

**Original Research Article**

Pattern of Fine Needle Aspiration Cytology (FNAC) of Thyroid Swelling in Patients, Attending in Tertiary Care Hospital, at N.M.C.H. Patna

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Abstract

Objective: The aim of present retrospective study was to evaluation the effectiveness of Fine Needle Aspiration cytology (FNAC) in both benign and Malignant thyroid lesions and its correlation with histopathological findings.

Materials and Methods: A total of 84 patients of different sex and age groups were included in the study. After detailed history, clinical examination and routine laboratory investigations, FNAC was done under fully aseptic conditions. Aspirates were air dried fixed and stained in H and E staining. Cytological diagnosis was done according to orell guidelines.

Result: Out of 84 patients, 80 patients (45.21%) were female and 4 (4.81%) patients were man, mean age was 38.2 Years and ranging from 16-68 years of age. Out of 84 patients, 58(69.04%) patients had solitary nodule. In cytological diagnosis 66 Patients (78.58%) had non-neoplastic lesion, out of which 47.8% patients had nodular goiter, followed by cysts in 7.14% cases, hyperplastic goiter was seen in 3.57% of cases, Lymphocytic thyroiditis in 7.14% of cases, and no material was found in 10.71% of cases. In 18 (21.42%) patients had neoplastic lesions, out of which 15.47% had follicular neoplasm, followed by 2.38% patients had Hurthle cell neoplasm, 1.19% patients had papillary carcinoma, 1.19% cases had Medullary carcinoma and 1.19% Patient were suffers from Metastatic carcinoma. Histopathological correlation was done in 19 cases, out of which 47.4% cases had nodular goiter, 10.5% had cystic lesions, thyroiditis in 5.25% cases, 21.05% cases had benign neoplasm and 15.79% cases had malignant neoplasm. Accuracy of FNAC was found to have 89.5%, sensitivity was 87.5% and specificity was 92.3%.

Conclusion: The technique has shown to provide with reliable, rapid and inexpensive methods of diagnosis. In most instances, no hospitalization or anesthesia was required for this procedure.

Keywords: Thyroid lump, Benign, Malignant, Histopathology, FNAC.

Introduction

Thyroid swelling either diffuse or nodular are common clinical finding especially in our north

Bihar. I.C.M.R. study found prevalence of nodular thyroid disease in India 3.78% and incidence of Carcinoma thyroid is 5% among them while orell

et. al. found 10-15%. In Sweden FNAC is being practiced for pre-operative diagnosis of thyroid lesion since more than 40 years with excellent results. Initially there was difficulty of interpretation of the aspirate and concern of needle tract seeding. But these days FNA has become investigation of choice. FNAC thyroid is a simple and cost effective procedure with negligible complication. Several studies have confirmed its high accuracy, significant sensitivity and specificity.

This presentation is a retrospective study to evaluate the effectiveness of FNAC in both Benign and malignant thyroid lesions in correlation with Histopathological findings.

Material and Methods

Present study was conducted in the Department of pathology, Nalanda Medical College, Patna, with the help of Department of ENT and Surgery, during the period of September 2016 to August 2018 . A total of 84 patients of different sex and age groups were included in the study. The main

clinical indication of the procedure was the presence of thyroid nodule. The clinical feature, history and routine Investigations were noted in all cases. The Patient is placed supine with a pillow under back to extend the neck. After Antiseptic cleaning of skin 23 gauge needles has been used to puncture the lesion. With non-Aspiration technique, material is obtained for smear. In some cases of solid lesions suction is applied along with to and fro movement of needle. The most of slides are air dried and stained with H & E stained. Cytological diagnosis has arrived using guidelines prescribed by orell et. al. Finally the accuracy of cytological diagnosis was done by comparing with Histopathological diagnosis

Results

A total of 84 cases have been included in the study. Out of 84 cases 58 cases presented as solitary nodule. 80 (95.2%) women and 4 men (4.8%) were evaluated. Mean age was 38.2 years ranging 16-68 years.

Table-1 shows cytological Diagnosis of patient underwent FNAC of Thyroid Lump (n=84)

Cytological findings		Total No. of Patients	Percentage
Non-Neoplastic N=66(78.58%)	Nodular goiter	40	47.6
	Thyroid Cyst	06	7.14
	Hperplastic goiter	03	3.57
	Thyroiditis (Lymphocytic)	06	7.14
	Insufficient for diagnosis (Scanty or hemorrhagic)	09	10.71
	Hashimoto Thyroiditis	02	2.38
Neoplastic N=18(21.42%)	Follicular Neoplasm	13	15.47
	Hurthle cell Neoplasm	02	2.38
	Papillary Carcinoma	01	1.19
	Medullary carcinoma	01	1.19
	Metastatic carcinoma	01	1.19
Total No. of Patient		84	

Table-2 Shows Histopathological Analysis

Histopathological Correlation N=19		Total No. of Patient	Percentage
Non-Neoplastic N=12 (63.16%)	Nodular Goiter	09	47.4%
	Cyst	02	10.5%
	Thyroiditis	01	5.25%
Neoplastic N=7 (36.84%)	Benign	04	21.05%
	Malignant	03	15.79%

Table-3 shows, Accuracy, Sensitivity and Specificity of FNAC.

Total No. of False Positive Cases (01)	5.26%
Total No. of False Negative Case (01)	5.26%
Accuracy of FNAC	89.5%
Sensitivity	87.5%
Specificity	92.3%

One case diagnosed cytological as medullary Carcinoma was proved to be Nodular goiter histologically while on colloid goiter with hyperplasia proved to be follicular Adenoma. Therefore we got one false negative and one false positive case in only 19 cases. Complications

were seen in 4 cases of 84 FNAC and were relatively mild.

Discussion

A definite cytological diagnosis of malignancy confirms the need for surgery while diagnosis of inoperable malignancy like giant cell carcinoma, lymphoma and spindle cell carcinoma clarify to go for palliative treatment. FNAC is fairly sensitive and specific test in detecting malignant neoplasm. The FNAC of solitary thyroid nodules reduces the unnecessary operation for benign lesion.

Table 4 Shows Comparison with other studies

Authors	No. of Cases	Sensitivity	Specificity	Accuracy
Goellner et.al. (1987)	6300	98%	99%	—
Alta villa et.al.(1990)	1796	71.4%	100%	95.1
Klein et.al. (1991)	1054	—	100%	95%
Nalini Calton (1997)	108	75%	100%	96.7%
S. Robinson Smile et.al. (1999)	183	71.88%	100%	95.08%
Present Study	84	87.5%	82.3%	89.5%

In our small histological confirmation the specificity and sensitivity are very close to International standard.

Conclusion

We believe that Fine Needle Aspiration have many advantage, It provides the most information of all procedures, It is a safe OPD procedure, Non-traumatic, Low cost, Procedure can be repeated, It can be therapeutic in cystic lesions and Acceptable to elderly. The cytological criteria for neoplastic and non-neoplastic lesions are well defined except in follicular neoplasm where capsular infiltration and vascular invasion has to be ruled out. FNA compliments the surgical evaluation of the patients since the surgeon can be knowledgeable pre-operatively about nature of neoplasm. Therefore, we recommend FNA as the initial diagnostic test in evaluation of thyroid nodules.

Reference

1. Guhamallick M, Sengupta S, Bhattacharya NK, Basu N, Roy S, Ghosh AK, et al. Cytodiagnosis of thyroid lesions-usefulness and pitfalls: A study of 288 cases. *J Cytol.* 2008;25:6–9.
2. Agarwal K, Puri V, Singh S. Critical appraisal of FNAC in the diagnosis of primary papillary carcinoma arising in thyroglossal cyst: A case report with review of the literature on FNAC and its diagnostic pitfalls. *J Cytol.* 2010;27:22–5.
3. Handa U, Garg S, Mohan H, Nagarkar N. Role of FNAC in diagnosis and management of thyroid lesions: A study on 434 patients. *J Cytol.* 2008;25:13–7.
4. Ogilvie JB, Piatigorsky EJ, Clark OH. Current status of fine needle aspiration for thyroid nodules. *Adv Surg.* 2006;40:223–38.

5. Polyzos SA, Kita M, Avramidis A. Thyroid nodules - stepwise diagnosis and management. *Hormones (Athens)* 2007;6: 101–19.
6. Pacini F, Schlumberger M, Dralle H, Elisei R, Smit JW, Wiersinga A. European consensus for the management of patients with differentiated thyroid carcinoma of the follicular epithelium. *Eur Endocrinol.* 2006;154:787–803.
7. Castro MR, Gharib H. Thyroid fine-needle aspiration biopsy: Progress, practice, and pitfalls. *Endocr Pract.* 2003;9:128–36.
8. Wong CK, Wheeler MH. Thyroid nodules: Rational management. *World J Surg.* 2000;24:934–41.