Section: Pathology

Original Research Article

STUDY OF CYTOLOGY OF THYROID LESIONS RETROSPECTIVE STUDY

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ABSTRACT

Background: Cytology of thyroid lesions is studied by the FNAC technique to differentiate benign from malignant lesions, because malignant lesions have a bad prognosis. **Materials and Methods:** 50 (fifty) adult patients aged between 20 to 50 years who were having thyroid swellings were studied by FNAC technique and classified with cytological examination based on the Bethesda classification of 6 groups. **Result:** 4 (6.6%) were ND/USA, 47 (78.3%) were benign, 2 (3.3%) were FN/SFN, 1 (1.61%) was SFM, and 4 (6.6%) were malignancy. **Conclusion:** The present study will be helpful to oncological surgeons to treat such patients efficiently to avoid morbidity and mortality.

INTRODUCTION

The majority of thyroid swellings are benign in nature, with goiter being the most common. The prevalence of goiter is more than 40 million in India, with more than 2 million globally.[1] The incidence of thyroid cancer nodules varies from approximately 0.1% in the general population to 20% in surgically biopsied nodules.

Fine needle aspiration cytology (FNAC) provides information that guides the management of patients with thyroid nodules by identifying patients who require surgical resection and patients who require no further intervention.[2] Lack of uniform reporting confuses clinicians and can result in inconsistent patient management; hence, a variety of tests have been employed to separate benign from malignant thyroid lesions. These tests include isotope scanning and fine needle aspiration cytology.[3] The use of isotope scanning, fine needle aspiration cytology, and histopathology of the thyroid offers the best diagnostic strategy.[4] As the isotopic scanning is costly, hence initially FNAC was ruled out, and positive malignancy was confirmed by isotopic scanning. Moreover, the FNAC technique is a nontoxic method and safer for patients; hence, FNAC is carried out to evaluate different types of lesions.

MATERIALS AND METHODS

50 (fifty) adult patients aged between 20 to 50 years who visited the Institute of Medical Sciences and Research Vidyagiri Mayani Vita Road, Mayani, Taluk-Khatav, Dist-Satara, Maharashtra-415102 were studied.

Inclusive Criteria: The patients having thyroid swelling in which cytological studies were done.

Exclusion Criteria: The patients had inadequate aspiration on FNAC. Patients who had previously undergone thyroid surgery and immunocompromised patients were excluded from the study.

Method: Detailed history of every patient was noted, clinical examination and radiological investigation were performed, and FNA (fine needle aspiration) was performed from different sites of the thyroid lump using a 10 ml disposable syringe and 23/24-gauge needle without local anesthesia. FNA air-dried smears were stained with Giemsa stain.

Cytological examination based on Bethesda classification. After careful and thorough examination of the MGG-stained aspirate smears, FNAC results were classified into six (6) groups: (1) Non-diagnostic/unsatisfactory (2) Benign (consisting of goiter and thyroiditis) (3) Atypia of undetermined significance (AUS) / Follicular lesion of undetermined significance (FLUS) (4) Follicular Neoplasm (FM) / Suspicious for Follicular Neoplasm (SFN) (5) Suspicious for malignancy (SFM) (6) Malignant.

The duration of the study was February 2012 to November 2012.

Statistical analysis: Different lesions in different categories were classified with percentages. The statistical analysis was carried out in SPSS software. The ratio of the male and the female was 1:2.

RESULTS

[Table 1] Classification of thyroid lesions 4 (6.6%) were ND/UNS (non-diagnostic or unsatisfactory),

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47 (78.3%) were benign thyroid lesions, 2 (3.3%) were AUS/FLUS (atypia of undetermined significance), 2 (3.3%) were FN/SFN (suspicious for follicular neoplasm), 1 (1.6%) was SFM (suspicious for malignancy), and 4 (6.6%) were malignant thyroid lesions.

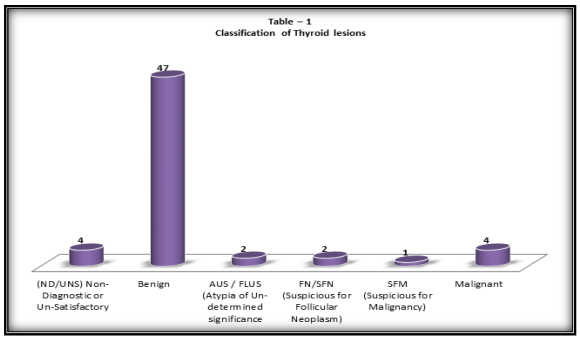

Figure 1: Classification of Thyroid lesions

[Table 2] Classification of subcategories in the Bethesda system for reporting thyroid cytopathology 2–cyst fluid only, 1–virtually a cellular specimen, 1–obscuring blood, 31–benign follicular nodule, 12–lymphocytic thyroiditis, 4–granulomatous thyroiditis, 1–AUS/FLUS, 1–SFN, 2–SFM, 4–papillary thyroid 1–carcinoma medullary thyroid.
[Table 3] Present findings are compared with previous studies.

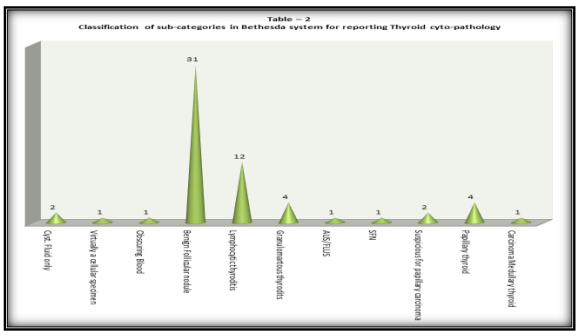

Figure 2: Classification of sub-categories in Bethesda system for reporting Thyroid cyto-pathology

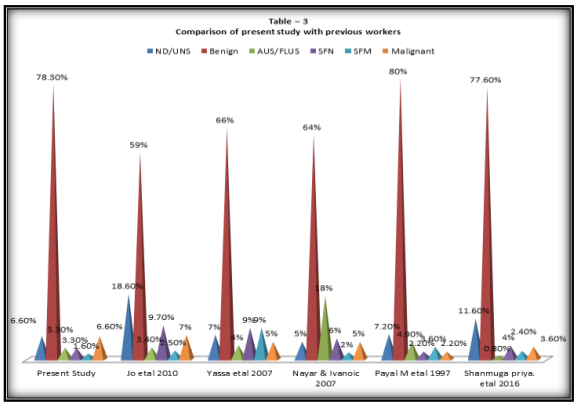

Figure 3: Comparison of present study with previous workers

Table 1: Classification of Thyroid lesions

Sl. No	Cytological Categories	Frequency	Percentage (%)
1	(ND/UNS) Non-Diagnostic or Un-Satisfactory	4	6.6 %
2	Benign	47	78.3 %
3	AUS / FLUS (Atypia of Un-determined significance	2	3.3 %
4	FN/SFN (Suspicious for Follicular Neoplasm)	2	3.3 %
5	SFM (Suspicious for Malignancy)	1	1.6 %
6	Malignant	4	6.6 %

Table 2: Classification of sub-categories in Bethesda system for reporting Thyroid cyto-pathology.

Sl. No	Cytological categories	Sub categories	No. of cases	Total No of cases
1	ND/UNS	Cyst. Fluid only	2	4
		Virtually a cellular specimen	1	
		Obscuring Blood	1	
2	Benign	Benign Follicular nodule	31	47
		Lymphocytic thyroditis	12	
		Granulomartous thyrodits	4	
3	AUS/FLUS	--	1	1
4	SFN	--	1	1
5	SFM	Suspicious for papillary carcinoma	2	2
6	Malignant	Papillary thyroid	4	5
		Carcinoma Medullary thyroid	1	

The majority of benign cases are 47 and least number of SFM is observed.

Table 3: Comparison of present study with previous workers.

Diagnostic particulars	Present Study	Jo etal 2010	Yassa etal 2007	Nayar & Ivanoic 2007	Payal M etal 1997	Shanmuga priya. etal 2016
ND/UNS	6.6%	18.6%	7%	5%	7.2%	11.6%
Benign	78.3%	59%	66%	64%	80%	77.6%
AUS/FLUS	3.3%	3.4%	4%	18%	4.9%	0.8%
SFN	3.3%	9.7%	9%	6%	2.2%	4%
SFM	1.6%	2.5%	9%	2%	3.6%	2.4%
Malignant	6.6%	7%	5%	5%	2.2%	3.6%

Present study findings are more or less in agreement with previous studies.

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DISCUSSION

The present study of cytology of thyroid lesions in the Maharashtra population. In the classification of 47 (78.3%) benign, 2 (3.3%) AUS/FLUS, 2 (3.3%) FN/SFN, 1 (1.6%) SFM, and 9 (6.3%) malignancy [Table 1], Classification of sub-categories in the Bethesda system for reporting cytopathology of the thyroid were (1) Out of 10, 2 were cyst fluid only, 1 case was virtually cellular, and 1 was obscuring blood. (2) Out of 50 benign cases, 31 were benign follicular nodules, 12 were lymphocytic thyroiditis, and 4 were granulomatous thyroiditis. (3) 1 case of AUS/FLUS, (4) 1 SFN, (5) 2 SFM cases, and (6) out of 5 malignant cases, 4 were papillary thyroid carcinoma and 1 was medullary thyroid carcinoma. These findings are more or less in agreement with previous studies.[6-8]

It is reported that nodules or lesions are the weak predictors of histological malignancy. FNAC is a sensitive and highly specific method of evaluating malignancy of thyroid lesions,[9] and the false positive rate of FNAC was found to be benign lesions.

As the thyroid gland is a highly vascular organ, with each impending trauma, the chances of aspirating hemorrhagic fluid increase, so it is advised to keep the number of aspirates to a minimum.[10] It is also believed that cellularity criteria for adequacy also vary depending on whether the aspirated lesion is solid or cystic and whether the aspiration was performed under palpation or ultrasound guidance. Aspirates that contain only cyst fluid and erythrocytes are inadequate.[11] The Bethesda system of reporting thyroid cytology is a standardized initial modality for diagnosing different thyroid lesions. It can detect benign and malignant lesions, thus avoiding unnecessary surgery for benign thyroid lesions.[12]

Limitation of study: Owing to remote location of research centre, small number of patients lack of latest techniques we have limited finding and results.

CONCLUSION

The present study of cytology of thyroid lesions in the Maharashtra population shows that FNAC is a rapid, simple, and cost-effective diagnostic modality in the investigation of thyroid lesions with high sensitivity, specificity, and accuracy. It can be used as an excellent first-line method for investigating the nature of a lesion. The Bethesda system is very useful as it is a simplified, systematic, standardized system for reporting cytopathology, which provides better communication between cytopathology and clinicians, leading to a more consistent approach. But this study demands further genetic, histopathologic, hormonal, nutritional, immunological, and pharmacological studies because the exact pathogenesis of thyroid lesions is still unclear.

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