

Study of clinical and epidemiological profile of thyroid swelling

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Abstract

Introduction: Thyroid swelling remains a problem of enormous magnitude all over the world. The problem in clinical practice is to distinguish reliably the few malignant tumors from the many harmless nodules so that a definitive preoperative tissue diagnosis of the malignancy allows planning of appropriate surgery and relevant patient counseling. FNAC is reliable, safe and accurate method as a first line of evaluation in thyroid swelling before the surgery. **Material And Methods :** The present study was conducted in Department of Medical College. It included Cross sectional study of cytomorphology of fine needle aspiration cytology material of 156 patients presenting with thyroid nodule in the Department. Information about the clinical presentation, treatment modality and presence or absence of malignancy was collected in a proforma and was analyzed. Statistical tests employed are tests of proportion, tests of percentage, Student's t-test and Fisher's exact test. **Results :** The commonest age group affected was 51-60 yrs. The female patients (69.8%) outnumbered the male patients (30.1%). The cytomorphological analysis of 156 patients revealed 10 cases of neoplastic lesions. Maximum number (122) of patients was suffering with goiter followed by lymphocytic thyroiditis (12) and nodular disease (8). Amongst the malignant cases six cases were of papillary carcinoma and six cases of follicular carcinoma. **Conclusion :** FNAC is a simple, safe and cost-effective diagnostic modality in the investigation of thyroid disease with high specificity and accuracy. We concluded that FNAC diagnosis of malignancy is highly significant. A benign FNAC diagnosis should be viewed with caution as false negative results do occur and these patients should be followed up and any clinical suspicion of malignancy even in the presence of benign FNAC requires surgery. So, final diagnosis and treatment pattern should be based upon histopathology.

Keywords: Thyroid swelling, Thyroid Adenoma, Thyroid tumour, Fine Needle Aspiration Cytology

Introduction

Thyroid swelling remains a problem of enormous magnitude all over the world. The problem in clinical practice is to distinguish reliably the few malignant tumors from the many harmless nodules so that a definitive preoperative tissue diagnosis of the malignancy allows planning of appropriate surgery and relevant patient counseling. The prevalence of thyroid swelling ranges from 4% to 10% in the general adult population and from 0.2% to 1.2% in children [1]. The majority of clinically diagnosed thyroid swelling are non-neoplastic; only 5% to 30% are malignant and require surgical intervention [2]. In India, thyroid cancer comprises of 1% of all head and neck cancers.

Fine needle aspiration cytology of thyroid is a well

established out patient department procedure used in primary diagnosis of thyroid swellings. Fine needle aspiration cytology by giving direct morphological information often bridges the gap between clinical findings and laboratory test to give a definite diagnosis and subsequently reduce the need of surgery [3]. Definite cytological and clinical criteria have been outlined to distinguished various types of thyroid lesions [4].

Fine needle aspiration cytology is considered the gold standard diagnostic test in the evaluation of a thyroid nodule and other test like ultrasound and nuclear scan should be used in conjunction with fine needle aspiration cytology [5]. Despite high prevalence of thyroid nodule and incidental malignancies, the prevalence of clinically overt thyroid carcinoma is

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much lower. Therefore the routine use of fine needle aspiration cytology in the assessment of thyroid nodule has reduced the number of patient subjected to thyroidectomy for benign diseases of the thyroid [6].

The present study is undertaken to evaluate the accuracy of thyroid FNAC and its correlation with histopathological examination.

Material Methods

A cross sectional study was done in the department of Medicine of tertiary care teaching hospital of North India. All patients were evaluated by thorough clinical examination followed by routine investigations, FNAC and histopathological examination. The cytology reports were compared with the histological diagnosis. Sensitivity, specificity, accuracy, positive predictive value and negative predictive value were calculated.

Inclusion criteria: Those patients presenting with thyroid swelling, who underwent FNAC, thyroid surgery and histopathological examination within the study period were included in the study.

Exclusion criteria: Those patients having FNAC done but did not have thyroid surgery were excluded.

Results

Clinical and Epidemiological profile of Thyroid swelling

Table 1: Distribution of patients of thyroid swelling

	Male	Female	Total
10-20	6	16	22
21-30	4	11	15
31-40	7	14	21
41-50	11	20	31
51-60	10	23	33
61-70	6	15	21
71-80	3	10	13
More than 80	47	109	156

In this study we found that out of 156 patients most of the patients are female 109 [69.8%] which outnumbers males 47[30.1%] and most common age group affected is 51- 60years followed by 41-50 years.

All patients both male and female in the age group 1-90 years attending various departments having thyroid swellings who were referred to the pathology department for FNAC were analysed. Prior to aspiration and physical examination were carried out to note the mobility of the thyroid swelling during swallowing and presence of any cervical lymph node. All aspiration were done by cytopathologists to ensure representative sampling.

The patients were asked to lie down with a pillow beneath the chest for better visualization of the gland. Using sterile precautions FNAC was performed using nonaspiration or aspiration techniques by 23G needle with 10 ml syringe. If the swelling was cystic, the cyst fluid was collected in the syringe for the preparation of smears after centrifugation The smears were either air dried or alcohol fixed (95%). Air dried smears were stained by the MayGrunwald Giemsa stain while alcohol fixed smears were stained by the Papaniculauo method.

Statistical analysis: The data collected on Excel sheet and analyzed. Statistical tests employed are tests of proportion, tests of percentage, Student's t-test and Fisher's exact test.

Table 2: Clinical and FNAC diagnosis of Thyroid swelling

Clinical diagnosis	FNAC diagnosis						
	Colloid Goitre	Nodular goitre	Graves disease	Thyroiditis	Papillary carcinoma	Follicular carcinoma	Non specific
Colloid goitre (119)	104	10	3	2			3
Graves disease (7)		1	5	1			
Thyroiditis(12)		1		11			
Carcinoma (10)					5	5	
Nodular disease (8)	4	3	1				4

The above table shows out of 156 patients, clinically 119 were diagnosed as colloid goitre which confirmed after FNAC in which 104 cases were colloid goitre, 10 were nodular goiter, 3 were graves disease, 2 were thyroiditis and 3 were non specific. Similarly 7 were clinically diagnosed as graves disease which after FNAC,5 turned out to be graves disease and 1 each of nodular goiter and thyroiditis.

Clinically 12 were diagnosed as thyroiditis, after FNAC , 11 of them were thyroiditis and 1 became nodular goiter. similarly 10 and 8 patients were clinically diagnosed as carcinoma and nodular disease respectively which after FNAC of carcinoma patients 5 were papillary and 5 were follicular carcinoma and After FNAC of 8 nodular disease , 4 of them were colloid goiter,3 were nodular goiter, 1 was graves disease, and 4 were non specific swelling.

Table 3: FNAC diagnosis and Histological confirmation

FNAC diagnosis	Histological diagnosis			
	Colloid Goitre	Nodular disease	Papillary carcinoma	Follicular carcinoma
Colloid goitre (43)	40	3		
Nodular disease (7)	2	5		
Papillary Carcinoma (6)			5	1
Follicular carcinoma (6)			0	6

The above study showed, out of 43 cases of colloid goiter on FNAC, 40 cases showed colloid goiter, 2 cases showed nodular disease on histological confirmation. out of 6 cases of papillary carcinoma on FNAC, 5 cases showed papillary carcinoma and 1 showed follicular carcinoma. Out of 7 nodular disease, 2 were of colloid goiter and 5 were nodular disease on histological confirmation. out of 6 cases of follicular carcinoma, all the 6 cases were histologically correlated. Sensitivity calculated for colloid goiter by FNAC is 93%.

Discussion

Thyroid nodules are very common occurring in 4% of the population aged between 30 and 60[1]. Most of the swellings are benign only between 10% to 20% are malignant [7]. Thyroid enlargement whether diffuse or in the form of a nodule, leads to a battery of investigations mainly to rule out the possibility of neoplasm or thyroiditis [6].

Fine needle aspiration cytology (FNAC) is usually the first line of investigation and the other investigations are done subsequently with an aim to select patient who require surgery and those that can be managed

conservatively. Fine needle aspiration cytology is inexpensive, can be performed in a out patient clinic and has few complications including absence of tumor implants along the needle tract [8].

In the present study age of the patients ranged from 1-90 years. Most commonly affected age group is 51-60 years which is comparable to study done by Monoj Gupta,Sabita Gupta and Ved Bhushan Gupta(2010) [5] and the study done by Bhatia et al 2007 [10]. Female predominance has been observed in present study similar to other studies [6,10,11].

T T, et al[12] found highest (45.2%) incidence of thyroid swelling in the 41–60 year age group, followed by 42.9% in the 21–40 year age group, 8.1% in the > 60 years age group, and 3.8% in the age group < 21 years. Females predominated in present study, 87% females and 13% males, ratio being 7:1. They also revealed similar findings to this study.

In the present study most common non neoplastic lesion is the colloid goitre which is similar to the studies done by other authors [3]. Papillary carcinoma of thyroid is the most commonly encountered neoplasm in our study which is similar to studies done by and Tabaqchali et al [13].

FNAC is regarded as the gold standard initial investigation in the diagnosis of thyroid swellings. The technique is safe, simple and quick with a low complication rate. FNA cytology of the thyroid has a high negative predictive value, which is useful to reassure the majority of patients presenting with thyroid enlargement. However, a negative FNA should never exclude malignancy if there is a strong clinical suspicion. If this rule is adhered to a large number of patients will be spared unnecessary surgery and no malignant nodule will go untreated[14]. Several other tests, such as high resolution ultrasonography, radioisotope scanning and FNA biopsy have been used for evaluation of thyroid swellings before proceeding to thyroid surgery[15]. Studies have demonstrated that among all these diagnostic modalities, FNAC is the most accurate, cost effective screening test for rapid diagnosis of thyroid swelling. FNAC of the thyroid nodule is reported to have sensitivity ranges from 65% to 98% and specificity of 72% to 100%. FNAC has been shown to have similar or higher sensitivity and accuracy levels than frozen section examination[16].

Karma et al[17] did the cytomorphological analysis of 206 patients revealed 190 cases (92.2%) of neoplastic lesions, 10 cases (4.8%) were neoplastic and 6 cases (2.9%) had indeterminate cytomorphology. Maximum number (65.5%) of patients was suffering with goiter followed by lymphocytic thyroiditis (26.2%). In our study we also found that maximum no. of patients suffering from colloid goiter followed by lymphocytic thyroiditis.

Vyas C et al[18] found that Females predominated in this study 87%, ratio being 7:1. Majority (40%) of patients came with complaint of swelling of duration less than 6 months, similar to our study.

Parikh U.R et al[19] studied FNAC analysis showed 93.67% (207 cases) non-neoplastic lesions, 3.62% (8 cases) neoplastic lesions and 2.71% (6 cases) malignant lesions. Histopathological analysis showed 81.3% (100 cases) non neoplastic lesions and 18.70% (23 cases) neoplastic lesions. Commonest malignancy detected is papillary carcinoma of thyroid in 5 cases. The accuracy rate of FNAC in diagnosis for non-neoplastic, neoplastic and malignant lesions were 90%, 85.71% and 100% respectively. In our study also commonest malignancy detected was papillary carcinoma.

Borgohain R et al [20] concluded that FNAC diagnosis of malignancy is highly significant. A benign FNAC diagnosis should be viewed with caution as false negative results do occur and these patients should be followed up and any clinical suspicion of malignancy even in the presence of benign FNAC requires surgery. So, final diagnosis and treatment pattern should be based upon histopathology

Khageswar Rout[21] found that Colloid goiter was most common among the thyroid swelling (42.2%) followed by colloid goiter with Cystic degeneration (13.2%). In this study 53 cases were females and 23 were males and peak age of incidence was in second and third decades of life. It is contradicting with study by Bhansali [22] where it was the fifth decade of life. The female to male ratio is 2.3:1 and our study.

Conclusion

FNAC is a simple, safe and cost effective modality in investigation of thyroid disease with high accuracy and specificity. It is very much helpful in third World Countries like India. The suspicious indeterminate results prove to be an area of uncertainty which can be resolved by surgical resection and biopsy.

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