

An Open, Retrospective Study Of Comparison Of Fine Needle Aspiration Cytology (FNAC) And Histopathology Findings In 75 Cases Of Solitary Thyroid Nodule.

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Abstract: Background and objectives: Solitary thyroid nodule (STN) is a common clinical entity encountered in routine clinical practice. STN is defined as a single swelling involving either lobe of thyroid or isthmus of thyroid gland. Present study was undertaken to know distribution of lesion according to age and sex, and also to evaluate efficacy of FNAC in diagnosis of clinically obvious and palpable solitary thyroid nodule. Method: This study was done on 75 cases operated in our hospital from May 2012 to May 2016. All patients included in the study were submitted to FNAC and ultrasonography. All patients were subjected to surgery and histopathology examination was obtained. Results: Out of 75 cases of thyroid lesions, 63 cases were benign (84%), 6 cases were malignant (8%) and 6 cases were suspicious (8%) on FNAC. On Histopathological examination, 60 cases were benign (80%) and 15 cases were malignant (20%). Conclusion: FNAC is a single best investigation for preoperative evaluation for STN to differentiate between benign and malignant nodules with 88% accuracy rate. [Doshi H NJIRM 2016; 7(5):53-55]

Key words: solitary thyroid nodule (STN), fine needle aspiration cytology (FNAC), histopathology examination (HPE)

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Introduction: Thyroid lesions are very frequent with number of studies shows annual incident rate of 4-8%^{1,2,3}. Excising all the thyroid lesions is impracticable and associated with risk^{1,2}. It is very vital to make a pre-operative assessment of morphological nature of lesion⁴. Thyroid gland is superficial and easily accessible position and ideal tissue for FNAC⁵. FNAC is well established, non-invasive and safe procedure to differentiate between benign and malignant thyroid swelling⁶. Routine use of FNAC in the assessment of thyroid lesions is reliable in well experienced hand and has been useful in preoperatively deciding the type of thyroid surgery in patient. Purpose of our study is to know distribution of lesion in population according to age and sex, and to evaluate the efficacy of FNAC in the diagnosis of clinically obvious and palpable thyroid lesions.

Materials and methods : The present study consists of study of 75 cases of thyroid nodules operated from May 2012 to May 2016 after permission of IRB. For the purpose of inclusion in this study, a STN is defined as a clinically single swelling involving either lobes of thyroid or isthmus of thyroid gland. All the patient included in the study were clinically and biochemically (T3, T4, TSH) euthyroid. The patients with clinically multinodular goiter, generalized thyroid swelling and abnormal thyroid level (hypothyroid or hyperthyroid) are excluded from the study. A relevant clinical profile of respected cases was taken from the case record. All patients included in the study were submitted to FNAC and ultrasonography. The result of FNAC was interpreted as benign, malignant and suspicious for malignancy. Ultrasonography of thyroid nodule was

done to evaluate for size, location and consistency in order to differentiate between benign and malignant lesion. All patients were subjected to surgery and histopathology examination was obtained. The findings of FNAC and histopathological examination are collected and compared.

Result: A total 75 patients of solitary thyroid nodule were diagnosed and treated in our hospital. In all cases pre-operative FNAC and ultrasonography was done and diagnosis was recorded. In our study solitary thyroid nodule was prevalent in all age groups, the youngest patient was of 19 years and oldest was 70 years old. Most of cases reported were in 3rd and 4th decade (64%) (Table 1).

Table 1: Age wise distribution of thyroid nodule.

Age (in yr)	benign	malignant	Total (%)
11-20	3	0	3(4%)
21-30	21	3	24(32%)
31-40	21	3	24(32%)
41-50	6	6	12(16%)
51-60	3	3	6(8%)
61-70	6	0	6(8%)
71-80	0	0	0
Total	60	15	75(100%)

In present study, out of 75, 66 patients were female (88%) and 9 patients were male (12%). In this study, 3 out of 9 male patients, the nodule were malignant (33.3%) and 12 out of 66 female patients, nodule were malignant (18.2%) (Table-2).

Table 2: Sex distributions

Total 75 (100%)			
MALE 9(12%)		FEMALE 66(88%)	
BENIGN	MALIGNANT	BENIGN	MALIGNANT
6(66.6%)	3(33.3%)	54(81.8%)	12(18.2%)

In present study, 63 out of 75 cases were benign(84%) on FNAC, while 6 cases were malignant(8%) and 6 had suspicious(8%) findings on FNAC. The cytological diagnosis of benign nodule is confirmed in 57(90.5%) out of 63 cases and was disputed in 6(9.5%) cases, which were diagnosed as malignant on histopathological examination after biopsy. 6 cases with malignant aspirations on cytology were confirmed by HPE to be malignant. Out of 6 suspicious cases on FNAC, 3 were malignant and 3 were benign on HPE. (Table 3,4 and 5)

Table 3: Fine needle aspiration cytology finding

FNAC finding	Number (%)
Benign- Follicular adenoma (12) Colloid goiter (35) Thyroid cyst (9) Hashimoto's thyroiditis (3) Toxic nodule (4)	63(84%)
Malignant	6(8%)
Suspicious	6(8%)

Table 4 : Histopathology examination of specimen

Benign	60	Malignancy	15
Follicular adenoma	12	Papillary carcinoma	12(16%)
Colloid goiter	33		
Thyroid cyst	9		
Hashimoto's thyroiditis	3	Follicular carcinoma	3(4%)
Toxic nodule	3		

Table 5: correlation of FNAC with histopathological diagnosis in thyroid carcinoma

Histopathology diagnosis	number	FNAC diagnosis	number
Papillary carcinoma	12	Papillary carcinoma	6
		benign	6
		suspicious	0
Follicular carcinoma	3	Suspicious	3

Out of 12 cases of papillary carcinoma of thyroid, FNAC revealed papillary carcinoma in 6 cases (50%), and

benign in 6(50%) cases. Histopathology of 6 suspicious lesions in FNAC shows 3 cases of follicular carcinoma and 3 cases of benign thyroid lesion (Table 5,6,7).

Table 6: Benign, malignant and suspicious lesions diagnosed by FNAC and their comparison with HPE

FNAC report	No of patient	HPE report	No of patient	Remark
Benign (colloid goiter and benign cystic lesion)	63	Benign	57	True negative
		malignant	6	False negative
Malignancy	6	Malignancy	6	True positive
		benign	0	False positive
suspicious	6	Malignancy	3	True positive
		benign	3	False positive

Table 7 : Statistical analyses for carcinomatous lesion

Histopathologic Examination		Malignant	Benign
FNAC			
Malignant suspicious	+	9	3
Benign		6	57

Discussion : Thyroid nodule occurs spontaneously in 4.7% of adult population⁷. Incidence of thyroid cancer in nodules varies from approximately 0.1% in general population to 20 % in surgically biopsied nodule^{8,9}. In our study overall incidence of malignancy in solitary thyroid nodule was 20 % which is slightly higher than other study but comparable with Hoffman¹⁰ (1972). FNAC is a cost effective and recommended as the 1st choice for evaluation of thyroid lesion¹¹. In our study maximum number of patients is between 3rd and 4th decade (64 %) which is comparable to M MKapur study¹². In our study, 88% of lesions were found in females, out of which 18.2% were found malignant. While in male 3 out of 9(33.3%) were found malignant. This leads to conclusion that STN found more common in female but male should be highly suspicious for malignancy. In review of thyroid nodule, FNAC was reported to have sensitivity of 65-98% and a specificity of 72-100%⁶. In our study FNAC diagnosis of suspicious for malignancy were included in test positive for

malignancy for calculation of diagnostic tests. After comparison of our result of FNAC with histopathology, overall sensitivity of FNAC was 60% and specificity was 95% with the overall accuracy rate of 88%. In our study, we reported 6 cases as false negative that translated to 8% false negative rate. So patient with benign lesion on FNAC should be carefully followed and if any clinical suspicion for malignancy arises, patient should undergo surgery. While we reported 3 cases as false positive with 4% false positive rate which agreed with other study that range 0-8%. This shows that FNAC is more specific than sensitive in detecting thyroid malignancy and therefore it is used as a reliable diagnostic test. ⁶.

Conclusion: FNAC is considered the gold standard diagnostic test for diagnosis of thyroid nodules with good accuracy, sensitivity and specificity. FNAC in thyroid lesion is a safe and cost effective OPD procedure with minimal complication. FNAC provides useful information and may be used along with other clinical tools to decide best form of treatment for solitary thyroid nodule. FNAC diagnosis of malignancy is highly significant. The routine use of FNAC for STN has been useful in preoperatively deciding the type of thyroid surgery and lead to proper planning in cases which are malignant on FNAC. Any clinical suspicion for malignancy in the presence of benign FNAC should undergo surgery.

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