

Original Research Article

A STUDY ON EVALUATION OF THYROID LESIONS BASED ON BETHESDA SYSTEM IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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ABSTRACT

Background: Fine needle aspiration cytology (FNAC) of thyroid is a low cost, effective, safe diagnostic tool which can aid in evaluation of benign and malignant lesions. The Bethesda System of Reporting Thyroid Cytopathology (TBSRTC) of thyroid nodules standardizes the nomenclature of reporting of thyroid cytological findings.

Material and Methods: This prospective study was conducted in Department of Pathology at Osmania General Hospital, Afzalgunj, Hyderabad over a period of 2 years which included 424 patients with thyroid nodules from the Departments of Surgery, Medicine and E.N.T.

Results: Females (n= 373) outnumbered males. Lesions belonging to Category – II (Benign) were the predominant ones. Out of 424 samples, 3.5% of them had malignancy.

Conclusion: This study concludes that nomenclature according to TBSRTC ensures uniformity in reporting.

Keywords: FNAC, thyroid nodule, Bethesda, cytopathology.

INTRODUCTION

Thyroid disorders are one of the most commonly encountered endocrinological disorders worldwide. The incidence of thyroid nodules as per studies worldwide is 4–8%.^[1] Differentiating the benign and malignant lesions are important in the management of the patients.^[2]

Fine needle aspiration cytology (FNAC) is a quick and easy method of studying the cytology of superficial swellings done on outpatient basis. Thyroid is one of the most frequently sampled organ by FNAC owing to the increasing incidence of thyroid swellings. Thyroid fine- needle aspiration (FNA) has been in use for many years and is now the mainstay of preoperative diagnosis of thyroid lesions.^[1,3]

FNAC can be used to differentiate benign from malignant nodules of thyroid with approximately 100% positive predictive value and 92% negative predictive value,^[1] this technique provides valuable information in guiding the physician on further management.

Limitations of FNAC procedure are related to skill of the aspirator, the expertise of the cytopathologist and the difficulty in distinguishing some benign cellular adenomas from malignant counterpart.

However, due to the lack of a standardized system of reporting, pathologists have been using different terminologies and diagnostic criteria, thereby creating confusion amongst referring clinicians in the interpretation of the cytopathology report, ultimately hindering a definitive clinical management. 2-4 To overcome this issue, the National Cancer Institute (NCI), Bethesda, Maryland, United States, organized the NCI Thyroid Fine Needle Aspiration State-of-the- Science Conference, and an initiative was undertaken to publish an guidelines using a standardized nomenclature for the interpretation of thyroid fine needle category, aspirates, known as the Bethesda system for reporting thyroid cytopathology (TBSRTC).^[5]

This system divides any thyroid lesion into six diagnostic categories of lesions: “Non-diagnostic/unsatisfactory; benign; atypical follicular lesion of undetermined significance (AFLUS);

suspicious for follicular neoplasm (SFN); suspicious for malignancy (SM) and malignant. The six diagnostic categories of the Bethesda system have individual implied risks of malignancy that influence management.^[6,7]

This study was undertaken to evaluate the type of thyroid lesions presenting to tertiary care hospital according to Bethesda classification and to assess the malignancy risk for each category by follow-up histopathology.

MATERIAL AND METHODS

This prospective study was conducted in Department of Pathology, Osmania General Hospital, Afzalgunj, Hyderabad over a period of 2 years, i.e. from May 2021 to June 2023. A total of 424 patients who presented with thyroid nodules to the departments of surgery, ENT and medicine. During the study period were included in the study. A detailed history of complaints was taken and general examination was done. All the patients with thyroid nodules who presented during the study period were included in the study after taking a written informed consent.

Patients were explained about the procedure initially and after their consent, under strict aseptic precautions the thyroid swelling was aspirated using a 23G aspiration needle.

The aspirate was spread on a glass slide and stained using H&E stain, Papanicolau stain. After drying up of the stain, the slide was observed under a microscope.

Reporting of FNA was done by using TBSRTC. Prior to starting the study, permission from ethical committee was sought after.

RESULTS

The mean age of study population is 31.2 years. Out of 424 cases, 88% were females and the rest 12% were males.

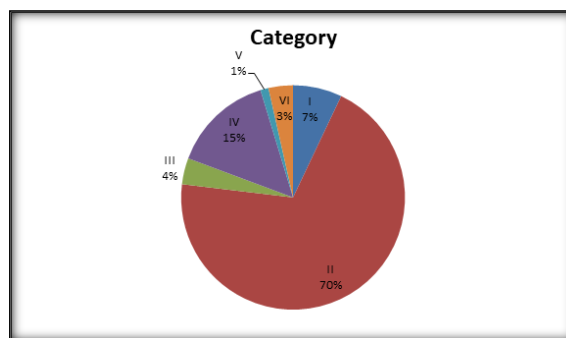


Figure 1: category wise distribution of thyroid lesions

In the present study, benign follicular nodule was the most predominant lesion of all, followed by Hashimoto's thyroiditis.

Table 1: Gender distribution of cases according to categories

Category	Total no of cases	No of females	No of males	Percentage
I Non diagnostic/ unsatisfactory	30	26	4	7.07%
II Benign	296	260	36	69.8%
III AUS/FLUS	16	14	2	3.7%
IV SFN/FN	62	58	4	14.6%
V SM	5	4	1	1.1%
VI Malignant	15	11	4	3.5%
TOTAL	424	373	51	100%

Table 2: lesion wise distribution

Category	Type of lesion	No. of lesions
I Non- diagnostic / unsatisfactory (n = 30)		24 (7.07%)
	Benign follicular nodule	105 (24.7%)
II Benign (n = 296)	Grave's disease	2 (0.47%)
	Hashimoto's thyroiditis	100 (23.5%)
	Nodular hyperplasia of thyroid	27 (6.3%)
	Acute suppurative thyroiditis	1 (0.2%)
	Goitre	55 (12.9%)
	Colloid cyst	6 (1.4%)
	Atypia of undetermined significance/ follicular lesion of undetermined significance (n = 16)	
IV Follicular neoplasm/ suspicious of follicular neoplasm/ Hurtle cell type (n = 62)	Hurtle cell neoplasm	6 (1.4%)
	Follicular neoplasm	56 (13.2%)
V Suspicious of malignancy (n = 5)		5 (1.1%)
VI Malignancy (n = 15)	Papillary carcinoma	9 (1.5%)
	Medullary carcinoma	6 (1%)

DISCUSSION

During the period of 2 years, a total number of 424 FNAC's of thyroid gland were done.

In the present study, cytodiagnostic evaluation of thyroid lesions were done and classified according to The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC).

Table 3: comparison with other studies

Category	Present study	Yassa et al ⁸	Yang J et al ⁹	Mehra et al ¹⁰	Smita et al ¹¹
I	7.07%	7 %	10.4%	7.2%	2.41%
II	69.8%	66%	64.6%	80%	88.5%
III	3.7%	4%	3.2%	4.8%	1.82%
IV	14.6%	9%	11.6%	2.2%	4.24%
V	1.1%	9%	2.6%	3.6%	1.21%
VI	3.5%	5%	7.6%	2.2%	1.82%

The mean age in the present study was 31.2 years which was comparable with Handa et al,^[12] Female to male ratio in the present study was 7.3:1. It was lower when compared to and was comparable with studies of Renuka I V et al, 13 which had female to male ratio 9:1.

The present study has been compared with other other to assess the overall prevalence of thyroid lesions worldwide. The percentage of Cat –I lesions is similar to that of Yassa et al 8 and Mehra et al.^[10] However, Smita et al,^[11] had observed the lowest prevalence of Cat – I lesions.

In all studies lesions belonging to Cat – II was predominant, with the highest prevalence observed by Smita et al,^[11] and Mehra et al.^[10]

In present study, 3.5% had malignancy. However, Yang J et al,^[9] had observed 7.6% of the samples detected to be malignant. The variation in prevalence of malignancy in thyroid lesions could be owing to technical issues, geographical changes and ethnicity.

CONCLUSION

The primary objective of FNAC of the thyroid is to differentiate between benign and malignant lesion. Laying of nomenclature protocols by TBSRTC has brought about standardization and uniformity in reporting the lesions. This aids in guiding the physician towards a proper diagnosis and ultimately initiate appropriate treatment.

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