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Original Research

Assessment of scrape cytology in the diagnosis of thyroid lesions

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ABSTRACT:
Background: Thyroid lesions encompass a variety of conditions affecting the thyroid gland, ranging from benign nodules to malignant tumors. The present study was conducted to evaluate the role of scrape cytology in the diagnosis of thyroid lesions. **Materials & Methods:**64 thyroid specimens obtained from general surgery departmentof both genders were selected. The fixed smears were stained for 30 to 45 seconds with hematoxylin in the Rapid H&E staining process. After that, they were dipped in eosin for 15 to 30 seconds and rinsed to get rid of any leftover stain. **Results:** Out of 64 patients, males were 42 and females were 22. Scrape cytology revealed goitre in 18, follicular neoplasm in 4, Hashimoto's/ inflammatory thyroiditis in 12, papillary thyroid carcinoma (PTC) in 14, follicular variant of PTC in 5, suspicious of malignancy in 3 and non-diagnostic in 10 cases. Histopathology showed colloid goitre and adenomatoid nodule in 15, follicular neoplasm in 3, Hashimoto's Thyroiditis in 12, papillary thyroid carcinoma in 14, follicular variant of PTC in 10, microinvasive PTC in 3, multicentric PTC in 3 and medullary carcinoma in 4 cases. The difference was significant (P< 0.05). **Conclusion:** In addition to FNAC, scrape cytology can be a helpful tool. It is particularly useful in cases of neoplasms that aspiration revealed to be suspect for papillary carcinoma and may eliminate the necessity for a follow-up procedure to complete thyroidectomy. Scrape cytology is an easy-to-use, quick, and reasonably priced supplementary method that ought to be applied during intraoperative thyroid lesion consultation.
Keywords: Thyroid, Scrape cytology, FNAC

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INTRODUCTION

Thyroid lesions encompass a variety of conditions affecting the thyroid gland, ranging from benign nodules to malignant tumors.One rapid and efficient technique that can be used to shorten the time it takes to provide a diagnosis is scrape cytology.[1] It has been employed as a substitute or addition to frozen sections and intraoperative consultations in a variety of tissue types. The pathologist and surgeon can quickly determine the sort of lesion in concern thanks to this method.[2] With a 93.6% diagnostic accuracy, fine needle aspiration cytology (FNAC) is a useful diagnostic method for thyroid abnormalities. On the other hand, not all thyroid nodule cases will be appropriately diagnosed on FNAC because aspirated material may lack characteristic features, and fibrosis and extensive cystic changes may result in repeated non-diagnostic aspirates that are diagnosed as suspicious and not malignant.[3]

Resection specimens that show a later histological diagnosis of cancer typically necessitate a second procedure to complete the thyroidectomy and dissect the neck.[4] These instances provide a diagnostic and treatment conundrum that results in insufficient resections and repeated thyroidectomy procedures. In most situations, however, especially those involving papillary cancer, scrape cytology can be a timely lifesaver. Usually, thyroid nodule frozen sections are performed in order to prevent recurring procedures.[5] Not every institution has access to the frozen section, particularly in environments with limited resources.[6]The present study was conducted to evaluate the role of scrape cytology in the diagnosis of thyroid lesions.

MATERIALS & METHODS

The present study was conducted on 64 thyroid specimensobtained from general surgery department of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Before being fixed, scrapings were placed in 10% buffered formalin. Using a sharp knife, the specimen was divided into two pieces following a thorough examination. Excess blood was removed from the incision surfaces using a filter paper, and the area that best represented the lesion was selected for scraping. The lesion was scraped with a sharp scalpel or the edge of a glass slide, and the semi-fluid material that was left behind was used to make slides that resembled FNAC slides. Following labeling, the smears were instantly fixed in 95% ethanol and stained with quick Haematoxylin and Eosin (H & E) stain. The fixed smears were stained for 30 to 45 seconds with hematoxylin in the Rapid H&E staining process. After that, they were dipped in eosin for 15 to 30 seconds and rinsed to get rid of any leftover stain.Cytologicalfindings were compared with pre-operative FNAC findings andhistopathological diagnosis. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 64		
Gender	**Males**	**Females**
Number	42	22

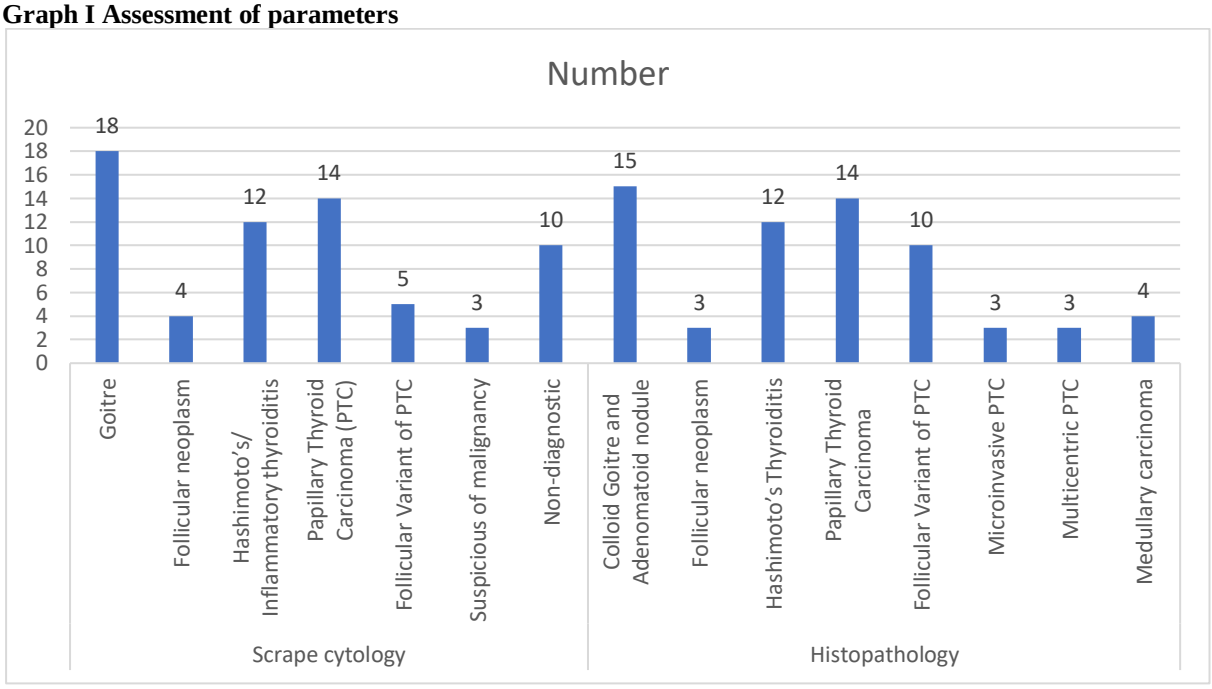
Table I shows that out of 64 patients, males were 42 and females were 22.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Scrape cytology	Goitre	18	0.05
	Follicular neoplasm	4	
	Hashimoto's/ Inflammatory thyroiditis	12	
	Papillary Thyroid Carcinoma (PTC)	14	
	Follicular Variant of PTC	5	
	Suspicious of malignancy	3	
	Non-diagnostic	10	
Histopathology	Colloid Goitre and Adenomatoid nodule	15	0.04
	Follicular neoplasm	3	
	Hashimoto's Thyroiditis	12	
	Papillary Thyroid Carcinoma	14	
	Follicular Variant of PTC	10	
	Microinvasive PTC	3	
	Multicentric PTC	3	
	Medullary carcinoma	4	

Table II shows that scrape cytology revealed goitre in 18, follicular neoplasm in 4, Hashimoto's/ inflammatory thyroiditis in 12, papillary thyroid carcinoma (PTC) in 14, follicular variant of PTC in 5, suspicious of malignancy in 3 and non-diagnostic in 10 cases. Histopathologyshowed colloid goitre and adenomatoid nodule in 15, follicular neoplasm in 3, Hashimoto's Thyroiditis in 12, papillary thyroid carcinoma in 14, follicular variant of PTC in 10, microinvasive PTC in 3, multicentric PTC in 3 and medullary carcinoma in 4 cases. The difference was significant (P< 0.05).

Graph I Assessment of parameters



DISCUSSION

Thyroid gland is a very important endocrine gland. Thomas Wharton first coined the term "thyroid".[7] The word thyroid is derived from the Greek "thyros" meaning "shield" because it was initially thought to protect the larynx. Normal thyroid gland is impalpable.1 Enlargement of thyroid gland is most common manifestation of thyroid disease.[8] Thyroid swellings presented as single or multiple nodules within the thyroid gland and remain a common clinical problem and have a reported prevalence of 4% to 7% in the general population.[9] The incidence of thyroid swellings are increasing in recent years due to goitrogens and changing food habits. The enlargement may be either localized or generalized, which may be toxic or nontoxic.[10]The present study was conducted to evaluate the role of scrape cytology in the diagnosis of thyroid lesions.

We found thatout of 64 patients, males were 42 and females were 22. Khuroo et al[11]evaluated the role of scrape cytology in the diagnosis of thyroid lesions, its role as an adjunct to fine needle aspiration cytology (FNAC) and application of this technique for intra-operative consultation. There were total of 50 patients. Out of the 50 patients, 15 were diagnosed as benign on scrape; of which 100% of cases were true negative for malignancy and five malignant cases were diagnosed as benign-false negative rate of 16.1%; four (8%) were deferred (non-diagnostic) with a true positive rate of 83.3%. Histopathological correlation was available in all cases. The overall diagnostic accuracy of scrape cytology was 89.1% with sensitivity and specificity of 83.87% (C.I.; 66.27% to 94.55%) and 100% (C.I; 76.84% to 100.00%) respectively. Fine Needle Aspiration results were available in 41 cases of which 2 were non-diagnostic. Of the remaining 39 cases 19 were benign and 20 were malignant with false negative rate of 40% and true positive rate of 60%. The overall diagnostic accuracy of FNAC was 64.1% with sensitivity and specificity of 60% (C.I.; 40.6% to77.3 %) and 77.78% (C.I; 39.9% to 97.1%) respectively.

We observed that scrape cytology revealed goitre in 18, follicular neoplasm in 4, Hashimoto's/ inflammatory thyroiditis in 12, papillary thyroid carcinoma (PTC) in 14, follicular variant of PTC in 5, suspicious of malignancy in 3 and non-diagnostic in 10 cases. Histopathology showed colloid goitre and adenomatoid nodule in 15, follicular neoplasm in 3, Hashimoto's Thyroiditis in 12, papillary thyroid carcinoma in 14, follicular variant of PTC in 10, microinvasive PTC in 3, multicentric PTC in 3 and medullary carcinoma in 4 cases. Lawrence W et al[12] observed that less than 5% of all adults will have palpable thyroid nodule. More than 95% of thyroid nodules are benign. Estimation of Thyroid stimulating hormone is useful for confirming euthyroid state. FNAB is most efficient diagnostic tool for thyroid swelling.

Rangdaeng et al[13]evaluated the role of cytology of sputum, bronchial brushing (BB), bronchial washing (BW), bronchoalveolar lavage (BAL) and fine needle aspiration cytology (FNA) in the diagnosis of lung cancer using histological material as a gold standard. Of these, 160 had been confirmed histologically to have lung cancer. Cytological materials included in the study were 31 sputa, 123 BWs, 11 BBs and 36 BALs. Meanwhile, FNAs and concurrent gun biopsies (GBs) were performed on 23 patients clinically and histologically proved to have lung cancer. The overall sensitivity of sputum, BW and BAL was 0.222, 0.455 and 0.361, respectively. BB provided a significantly far superior sensitivity (0.800) than those of three former methods with $p<0.05$ by Fisher's exact test.

FNA and GB seemed to provide greater sensitivity of 0.913 and 0.783, respectively.
The shortcoming of the study is small sample size.

CONCLUSION

Authors found that in addition to FNAC, scrape cytology can be a helpful tool. It is particularly useful in cases of neoplasms that aspiration revealed to be suspect for papillary carcinoma and may eliminate the necessity for a follow-up procedure to complete thyroidectomy. Scrape cytology is an easy-to-use, quick, and reasonably priced supplementary method that ought to be applied during intraoperative thyroid lesion consultation.

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