



CYTOMORPHOLOGICAL SPECTRUM OF THYROID LESIONS IN MIDDLE AGED WOMEN: A TWO-YEAR PROSPECTIVE STUDY

Pathology

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ABSTRACT

Background: Thyroid gland can be affected by numerous pathologies, many of which ultimately lead to enlargement of the gland. Thyroid diseases are seen more commonly in female population. We conducted a study on thyroid lesions in middle aged women presenting with palpable thyroid swellings in our department. FNAC of the lesions was done, and the spectrum of thyroid lesions was studied using The Bethesda System for Reporting Thyroid Cytology. **Methodology:** A two-year prospective study was conducted in Jhalawar Medical College in department of pathology, Jhalawar (Rajasthan) on 220 patients who met the inclusion criteria. After taking informed consent and relevant history of the patient, FNAC was performed, smears were prepared and stained using Romanowsky stain (Field stain) and Papanicolaou stain. Reporting was done using The Bethesda System for Reporting Thyroid Cytology and lesions were categorized into six Bethesda categories. **Results:** 220 patients aged 31-65 years were taken for study. Mean age was calculated as 43.1 years. After classifying the lesions using TBSRTC, it was observed that there were 6 cases (2.7%) in Bethesda category I, 191 cases (86.8%) in Bethesda category II, 2 cases (0.9%) in Bethesda category III, 13 cases (5.9%) in Bethesda category IV, 3 cases (1.3%) in Bethesda category V, 5 cases (2.27%) in Bethesda category VI. Out of the benign lesions, 68 cases (36%) were of colloid goitre, 59 cases (31%) were nodular goitre, 25 cases (13%) were of subacute granulomatous thyroiditis and 39 cases (20%) were of Hashimoto's thyroiditis. Out of 5 cases of malignant lesions, 2 cases were of papillary carcinoma and medullary carcinoma constituting 40% each and single case of anaplastic carcinoma constituting 20%.

KEYWORDS

Thyroid, FNAC, Bethesda category, Goitre, Thyroiditis

INTRODUCTION:

Superficial location of the thyroid gland allows to perform FNAC of the lesion conveniently. As FNAC is minimally invasive, reliable, cost effective and highly accurate test, we used it to analyze the thyroid lesions and classified them according to TBSRTC 2017. It is used to triage patients for further treatment, which could be medical or surgical. FNAC is widely accepted as most accurate procedure to differentiate benign and malignant thyroid nodules and helps preoperatively in selecting patients for surgery.

FNAC used together with other diagnostic modalities such as thyroid scanning, ultrasonography, thyroid hormone profile and antibody level measurements enhances diagnostic accuracy of the technique.

MATERIAL AND METHODS:

After permission from the ethical committee, a two-year prospective study was conducted on 220 patients. Middle aged women (31-65 years) presenting with complaint of thyroid swellings referred from surgery and ENT outdoor and indoor departments were selected for study.

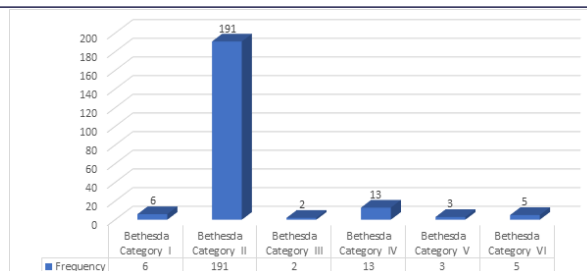
After taking consent from the patient, FNAC procedure was done under all septic precautions and smears were made. After staining of the smears, reporting was done using TBSRTC and the lesions were classified into six categories, category I (Nondiagnostic or Unsatisfactory), category II (Benign), category III (Atypia of Undetermined Significance or Follicular Lesion of Undetermined Significance), category IV (Follicular Neoplasm or Suspicious for a Follicular Neoplasm), category V (Suspicious for Malignancy) and category VI (Malignant).

Each category has an implied cancer risk. As a function of these risk associations, each category is linked to evidence-based clinical management guidelines.

RESULTS AND DISCUSSION:

Out of 220 cases, most of the cases (32%) were in age group 31-35 years, followed by 36-40 (19%), 46-50(13%), 41-45(12%), 56-60(9%), 51-55(8%), 61-65(7%). Mean age was calculated as 43.1 years.

After classifying according to TBSRTC, it was observed that, 6 cases (2.7%) belonged to Bethesda category I, 191 cases (86.8%) belonged to Bethesda category II, 2 cases (0.9%) belonged to Bethesda category III, 13 cases (5.9%) belonged to Bethesda category IV, 3 cases (1.3%) belonged to Bethesda category V, 5 cases (2.27%) belonged to Bethesda category VI. The results are depicted in the following chart.



While studying for the distribution of thyroid lesions in various age groups, It was observed that maximum cases of our study belonged to patients of age group 31- 35 years with maximum accountability (62 cases) to Bethesda category II, followed by Bethesda Category IV and I constituting 8 and 6 cases respectively and single cases belonging to Bethesda Categories V and VI. In age group 36-40 years, maximum cases belonged to Bethesda Category II constituting 36 cases, followed by Bethesda category VI constituting 2 cases and single cases in category I and III each. In age group 41-45 years, there were 25 cases belonging to Bethesda category II and 2 cases belonging to Bethesda Category IV. In age group 46-50, 20 cases belonged to Bethesda Category II, single case in Bethesda Category I and V. In age group 51-55, all 15 cases belonged to Bethesda Category II. In age group 56-60, 22 cases belonged to Bethesda category II, followed by 2 cases in Bethesda Category VI and single case in Bethesda categories IV, V and VI. In age group 61-65 years, 11 cases belonged to Bethesda Category II and 2 cases to Bethesda category IV.

Out of the total 191 benign lesions, 68 cases (36%) were of colloid goitre, 59 cases (31%) were nodular goitre, 39 cases (20%) were of Hashimoto's thyroiditis and 25 cases (13%) were of subacute granulomatous thyroiditis. Out of 5 cases of malignant lesions, 2 cases were of papillary carcinoma and medullary carcinoma constituting 40% each and single case of anaplastic carcinoma constituting 20%.

In studies conducted by Kaur B et al.^[5], Agarwal P et al.^[6], Bhagwat et al.^[7], Malhotra et al.^[3], it was observed that females patients were more than males in ratio of 5.3:1, 8.6:1, 6.5:1, and 9.1:1, respectively. As females have more predisposition towards the thyroid diseases, we took them as our subjects for study, specifically aged from 30-65 years. We conducted a study to analyse cytomorphology of thyroid lesions using the FNAC technique. In this study, we observed that most of the cases (32%) were in age group 31-35 years, followed by 36-40 (19%), 46-50(13%), 41-45(12%), 56-60(9%), 51-55(8%), 61-65(7%).

Kour B, et al.^[8] has done a study to identify the various cytological

patterns of thyroid lesions by FNAC, they concluded that most of the patients 30% cases were in their 3rd decade of life, in our study we observed it to be 41%.

In our study, it was observed that 197 cases (90.8%) are non-neoplastic and 21 cases (9.2%) were neoplastic which were comparable with the results obtained in the study done by **Kaur b et al.**^[5], where authors concluded that a total of 89.29% thyroid lesions were non-neoplastic and 10.71% neoplastic. Out of non-neoplastic lesions maximum 68 cases of colloid goitre were seen, followed by nodular goitre 59 cases, Hashimoto's thyroiditis 39 cases and subacute granulomatous thyroiditis constituting 25 cases. Among neoplastic lesions, maximum were follicular neoplasm constituting 13 cases, followed by 2 cases of Papillary carcinoma and medullary carcinoma each and one case of anaplastic carcinoma. Colloid goitre was the most frequent non-neoplastic thyroid lesion observed in 51.43% patients, followed by lymphocytic thyroiditis in 28.57% patients. Neoplastic lesions included follicular neoplasm and papillary carcinoma thyroid observed in 4.29% patients each, followed by anaplastic carcinoma thyroid in 1.42% patients and medullary carcinoma thyroid in 0.71% patient.

Among the benign lesions, most of the cases were of colloid goitre (36%), followed by nodular goitre (31%), Hashimoto's thyroiditis (20%) and Subacute granulomatous thyroiditis (13%).

Among the malignant lesions, we diagnosed 2 cases of Papillary and Medullary carcinoma each, constituting 40% each, followed by 1 case of anaplastic carcinoma constituting 20%.

In this study it was observed that percentage of cases in Bethesda Category I was 2.7% which is similar to the study done by **Pattnaik et al.**^[9] who observed it to be 2.09%. In Bethesda category II, we got 86.8% of cases which was comparable with the result obtained by **R Nikita et al.**^[8] and **Pattnaik et al.**^[9] which was 87.6% and 89.67% respectively. In Bethesda category III we observed 0.9% cases which was comparable with result obtained by **Bhat S et al.**^[11] which is 2%. In Bethesda Category IV, we obtained 5.9% cases which was same as study conducted by **Gheria A et al.**^[4]. In Bethesda category V, we obtained 1.3% cases which was comparable with studies conducted by **R Nikita et al.**^[8] and **Bhat S et al.**^[11] in both of the studies it constituted 1.6%. In Bethesda category VI, we observed results to be 2.27% which is comparable with **Mahera et al.**^[2] and **Modi R et al.**^[10] who observed it to be 2.20% and 2.28% respectively. Comparison of results our study with other studies using TBSRTC are shown in the table below.

Bethesda Category	Gheria A et al. ^[4] (in%)	R Nikita et al. ^[8] (in%)	Mahera P et al. ^[2] (in%)	Pattnaik et al. ^[9] (in%)	Bhat S et al. ^[11] (in%)	Modi R et al. ^[10] (in%)	Present study (in%)
I	0.02	5.2	7.2	2.09	6.6	8	2.7
II	82.5	87.6	80	89.67	82	82.2	86.8
III	0.02	2.80	4.9	5.97	2	2.8	0.9
IV	6	2.40	2.2	1.45	2.5	0.5	5.9
V	0.01	1.60	3.6	0.29	1.6	4	1.3
VI	6	0.04	2.2	0.58	5.1	2.28	2.27

Limitations Of Study: The present study was conducted to limited sample size in a particular geographic area for limited time duration, hence the results cannot be generalised.

CONCLUSION:

FNAC is a safe, inexpensive, reliable and rapid procedure in which no hospitalization or anesthesia is required. It helps in segregating benign and malignant cases helping with the selection of cases which require surgical interventions. However, the skill of person doing aspiration, location of target lesion, careful reporting FNAC is the key to true diagnosis and proper treatment in thyroid lesion.

Abbreviations: FNAC: Fine Needle Aspiration Cytology, TBSRTC: The Bethesda System for Reporting Thyroid Cytology

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