Original Research Paper

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A study on role of FNAC in the management of Thyroid nodules

General Surgery

KEYWORDS: Fine needle aspiration cytology , thyroid, nodule,dominant, solitary

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ABSTRACT

Introduction: The term 'thyroid nodule' refers to distinct lesion within the thyroid gland that is palpably or radiologically distinct from thyroid parenchyma. In India the prevalence of a palpable thyroid nodule in the community is about 12.2%. .However, thyroid cancer is quite rare, though this seems to be increasing over the years. It is well known that incidence of malignancy in solitary nodule is higher than multinodular. Therefore it is crucial to have a clear diagnostic approach to ensure patients presenting with solitary thyroid nodule are managed appropriately and are not over or undertreated.

Aims and Objectives: To find out the sensitivity and specificity of FNAC in a solitary thyroid nodule to diagnose as benign and malignant and thereby its management.

Materials and Methods: This is a prospective comparative study of patients (n-80) admitted for solitary thyroid nodule.

Results and Conclusion: Solitary thyroid nodule more common in female of age group of 31-40 years. Swelling in the front of lower neck was the commonest presentation. The incidence of malignancy in clinically diagnosed solitary nodule was 21% .On FNAC majority of the lesions were benign, with benign follicular adenoma being the largest group. Among suspicious lesions on FNAC,
50 % proved to be malignant, indicating the need for surgery. The entire malignant aspirates were malignant too in histopathology. FNAC is the diagnostic modality of choice for the initial workup of solitary thyroid nodule with sensitivity of 85.71% and specificity of 100%.

***Introduction*:**

The term 'thyroid nodule' refers to distinct lesion in the thyroid gland that is palpably or radiologically distinct from thyroid parenchyma (discrete thyroid swelling).A discrete swelling in an otherwise impalpable gland is termed as isolated or solitary and discrete swelling in a gland with clinicalevidence of abnormality elsewhere in thyroid is dominant nodule.About 70% of discrete thyroid swelling is clinically "isolated" and30% are dominant.[1]In India the prevalence of a palpable thyroid nodule in the community is about 12.2% [2]. However, thyroid cancer is quite rare, it is the most common endocrine malignancy and the incidence is 8.7 per 100000 peopleper year in US, though this seems to be increasing over the years[3].It is therefore crucial to have a clear diagnostic approach to ensure patients, presenting with thyroid nodules, are managed appropriately and are not over or under-treated.Present study is to evaluate FNAC as a diagnostic method in solitary thyroid nodule and to plan surgery accordingly.

Methods:

This is a **prospective** comparative study of patients admitted for solitary thyroid nodule. All patients were admitted with solitary thyroid nodule with age between 11 - 70years. Patients with thyroid swellings which are not nodular or multinodular or patients unfit for surgery were not included in the study. Study tools used were detailed history thorough examination ,necessary routine investigation ,FNAC of nodule, Ultrasonography of thyroid, treatment modality, histopathology of specimen obtained. The histopathology reports will be compared with the findings of FNAC in order to evaluate their sensitivity and specificity by statistical methods.

Observation:

1. AGE AND SEX OF PATIENTS

Table 1.

Age	Male	Female	Total
11-20	1	5	6
21-30	5	20	25
31-40	8	24	32
41-50	5	6	11
51 and above	2	4	6

Commonest age group of presentation was 31-40 years, mean age was 35.5 years.

Ratio of female was 70 %. M: F ratio -1: 2.8

2. PRESENTING COMPLAINT:

Table 2:

S.No.	Complaint	No. of Patients
1	Swelling in front of neck	80
2	Mild pain in swelling	10
3	Difficulty in breathing	02
4	Cervical lymphadenopathy	08
5	History of change in voice	01
6	Loss of weight/ hyperthyroidism	06
7	Intolerance to cold/ hypothyroidism	04

All the patients presented with swelling in the front of lower neck(100%).

On examination 08 (10%) patients had cervical lymphadenopathy.

06 Patients had history suggestive of hyperthyroidism and 04 had hypothyroidism.

04 patients had history of fever and sore throat.

3 . DURATION OF COMPLAINTS:

Table 3:

S.No.	Duration	No. of Patients (n=80)
1	< 3months	06
2	3-6 months	08
3	>6 months-3years	56
4	>3 years	10

The duration of complaints ranged from 15 days to 10 years.

Majority of the patients (56) presented between >6 months to 3 years of onset of swelling.

None of the patients had significant past or family history.

4. FNAC REPORTS:

Table 4:

Category	FNAC Diagnosis	No. of Patients
Thy 1	Non Diagnostic	04
Thy 2	Benign	43
Thy 3	Follicular	15
Thy 4	Suspicious	08
Thy 5	Malignant	10

On FNAC 55% of nodules were benign and 12% were malignant

5. HPE REPORTS:

Table 5:

S.No.	Diagnosis	No. of Patients
1	Benign follicular adenoma	26

2	Colloid nodule	18
3	Benign cyst	12
4	Hyperplastic nodule	03
5	Chronic lymphocytic thyroiditis	04
6	Malignancy	17

79 % of clinically diagnosed solitary nodules were benign and 21% of nodules were malignant.

So incidence of malignancy in clinically diagnosed solitary thyroid nodule is 21%.

Most common benign nodule was benign follicular adenoma(32%), followed by colloid nodule and benign cyst (22% and 15% respectively).

6. CORRELATION OF FNAC LESIONS WITH HISTOPATHOLOGY

Table 6:

FNAC Category	HPE Diagnosis	No. of Patients
Thy 1 (04)	Benign follicular adenoma Colloid nodule	03 01
Thy 2 (43)	Benign follicular adenoma Colloid nodule Benign cyst Hyperplastic nodule Chronic lymphocytic thyroiditis Malignancy	10 13 12 03 04 01
Thy 3 (15)	Benign follicular adenoma Follicular Carcinoma	12 03
Thy 4 (08)	Benign follicular adenoma Colloid nodule Malignancy	01 04 03
Thy 5 (10)	Malignancy	10

All inadequate FNAC were benign on HPE.

Out of 43 benign on FNAC only 1 turn out malignant on HPE.

Out of 15 follicular Neoplasia 3 turn out malignant [follicular carcinoma] on HPE, so incidence of malignancy was 20% in this group.

3 out of 8 report of suspicious lesion turn out malignant, so Incidence of malignancy is 38%.

All malignant aspirate were malignant too in HPE (100% specific).

7. COMPARISON OF FNAC WITH HISTOPATHOLOGY

Table 8:.

HPE/ FNAC	INADEQUATE	BENIGN	FOLLICULAR ADENOMA	SUSPICIOUS	MALIGNANCY	n
BENIGN	04	42	12	5	00	63
MALIGNANT	00	01	03	3	10	17
TOTAL	04	43	15	8	10	80

Malignancy:

Sensitivity: TP/ TP+FN i.e. 10/10+1 =90% Specificity: TN/TN +FP i.e.42/42+0= 100%

Sensitivity and specificity of FNAC to diagnose malignant solitary thyroid nodule as 90% and 100% respectively.

Benign :

Sensitivity: 42/42+1 = 97.5% Specificity: 10/10+1 = 90 %

Sensitivity and specificity of FNAC to diagnose benign solitary thyroid nodule as97.5% & 90%

Discussion:

The normal thyroid is impalpable. The term goiter is used to describe generalized enlargement of the thyroid gland. A discrete swelling (nodule) in one lobe with no palpable abnormality elsewhere is termed an isolated (or solitary) swelling. Discrete swelling with evidence of abnormality elsewhere in the gland is termed dominant.

Risk of malignancy in thyroid swellings[4]

The risk of cancer in a thyroid swelling can be expressed as a factor of 12. The risk is greater in isolated vs. dominant swellings, solid vs. Cystic swellings and men vs. women.

Factors Suggesting Increased Risk of Malignant Potential[5]

1. History of head and neck irradiation
2. Family history of medullary thyroid carcinoma, multiple endocrine neoplasia type 2, or papillary thyroid carcinoma
3. Age<14 or > 70 years
4. Male sex
5. Growing nodule
6. Firm or hard consistency
7. Cervical adenopathy
8. Fixed nodule
9. Persistent dysphonia, dysphagia, or dyspnea

In the present study, (Table1) age of the patient ranged from 11-70 years with a median age of 35.5 years. Age distribution of the present study is comparable to various studies[6,7,8,9,10]. The number of males in the present study was 30(30%) and the females were 70 (70%) with a male to female ratio of 1:2.33. Sex distribution was similar when compared to Afroze et al [7].

Table2 shows the commonest clinical presentation is the presence of swelling in front of the neck and majority presented between 6 months to 3 years which is consistent with other studies[6-10]

The overall sensitivity of FNAC in our series(Table 4) was 90%& 97%, while the specificity was 100% $ 90% % for both malignant and benign lesions which is comparable to study done by kim et al . FNAC has certain limitations because of suspicious diagnosis. In present series out of 8 (10%) suspicious lesion on FNAC , 3 were found to be malignant on final HPE report so , incidence of malignancy in this group is 37% . Due to high level of malignancy ,surgery like total thyroidectomy is justifiable on basis of FNAB report . The overall incidence of malignancy in solitary thyroid nodules varies from 10%-30% according to various studies. In our study, the overall incidence of malignancy in solitary nodule was 21%.

Conclusion:

The present study was undertaken to evaluate the usefulness of clinical examination, FNAC of thyroid nodule in the management of solitary thyroid nodule and to know the sensitivity and specificity of the investigations by comparing with histopathological report.

1. Thyroid nodules are common in females of age group 31 to 40years.
2. Commonest presenting complaint is swelling in the front of lower neck.
3. Most of the patients presented between 6 months to 3 years of onset of swelling.
4. In our study, the sensitivity and specificity of FNAC was 90% and 100% respectively. All malignant lesions on FNAC were confirmed by histopathology indicating its excellence. Therefore FNAC helps in planning the correct management and avoids second surgery.
5. Minimal surgery is lobectomy. This was undertaken in all cases,which help in establishing the histopathological diagnosis and in comparing the efficacy of above investigations.
7. The ideal test should have a sensitivity and specificity of 100%.The closest method to ideal test is, thus, FNAC which has high sensitivity and specificity.

References:

1. Yeung MJ, Serpell JW. Management of the solitary thyroid nodule. Oncologist. 2008;13:105–12.[PubMed]
2. Usha Menon V, et al;prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. J Indian Med Assoc.2009; 107:72–7. [PubMed]
3. Davies L, Welch HG. Increasing Incidence of Thyroid Cancer in the United States, 1973-2002. JAMA.2006; 295:2164–7. [PubMed]
4. Russel RCG, Williams NS, Bulstrode CJK. The Thyroid Gland and The Thyroglossal Tract, Bailey and Love's Short practice of Surgery; 26th edition: Arnold publishers 2004:776-803.
5. Jones A J. et al. Comparision of Fine Needle Aspiration, USG and Radionucleotide Scan in management of thyroid nodules. Post Grad Med J. 1990 66: 914-17.
6. Afroze N, et a;.Role of fine needle aspiration cytology in the diagnosis of palpable thyroid lesions. Indian J Pathol Microbiol 2002; 45(3):241-246.
7. Tabaqchali et al. Thyroid aspiration cytology in Newcastle: A six year cytology

histology correlation study. Ann R Coll Surg Engl 2000; 82:149-155.
8. Jose RM, Smile SR, lyengar KR.The role of imprint cytology in intraoperative diagnosis of thyroid swelling.Indian J Pathol Microbiol 2002; 45(4):393-396.
9. Sekhri T et al. Role of different diagnostic modalities in the evaluation of solitary thyroid nodule: Experience in a tertiary referral centre of North India. IJNM 2001; 16(3):105-108.
10. Mitra RB et al. Fine needle aspiration cytology of thyroid gland and histopathological correlation- Revisited. JIMA 2002; 100(6):49-54.