

Cytomorphological Assessment of FNAC Findings of Thyroid Swellings

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Abstract

Background: There is enormous burden of thyroid diseases in the general population. Among all the endocrine disorders, thyroid disorders are the most common in India. The present study was conducted to assess FNAC findings of thyroid swellings. **Subjects and Methods:** The present study was conducted on 108 patients with thyroid swellings. A thorough clinical examination was performed. USG findings were recorded in the available patients. FNAC was done as per standard protocols. **Results:** Out of 108 cases, males were 32 and females were 76. Common thyroid swelling was colloid nodular/adenomatous goitre seen in 57 patients followed by Lymphocytic Thyroiditis in 17 patients, simple colloid cyst in 12 patients, follicular neoplasm in 10 patients, toxic goiter (grave's disease) and papillary carcinoma in 03 patients each with insufficient material obtained in 06 patients. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that most common thyroid swelling was colloid nodular/adenomatous goitre followed by lymphocytic thyroiditis with sensitivity of FNAC found to be 73.5%.

Keywords: Thyroid, swelling, FNAC, goiter.

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Introduction

There is enormous burden of thyroid diseases in the general population. Among all the endocrine disorders, thyroid disorders are the most common in India. Thyroid lesions may be developmental, inflammatory, hyperplastic and neoplastic.^[1] Diseases of the thyroid gland are common and comprise a spectrum of entities causing systemic disease (Grave's disease) or a localized or diffuse enlargement of the thyroid gland such as nodular enlargement (goitre) or a tumor mass.^[2] The prevalence of goitre differs according to the geographical region, age and sex. Lesions affecting the thyroid can be accurately diagnosed by a careful histopathological examination of thyroidectomy specimens.^[2]

Long standing goitre (more than 5 years) is regarded as a risk factor for the development of thyroid cancer. Thyroid cancer is a relatively rare malignancy, representing only 1.5% of all the cancers, but it is the commonest endocrine cancer accounting for 92% of all endocrine malignancies. Papillary carcinoma is the most common thyroid cancer followed by follicular, medullary, anaplastic and lymphoma.^[3]

Thyroid fine-needle aspiration cytology (FNAC) was introduced in 1950 and became popular worldwide in 1980. Today, it is a well-established technique for preoperative diagnosis of thyroid pathologies. Thyroid lesions may cause sign and symptoms of hypothyroidism or hyperthyroidism and also have malignant potential. Therefore, accurate

evaluation of thyroid lesions is difficult.^[4] Fine needle aspiration cytology of the thyroid gland has radically changed the management of patients with thyroid disease.^[5] FNAC is widely accepted as the most accurate, sensitive, specific, and cost-effective diagnostic procedure in the preoperative assessment of thyroid nodules. The accuracy of the FNAC analysis approaches 95% in the differentiation of the benign nodules from the malignant nodules of the thyroid gland. FNAC of the thyroid swellings is reported to have a sensitivity range of 65 - 98% and a specificity of 72 - 100%.^[6] The present study was conducted to assess FNAC findings of thyroid swellings.

Subjects and Methods

The present study was conducted in the department of general pathology. It comprised of 108 patients with thyroid swellings. The study was approved from the institutional ethical committee. All patients were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc. was recorded. A thorough clinical examination was performed. USG findings were recorded in which ever patients they were available. FNAC was done as per standard protocols. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

[Table 1] shows that out of 108 cases, males were 32 and females were 76 with male to female ratio of 1:2.2. Most of the patients were in the age group of 20 - 45 years with patients commonly presenting with painless to painful thyroid swelling [Table 3].

Rapid enlargement in the swelling was seen in 15 patients. Swellings were mostly firm to soft and moved with deglutition.

Table 1: Distribution of lesions

Total- 108		
Gender	Males	Females
Number	32	76

Table 2: Different thyroid swellings

Thyroid swellings	Number	P value
Colloid nodular/adenomatous goitre	57	0.01
Lymphocytic Thyroiditis	17	
Follicular neoplasm	10	
Papillary carcinoma	03	
Simple colloid cyst	12	
Toxic Goitre	03	
Insufficient material	06	

[Table 2, Figure 1] shows that common thyroid swelling was colloid nodular/adenomatous goiter [Figure 2] seen in 57, Lymphocytic Thyroiditis 17, Toxic goitre suggesting Grave's disease in 03 patients, follicular neoplasms in 10 [Figure 3], papillary carcinoma in 03, simple colloid cyst in 12 patients and insufficient material obtained in 06 patients. The difference was significant ($P < 0.05$).

Table 3: Presenting Complaints

S. No.	Presenting Complaints	No. of Patients
1	Swelling in front of neck	108
2	Pain	21
3	Difficulty in swallowing	25
4	Difficulty in breathing	06
5	Symptoms of Hypothyroidism	22
6	Symptoms of Hyperthyroidism	10
7	Lymph Node involvement	06

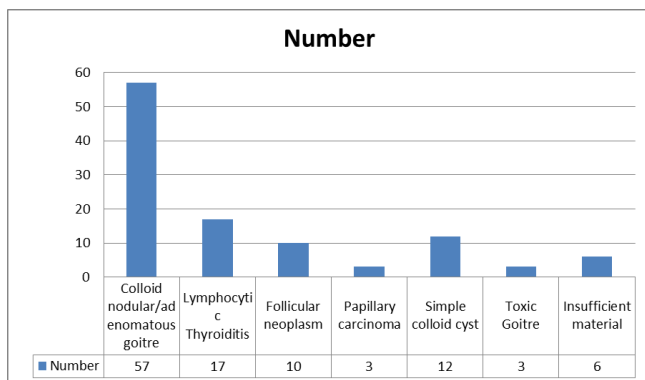


Figure 1: Cytomorphological Pattern Of Different thyroid swellings

The commonest presenting complaint is swelling in front of neck which was observed in all patients and rest other complaints given in [Table 3].

Discussion

Enlargement of thyroid accounts for the significant number of cases. It becomes a challenge to come out with a proper diagnosis and management when the swelling is not due to thyroid. Besides, cosmetic deformity, neck swelling may also cause various pressure symptoms related to trachea and esophagus and major blood vessels according to size and histopathological type.^[7] Sometimes, to rule out malignancy, biopsy may be required especially in adenoma cases. Both the neoplastic and non-neoplastic diseases of thyroid are common all over the world, with a varying frequency and incidences depending upon iodine deficiency status. In India about 42 million people suffer from thyroid diseases.^[8] Diseases of the thyroid are of great importance as most can be controlled by medical or surgical management. Thyroidectomy has become a routine procedure as a result of safe anesthesia, antiseptics, fine surgical instruments, developments of new techniques and is offering the chances of cure to many patients.^[9] The present study was conducted to assess FNAC findings of thyroid swellings.

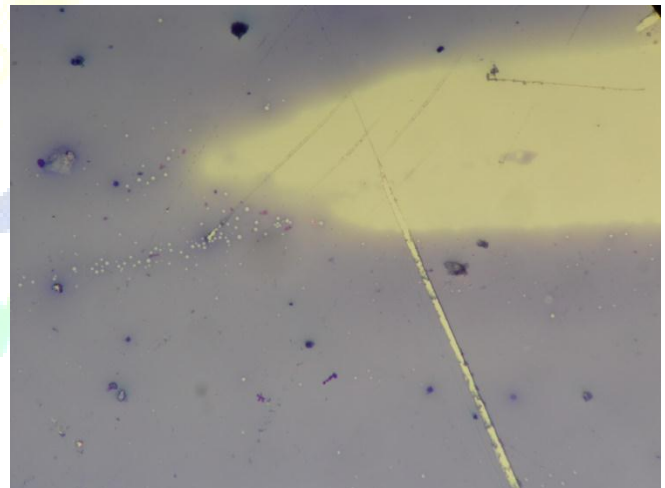


Figure 2: Colloid nodular goitre showing colloid and scattered benign follicular cells . MGG stain; 40X

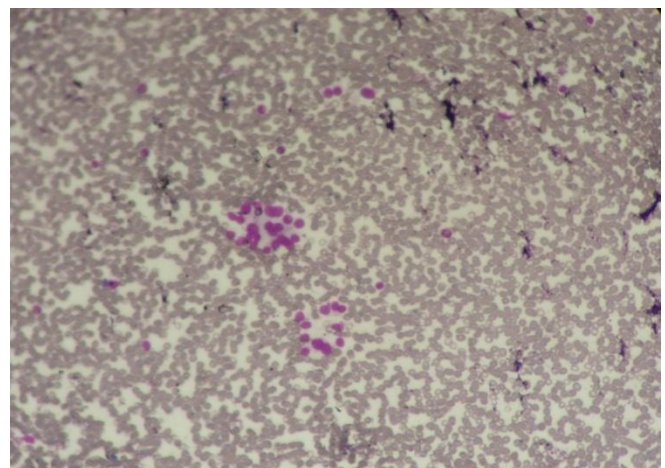


Figure 3: Follicular neoplasm showing follicle arrangement of benign follicular cells. MGG; 10 X

In present study, out of 108 cases, males were 32 and females were 76. We found that common thyroid swelling was colloid nodular/adenomatous goitre seen in 57, Lymphocytic Thyroiditis in 17, toxic goitre suggesting grave's disease in 03, follicular neoplasms in 10, papillary carcinoma in 03, simple colloid cyst in 12 patients and insufficient material in 06 patients. On FNAC 99 patients were diagnosed as benign lesion; of which 5 were later diagnosed as malignant on histopathological examination (94 were true negative 5 were false negative). 3 cases (true positive) were diagnosed as malignant, both on FNAC and histopathological examination. 10 cases were diagnosed as follicular neoplasm on FNAC but on histopathological examination 7 cases as follicular adenoma and 3 as follicular carcinoma in this study. Overall sensitivity of FNAC were 73.5%, specificity 100.00% and accuracy 89%; PPV=100% & NPV=89.28%. Patients in whom insufficient material was obtained repeat FNAC/trucut biopsy was advised but follow up of patients was lost as the patient did not turn up for further evaluation. Patient's having available thyroid profile with ultrasound findings were correlated with clinical and FNAC findings.

Sikder et al,^[10] found that out of 100 patients 23 were male and 77 were female, male-female ratio 1:3.3. Chaudhary et al,^[11] performed FNAC in 136 patients of which 82% were females and 18% males. Most of the patients were in the age group of 20-40. Most common presenting symptom was painless solitary nodule. Among 136 patients, 81.6% were non-neoplastic, and 18.4% were reported as neoplastic on cytology. Cytohisto-correlation was done in 52 cases. 49/52 cases were confirmed on histology, one was false positive and two were false negative. The sensitivity of FNAC was 90%, specificity was 96%.

Ambreen et al,^[12] found that neoplastic lesions were found in 204 cases (72.34%). 78.92% cases were females and 21.08% cases were males. Out of 204 neoplastic lesions, 55 cases were benign accounting for 26.96% of neoplastic lesions. Malignant thyroid lesions accounted for 72.55% (n=148) of all neoplastic lesions. The age of the studied malignant thyroid neoplastic lesions ranged from 9 years to 74 years with relative peak age of incidence between 20-29 years of age followed by 30-39 years age group. One case was diagnosed as well differentiated tumor of unknown malignant potential. Papillary carcinoma was the commonest malignant tumor seen in 85.14% of all malignant lesions. Follicular adenoma was most common benign neoplasm.

Sengupta et al,^[13] in a prospective study of preoperative FNAC carried out on 178 incidental thyroid swellings. Evidence-based surgical interventions were done, irrespective of FNAC findings and diagnosis was confirmed by histopathological examination (HPE) postoperatively in all the cases. In the FNAC, preponderance of the cases (75.84%) was colloid goitre followed by granulomatous thyroiditis; follicular carcinoma was noted in 7.30 percent and anaplastic carcinoma in 3.37 percent of cases. Histopathological examination showed colloid goitre

predominantly (76.97%), followed by follicular carcinoma (8.99%). The overall prevalence of malignancy was 11.24 percent diagnosed by HPE and 9.55 percent by FNAC.

Conclusion

In present study authors found that most common thyroid swelling was colloid nodular/adenomatous goitre followed by lymphocytic thyroiditis with sensitivity of FNAC was found to be 73.5%.

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