

Study of Cytology of Thyroid lesions in Madhya Pradesh Population

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Abstract

Background: Thyroid lesions are mainly endocrine disorders, mainly observed in females rather than males. Benign lesions are due to goiter. Lesions associated with enlargement of lymph nodes and have to be suspicious of malignancies.

Method: 80 (eighty) adult patients aged between 20 to 50 years who were having thyroid swellings were studied by the FNAC technique and classified with cytological examination based on the Bethesda classification of 6 groups.

Results: 5 (6.5%) were ND/USA, 63 (78.7%) were benign, 3 (3.7%) were FN/SFN, 1 (1.2%) was SFM, and 5 (6.25%) were malignant.

Conclusion: The present study will be helpful to oncological surgeons to treat such patients efficiently to prevent morbidity and mortality.

Keywords: FNAC, ND/UNS, Benign, AUS/FLUS, FN/SFN, SFM.

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Introduction

Thyroid lesions are due to endocrine disorders. In clinical practice, most of the lesions are benign, but significant cases of malignancies are also reported [1]. It is also observed that among the benign goiters, the most common is the multinodular goiter. The prevalence of goiter is more than 40 million in India and more than 2 billion worldwide [2]. Females are more prone to thyroid swellings than males. It is due to iodine deficiency.

For first line of diagnosis, the FNAC (fine needle aspiration cytology) technique is accepted globally to differentiate thyroid lesions from benign or malignant [3].

Thyroid lesions could be diffuse, firm, palpable, solitary nodules, nodules associated with suspicious clinical or ultrasonographic features, dominant nodules in multinodular goitre, recurrent cystic nodules, and nodules associated with palpable lymph nodes. So that unnecessary surgical approach can be avoided.

Thyroid cytological study provides a definite diagnosis of benign (goiter) or malignant with tumor type, enabling appropriate therapy or surgical approach. The thyroid cytology treatment has two options: therapeutic and diagnostic [4]. Hence, an attempt is made to evaluate the different types of thyroid lesions in adult patients.

Material and Method

80 (eighty) adult patients aged between 20 to 50 years who visited RKDF Medical College hospital, Bhopal, Madhya Pradesh-462026, were studied.

Inclusive Criteria: The patients having thyroid swelling who gave their consent for the study in writing for cytological studies were selected.

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: A 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 August 2023 to October 2024.

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.

Observation and Results

Table 1: Classification of thyroid lesions – 5 (6.25%) (ND/UNS) non-diagnostic or unsatisfactory, 63 (78.7%) benign, 3 (3.75%) AUS/FLUS (Atypia of undetermined significance), 3 (3.7%) were FN/SFN (suspicious for follicular

neoplasm), 1 (1.25%) was SFM (suspicious for malignancy), 5 (6.25%) were malignant.

Table 2: Classification of subcategories in Bethesda system for reporting thyroid cytopathology ND/UNS – 3 cyst. Fluid only, 1–virtually a cellular specimen, 1–obscuring blood, Total number cases are 5

Benign: 41 benign follicular nodule, 17 lymphocytic thyroiditis, 5–granulomatous thyroiditis, Total number of cases are 63.

1 cases of AUS/FLUS, 2 cases of SFN, 7 Malignant cases, 6 papillary thyroid, 1 carcinoma medullary thyroid

Table 3: Present study findings are compared with previous workers.

Table 1: Classification of Thyroid lesions: (Total No: 80)

Sl. No.	Cytological Categories	Frequency	Percentage (%)
1	(ND/UNS) Non-Diagnostic or Un-Satisfactory	5	6.25 %
2	Benign	63	78.7 %
3	AUS / FLUS (Atypia of Un-determined significance	3	3.75 %
4	FN/SFN (Suspicious for Follicular Neoplasm)	3	3.75 %
5	SFM (Suspicious for Malignancy)	1	1.25 %
6	Malignant	5	6.25 %

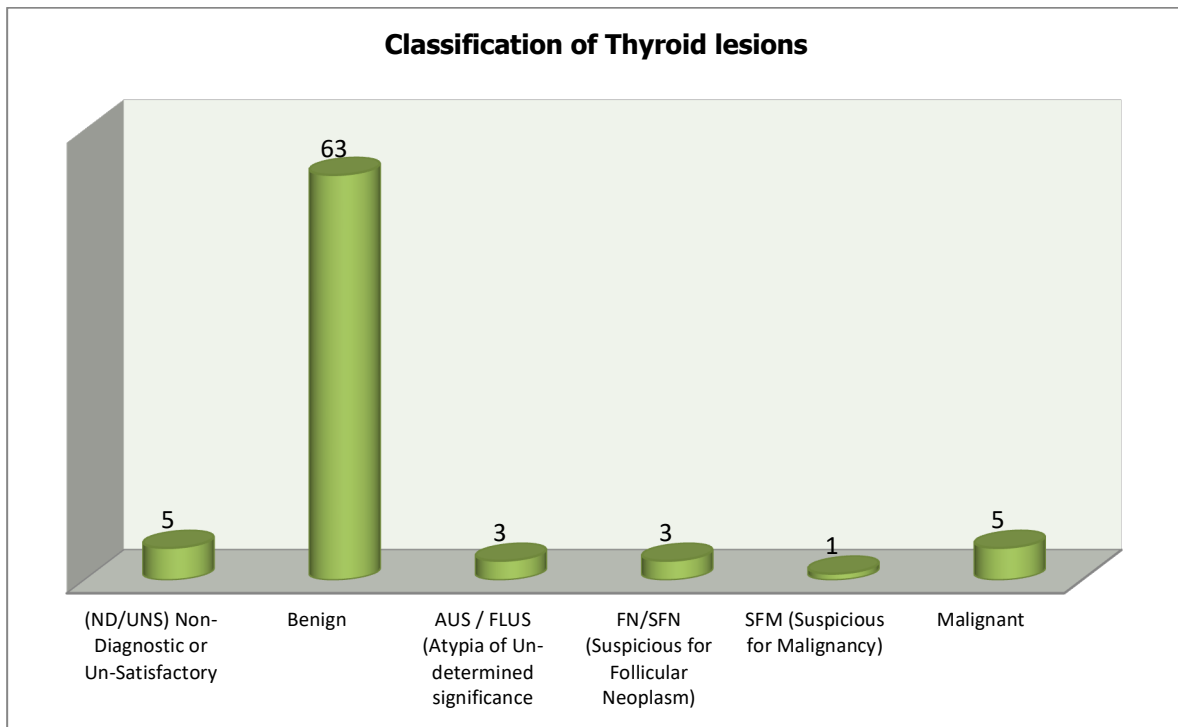


Figure 1: Classification of Thyroid lesions

Table 2: Classification of sub-categories in Bethesda system for reporting Thyroid cyto-pathology (Total No: 80)

Sl. No	Cytological categories	Sub categories	No. of cases	Total No of cases
1	ND/UNS	Cyst. Fluid only	3	5
		Virtually a cellular specimen	1	
		Obscuring Blood	1	
2	Benign	Benign Follicular nodule	41	63
		Lymphocytic thyroiditis	17	
		Granulomatous thyroiditis	5	
3	AUS/FLUS	--	1	1
4	SFN	--	1	1
5	SFM	Suspicious for papillary carcinoma	3	3
6	Malignant	Papillary thyroid	6	7
		Carcinoma Medullary thyroid	1	

The majority of benign cases are 63 and least number of SFM is observed.

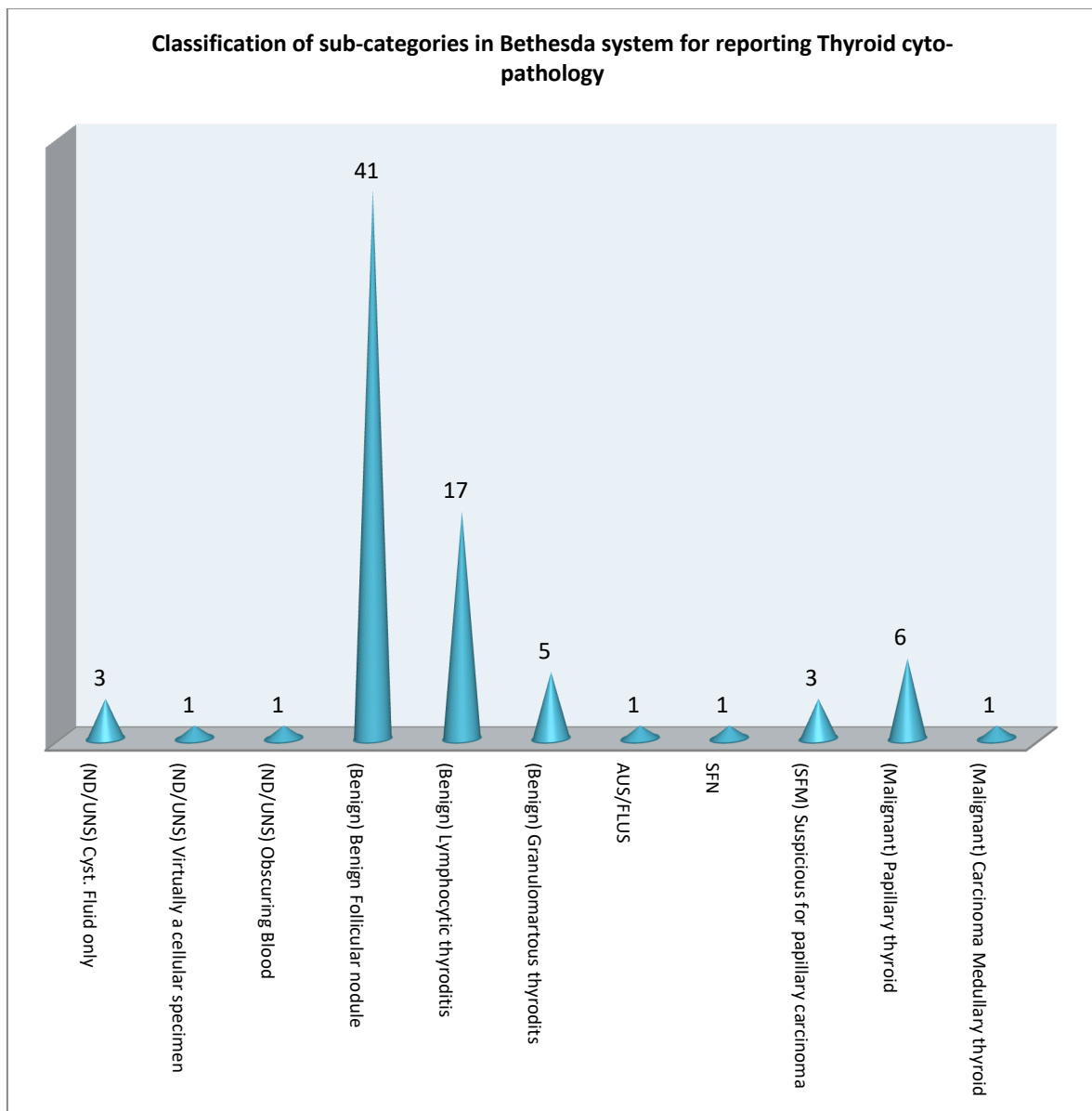


Figure 2: Classification of sub-categories in Bethesda system for reporting Thyroid cyto-pathology

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	6.25%	18.6%	7%	5%	7.2%	11.6%
Benign	78.7%	59%	66%	64%	80%	77.6%
AUS/FLUS	3.75%	3.4%	4%	18%	4.9%	0.8%
SFN	3.75%	9.7%	9%	6%	2.2%	4%
SFM	1.25%	2.5%	9%	2%	3.6%	2.4%
Malignant	6.25%	7%	5%	5%	2.2%	3.6%

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

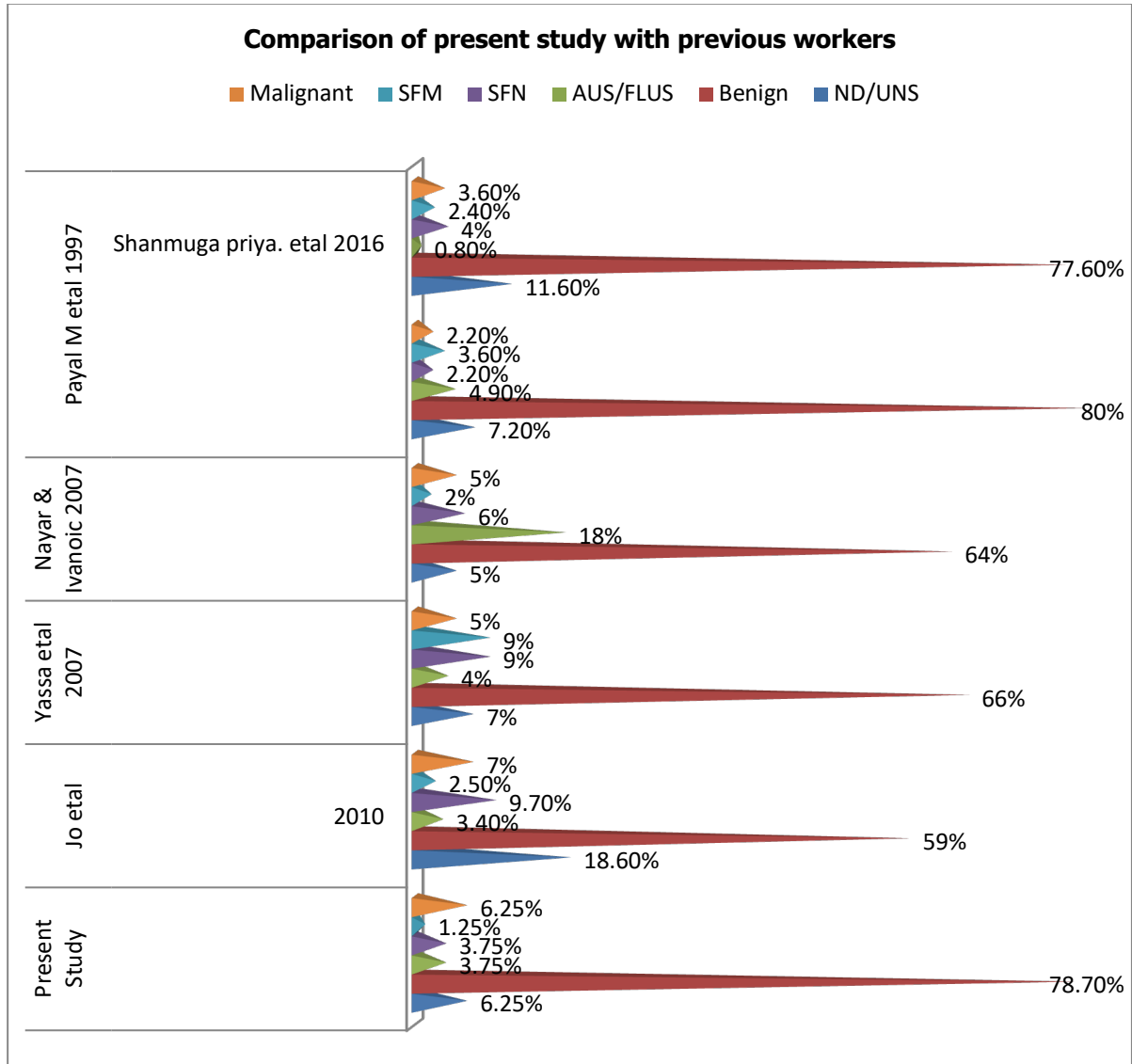


Figure 3: Comparison of present study with previous workers

Discussion

The present study of the cytology of thyroid lesions in the Madhya Pradesh population. In the classification of 63 (78.5%) benign, 3 (3.7%) AUS/FLUS, 3 (3.7%) FN/SFN, 1 (1.25%) SFM, and 5 (6.25%) malignancy (Table 1). The classification of subcategories in the Bethesda system for reporting cytopathology of the thyroid

was that out of 5, 3 were cyst fluid only, 1 case was virtually cellular, and 1 was obscured by blood. Out of 63 benign cases, 41 were benign follicular nodules, 17 were lymphocytic thyroiditis, and 5 were granulomatous thyroiditis. 1 case of AUS/FLUS, 1 SFN, and 3 SFM cases, and out of 7 malignant cases, 6 were papillary thyroid carcinoma, and 1 was medullary thyroid carcinoma. These findings are more or less in agreement with

previous studies [6,7,8]. 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.

Summary and Conclusion

The present study of the cytology of thyroid lesions in the Madhya Pradesh 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.

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

This research paper was approved by ethical committee of RKDF Medical College hospital, Bhopal Madhya Pradesh-462033.

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