



Accuracy of Fine Needle Aspiration of the Thyroid in a University Teaching Hospital

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OBJECTIVES

Thyroid Fine needle aspiration (FNA) is a safe, valuable and cost effective procedure and is now regarded as the investigation of choice for preoperative assessment of thyroid nodules¹. The reported sensitivity of thyroid FNA varies from 65-98% and the specificity from 73 to 98%². The aim of this study was to assess the accuracy of this procedure correlating cytology with histological outcomes, and to audit our practice against standard recommendations and published literature.

METHODS

The cytological diagnosis of all thyroid FNA biopsies performed in AMNCH during the 5 years period (2008-2012) was retrieved retrospectively from the pathology department laboratory information system (LIS). Excel® spread sheets were compiled to generate a database, these data included: patient's demographics, cytological diagnosis using THY grading system, procedure guidance method i.e. ultrasound (US) guided or Free-hand aspiration, and the final histological diagnosis on those who undergone surgery. Cytology results were placed into 5 diagnostic categories according to the RCPATH criteria³.

Figure 1: Cytology outcomes according to THY classification

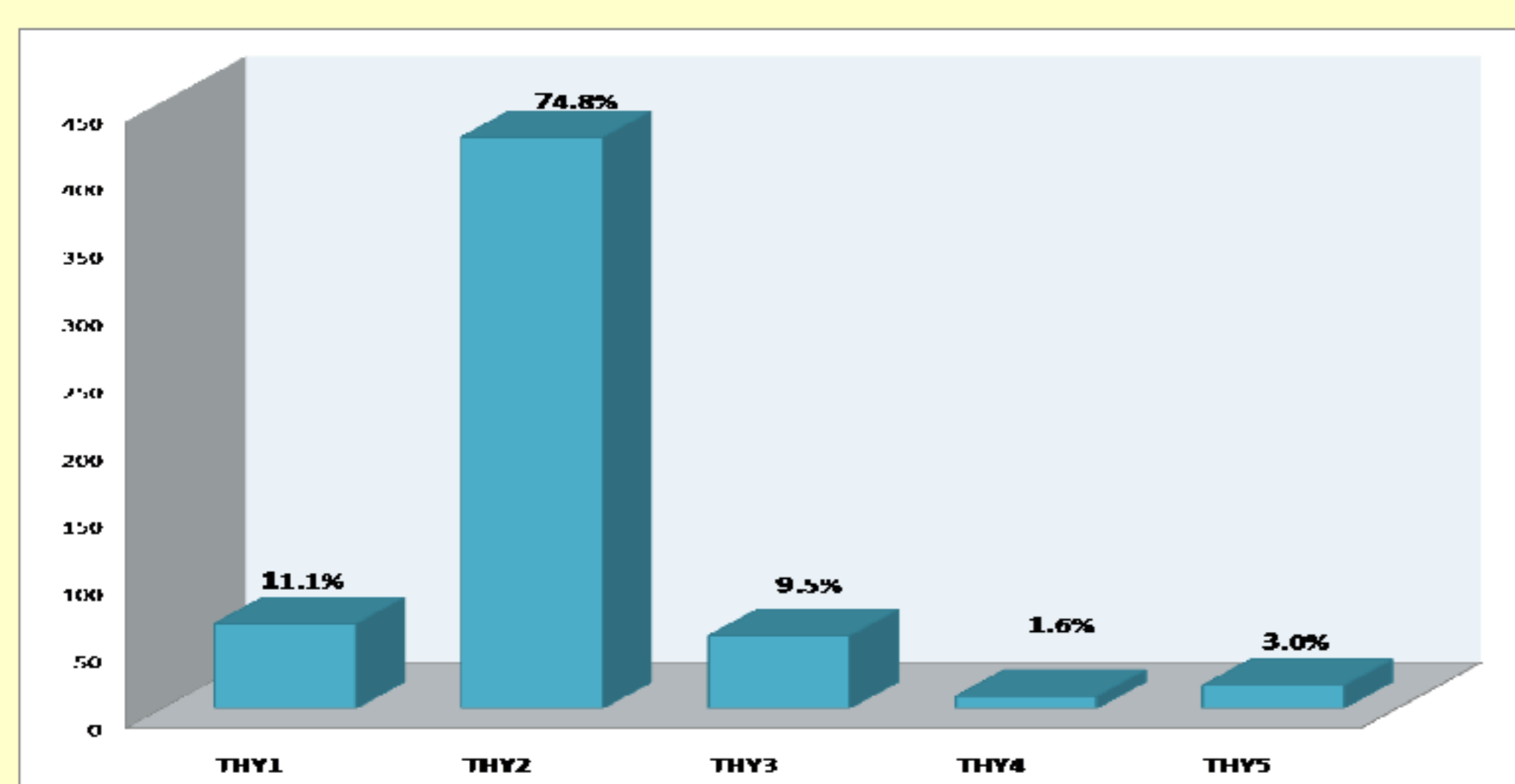


Table 1: Inadequacy rate according to guidance method.

	FNAC Adequacy		
	Non Diagnostic	Diagnostic	Total
US guided	37 (8.7%)	386(91.3%)	423
Free-hand	17(15.7%)	91(84.3%)	108

Histological Diagnosis

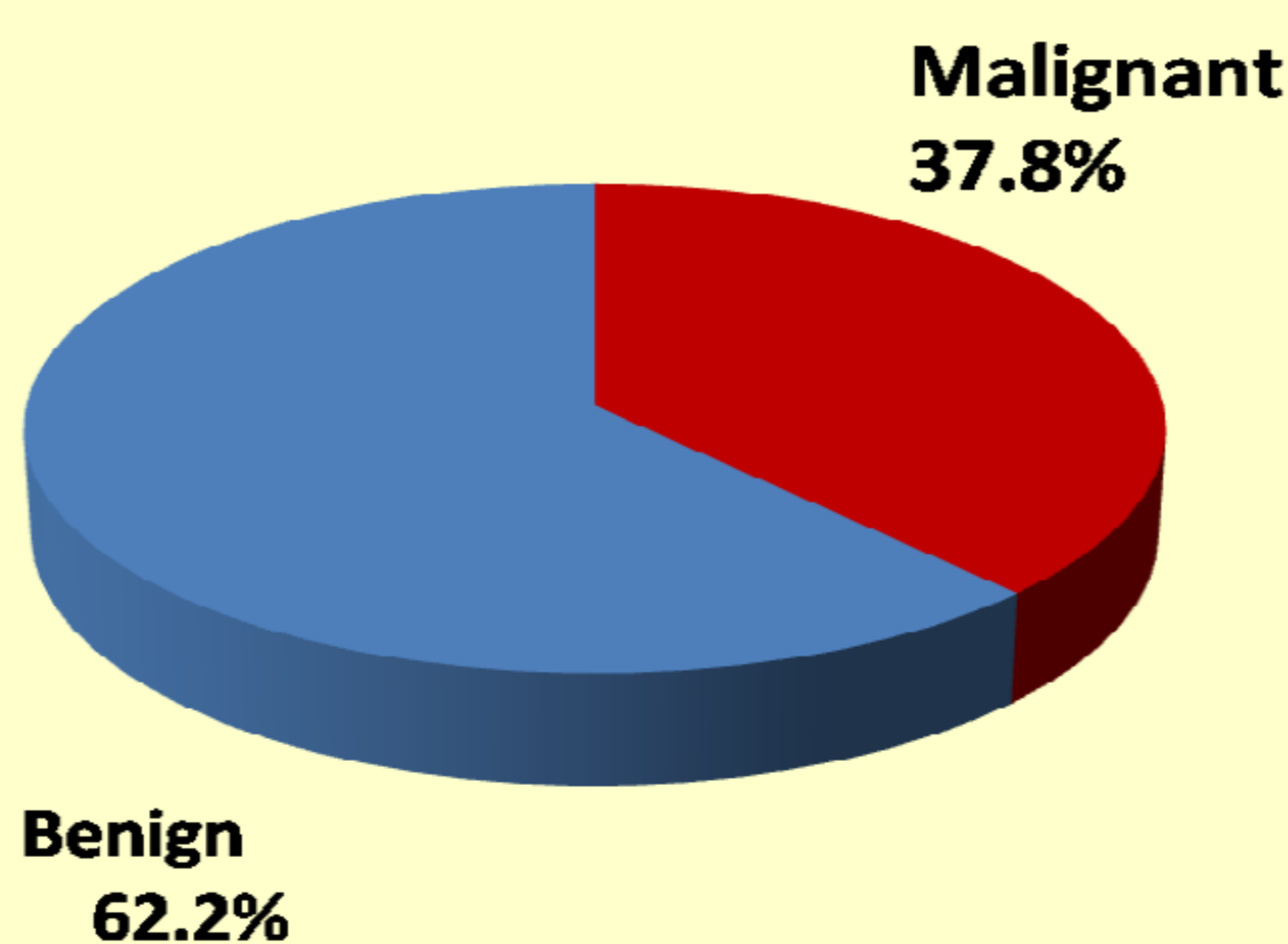


Figure 2: Histology outcomes

Table 2: Cytology/Histology Correlation

Cytology \ Histology	Cytology					Total (%)
	Thy1	Thy2	Thy3	Thy4	Thy5	
Benign	7	34	7	0	0	48 (43.2%)
Follicular Adenoma	3	6	10	2	0	21 (19%)
FC	2	0	7	0	2	11 (9.9%)
PTC	0	1	4	5	13	23 (20.7%)
MTC	1	0	1	1	1	4 (3.6%)
Pap micro carcinoma	1	0	1	0	0	2 (1.8%)
Metastasis	0	0	0	1	1	2 (1.8%)
Total	14	41	30	9	17	111(100%)

RESULTS

Between January 2008 and December 2012, 567 thyroid FNAs were performed on 433 patients. There were 349 (80.6%) females and 84 (19.4%) males, the ages of the patients ranged from 17 to 86 years. The cytological diagnoses were as follows: Thy1 (non-diagnostic) in 63 (11.1%) cases, Thy2 (benign) in 424 (74.8%) cases, Thy3 (follicular lesion) in 54 (9.5%) cases, Thy4 (suspicious for malignancy) in 9 (1.6%) and Thy5 (malignant) in 17 (3%) cases. Figure 1. Of 63 cases which were non-diagnostic, 25 had a repeat sampling, and of those a diagnostic aspirate was achieved in 84% (n=21) of cases. 80% of FNAs were performed under US guidance with onsite cytopathology evaluation, and the inadequacy rate was significantly lower in the US guided FNA compared to the free-hand aspirates (8.7% vs. 15.7% respectively, P<0.05) Table 1. 111 patients had either partial or total thyroidectomy, of which 69 (62.2%) were benign and 43 (37.8%) were malignant nodules. Figure 2. Table 2 illustrates cytology/histology correlation. The sensitivity and specificity for detecting neoplasia were 87.5% and 83%, respectively.

CONCLUSIONS

Thyroid FNA is a reliable and accurate procedure in triaging patients with thyroid nodule for surgery. Our findings are consistent with the standard recommendations and published literature. The use of US guided FNA coupled with onsite evaluation by pathologist should be the standard practice in all cases of thyroid nodules referred for FNA in order to reduce inadequacy rate and improve accuracy.

- References:** 1. Peros, P, et al. Guidelines for the management of thyroid cancer. Clinical Endocrinology, 2014; 81: 1-122. 5
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 3. Cross P, Chandra A, Giles T, et al. Guidance on the reporting of thyroid cytology specimens. London: Royal College of Pathologists; November 2009.

