International Journal of Clinical and Diagnostic Pathology

ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2020; 3(3): 287-288
Received: 19-05-2020
Accepted: 23-06-2020

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A study of accuracy of fine needle aspiration cytology of thyroid swellings

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DOI: https://doi.org/10.33545/pathol.2020.v3.i3e.296

Abstract
FNAC distinguishes between benign and malignant lesions quite effectively, it is the preoperative screening method of choice worldwide. Its use in recent years has resulted in a significant decrease in the number of surgeries being performed, while increasing the yield of malignant lesions of patients who have undergone surgery. Due to its simplicity, low cost, and absence of major complications, it is the initial investigation in the management of thyroid disease in the hospital. This study is aimed at determining the diagnostic precision of FNAC of thyroid swellings performed and compare with other regions. So this study is intended to study the accuracy of fine needle aspiration cytology of thyroid swellings.

Keywords: FNAC, Thyroid swellings, Thyroid mass, Aspiration cytology, Exclusion Criteria

Introduction
FNAC is a primary diagnosis of thyroid mass. Clinicians have available, a variety of tests giving anatomical and functional information about the thyroid gland. FNAC, by giving direct morphological information has supplanted most other tests for preoperative evaluation of thyroid nodules [1-5]. As FNAC distinguishes between benign and malignant lesions quite effectively, it is the preoperative screening method of choice worldwide. Its use in recent years has resulted in a significant decrease in the number of surgeries being performed, while increasing the yield of malignant lesions of patients who have undergone surgery [6-9]. Due to its simplicity, low cost, and absence of major complications, it is the initial investigation in the management of thyroid disease in the hospital. This study is aimed at determining the diagnostic precision of FNAC of thyroid swellings performed and compare with other regions.

Aims and objectives
To study the accuracy of fine needle aspiration cytology of thyroid swellings.

Materials and methods
Thirty cases were studied in the Department of Pathology, Kanachur Institute of Medical Sciences. FNAC was done for the thyroid gland and reported.

Inclusion criteria
Only thyroid disorders.
Exclusion Criteria.
Patients on chemo or radio therapy.

Results

Table 1: Sex Distribution

Male	10
Female	20

Table 2: Age distribution

Mean age	Std deviation
37.27 years	11.18 years

Table 3: Diagnosis

Lesions	Frequency
Benign	21
Suspicious	2
Malignant	6
Inadequate sample	1

Table 4: Distribution of accurate diagnosis

Benign lesions	
Hashimoto Thyroiditis	03
Subacute Thyroiditis	01
Colloid goiter	17
Suspicious	
Hurthle Cell Neoplasm	01
Follicular Neoplasm	01
Manilgnant Lesions	
Papillary Carcinoma	05
Medullary Carcinima	01

Discussion

The accuracy of the FNAC analysis approaches 95% in the differentiation of the benign nodules from the malignant nodules of the thyroid gland [1]. FNAC of the thyroid swellings is reported to have a sensitivity range of 65-98% and a specificity of 72-100% [2]. In our study, the analysis of the data revealed sensitivity of 65% and specificity of 99.9%. The results are comparable with the other data from different regions. Kumar *et al.* in their study on 89 patients with enlarged thyroid gland reported a sensitivity of 77%, specificity of 100%, and diagnostic accuracy of 97.7% [3]. Similarly, a study conducted by Nggada *et al.* in a teaching hospital in Nigeria reported a sensitivity of 88.9%, specificity of 96.1%, and diagnostic accuracy of 94.2% [4]. Our study and the view of other experts suggest that FNAC is more specific than sensitive in detecting thyroid malignancy and therefore its use, as initial diagnostic test. The false negative FNAC results may occur because of sampling error or misinterpretation of cytology and are of great concern because they indicate the potential to miss a malignant lesion [5]. Most authorities are of the opinion that the true false negative rate is below 5%, even if all patients with thyroid FNAC have a histopathological examination [6]. In the present study, false negative FNA has occurred in one out of twenty-five (4%) patients with benign diagnosis. This is consistent with reports in the literature that suggest a false negative rate of 2-7% [7, 8]. The false positive rate indicated that a patient with a malignant FNAC result was found on histological examination to have a benign lesion. False positive rate results were uncommon and it was 0%in our study, which was consistent with other reports that cite FPR results ranging from 0-8% [7, 8]. In the present study, the positive predictive value was 99.9%, negative predictive value was 95%, with a diagnostic accuracy of 95.2%, which was similar to the experience of others [9]. A negative FNA should never exclude malignancy if there is a strong clinical suspicion. Pitfalls in FNAC of the thyroid as mentioned by Shaha (2000) [14]. are: Adequacy of specimens, Accuracy of specimens, accuracy of cytopathological interpretation, Cysts, Follicular lesions, Hurthle cell lesions, and Lymphocytic lesions. The cytopathologists should be aware of the potential diagnostic pitfalls and the interpretational errors that can be reduced further, if the aspirates are obtained from different portions of the nodule with use of other modalities.

Conclusion

The results comparable with the other data and demonstrate that FNA cytology is a sensitive, specific, and accurate initial diagnostic test for the preoperative evaluation of patients with thyroid swellings.

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