BETHESDA CLASSIFICATION IS HIGHLY PREDICTIVE ESPECIALLY FOR DIAGNOSING AGGRESSIVE VARIANTS OF PAPILLARY THYROID CARCINOMA

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Introduction

➢ Fine needle aspiration biopsy (FNAB) has proven to be the most valuable diagnostic procedure for preoperative discrimination of benign and malignant nodules. Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) has standardized reporting and cytomorphological criteria in aspiration smears. In this study, we aimed to determine malignancy rates in nodules with different cytology results and diagnostic value of TBSRTC for variants of papillary thyroid carcinoma (PTC).

Methods

➢ A retrospective analysis of 2534 cases with 5784 thyroid nodules, who had undergone FNAB followed by surgery, were included in this study. FNA was performed with ultrasound guidance. Cytological diagnosis were classified as; nondiagnostic (ND), benign, atypia of undetermined significance /follicular lesions of undetermined significance (AUS/FLUS), follicular neoplasm/suspicious for follicular neoplasm (FN/SFN), suspicious for malignancy (SUS) and malignant. Histopathological diagnoses were classified into four groups; benign, papillary thyroid cancer (PTC), follicular thyroid cancer and other types of thyroid cancer (including medullary thyroid cancer, undifferentiated thyroid cancer and thyroid tumors of uncertain malignant potential). Cases with PTC were further divided in to four categories; conventional variant, follicular variant, aggressive variants (tall cell, diffuse sclerosing and columnar variant) and other variants (oncocytic, solid/trabecular, warthin-like variants). FNAB results were compared with histopathological results.

Results

➢ Malignancy rates were 6.3%, 3.2%, 20.7%, 33.3%, 74.2%, and 95.6% in the nodules with ND, benign, AUS/FLUS, FN/SFN, suspicious for malignancy (SUS) and malignant cytologies results, respectively (Table 1). Preoperative cytology was malignant or SUS in 56.6% of classical, 24.3% of follicular, 92% of aggressive and 41.7% of other variants of histopathologically confirmed PTC. The difference between the groups was significant (Table 2) ($p<0.001$).

Table 1: Comparison of fine needle aspiration biopsy and histopathological diagnosis of 5784 nodules

Cytology	Histopathological diagnosis			
	Malignant	Benign	Total	p
ND	93 (6.3%)	1384 (93.7)	1477 (25.5%)	
Benign	103 (3.2 %)	3122 (96.8%)	3225 (55.8%)	
AUS/FLUS	129 (20.7 %)	493 (79.3%)	622 (10.8%)	
FN/SFN	34 (33.7 %)	68 (66.7%)	102 (1.8%)	<0.001
SUS	147 (74.2%)	51 (25.8%)	198 (3.4%)	
Malignant	153 (95.6%)	7 (4.4%)	160 (2.8%)	
Total	**659 (11.4%)**	**5125 (88.6%)**	**5784 (100)**	

ND=Nondiagnostic.AUS/FLUS=Atypia of undetermined significance/follicular lesion of undetermined significance. FN/SFN=Follicular neoplasm/Suspicious for follicular neoplasm. SUS= Suspicious for Malignancy.

Table 2: Matching of Bethesda categories and variants of papillary thyroid carcinoma

Histopathological diagnosis	Total	FNAB diagnosis					
		ND	Benign	AUS/FLUS	FN/SFN	SUS+malignant	p
Classical variant	375	47 (12.5%)	45 (12%)	65 (17.3%)	6 (1.6%)	212 (56.6%)	
Follicular variant	152	33 (21.7)	39 (25.7%)	34 (22.4%)	9 (5.9%)	37 (24.3%)	
Aggressive variants	25	1 (4%)	0 (0)	1 (4%)	0 (0)	23 (92%)	<0.001
Other variants	24	3 (12.5%)	2 (8.3%)	8 (33.3%)	1 (4.2%)	10 (41.7%)	

FNAB= Fine needle aspiration biopsy. AUS/FLUS=Atypia of undetermined significance/follicular lesions of undetermined significance.FN/SFN=Follicular neoplasm/Suspicious for follicular neoplasm. SUS=Suspicious for malignancy. ND=Nondiagnostic.

Conclusion

➢ Bethesda classification seems to be very effective in predicting the malignancy for the nodules diagnosed with aggressive variant PTC on the final histological examination.