follicular neoplasm/suspicious for follicular neoplasm

Conclusion

➢ This study demonstrated that patients with TT- UMP had higher nodule and tumor size compared to CV-PTC and NEFV-PTC patients. Moreover, we found that US features and cytological results were similar in NEFV-PTC and TT-UMP patients.