



## STUDY OF CLINICAL PROFILE AND MANAGEMENT OF SOLITARY THYROID NODULES

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### Article Info

Received 29/04/2015

Revised 16/05/2015

Accepted 09/06/2015

### Keywords :-

Solitary thyroid nodules,  
Fine Needle Aspiration  
Cytology,  
Histopathology.

### ABSTRACT

Fine needle aspiration cytology (FNAC) is considered as the gold standard diagnostic test for the diagnosis of solitary thyroid nodules (STN). The present study was aimed to compare the accuracy of FNAC and to study the pathological conditions of the nodule and to assess the outcome of the management of solitary thyroid nodule. Retrospective, descriptive and comparative study of 63 patients of any age group and both sexes who have thyroid nodules and are subjected to surgical treatment at from Mamata Medical College. The smears were classified into categories like benign, suspicious/indeterminate, malignant and unsatisfactory. Cytological diagnosis was correlated with the histopathology report wherever possible. The present study findings suggest that the youngest patient was in the age group between 10-20 years whereas, oldest being above 60 years. The findings out of 63 swellings observed, 9 were malignant and the remaining were benign lesions. Further clinical specimens have been evaluated by histopathological examination (HPE). The results displayed that among all the 63 solitary nodule of thyroid cases studied 5 cases (7.9%) were malignant lesions while the rest of 58 (92%) cases were benign lesions. The clinical examination of STN subjects showed that the swelling in front of the neck is the most common symptom which has been observed in all the subjects. In present study commonest surgery performed was Hemithyroidectomy in 56 cases. To conclude, although a thorough history and clinical examination are indispensable, FNAC is essential to decision making and is able to provide highly accurate information that will ultimately determine the management of a nodule.

### INTRODUCTION

Thyroid disorders are the most common endocrine disorders seen in clinical practice and solitary nodule of the thyroid is one of the common presentations of thyroid disorders [1]. A good number of diseases affect the thyroid gland and almost all of them presents with nodular thyroid swelling. Solitary thyroid nodule still remains a mystery for surgeons and pathologists in these days of recent advances, because of the variations in pathological findings presented by it.

Sometimes it causes no symptoms and is very small clinically but turns out to be fatal because of its highly malignant nature [2]. Only a minority of thyroid nodules are likely to cause significant health problems. The endemicity varies from one place to another. According to a recent study the incidence of solitary nodule in India is around 12.2% [3]. Almost all conditions of the thyroid may present clinically as a solitary nodule. Solitary nodule of the thyroid has aroused interest because of its varied etiology and diverse clinical presentations.

Majority of the solitary nodules are benign but carries a small but significant risk of being malignant [4]. Based on investigations, definitive diagnosis can be arrived at and appropriate treatment can then be planned.

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Research Article



Cytological examination of material obtained by fine needle aspiration (FNAC), due to its high sensitivity and specificity, is the best single test for differentiating malignant from benign thyroid lesions [5]. The major limitation of FNA cytology is that 10% to 15% of specimens are non-diagnostic [6], and 10% to 20% are indeterminate [7].

Thyroid nodules are a common medical problem [6]. Although they are traditionally found as palpable masses at neck examination in patients with or without suspected thyroid disease, the apparent prevalence of non-palpable thyroid nodules (*i.e.* <1 cm in diameter) in the general population has recently increased, probably as a consequence of the increasing application of ultrasound [8]. The present study consisting of 63 cases of clinically solitary nodule is undertaken to compare the accuracy of FNAC and to study the pathological conditions of the nodule and to assess the outcome of the management of solitary thyroid nodule.

## MATERIALS AND METHODS

This study was carried out with 63 cases from patients admitted at Mamata General Hospital, Khammam, between June 2012 to March 2013. Informed consents were taken from all patients. After obtaining approval from the ethical committee of the college all the required investigations for the study were done routinely during the admission period. All the subjects were physical examined including routine investigations like Blood, Urine and ECG. Special investigations like FNAC and Thyroid function tests along with ultrasound scan, and X-ray neck were done. All the referred patients, who had undergone routine investigations, were clinically examined in detail and a careful palpation of the thyroid nodule was done to judge precisely the location for aspiration. Under aseptic precautions, FNAC was done in the department of pathology, Mamata Medical College using a 23 gauge needle attached to a 5 ml syringe. Then several smears were prepared and promptly fixed in a fixative containing equal amounts of ether and 95% ethyl alcohol. These were stained by Papanicolaou's stain and Hematoxylin and Eosin (H&E) stain. Air dried smears were also prepared and stained with Giemsa stain. Surgical removal of the

lesion was done at the discretion of the surgeons. Whenever the excised specimen was received in the department, it was routinely processed to obtain paraffin sections which were stained by H&E. Histopathological study was done independently. Results of cytological and histopathological studies were later correlated to evaluate the efficacy of FNAC.

## RESULTS

Solitary thyroid nodules are less common in children and adolescents than in adults. Therefore, we assessed the pattern of Solitary thyroid nodules among the subjects belonging to various age groups who were admitted at Mamata General Hospital. The findings suggest that the youngest patient in this study was in the age group between 10-20 years whereas, oldest being above 60 years (Table 1).

All the cases were subjected to FNAC analysis to differentiate the histological subtypes and the incidence of benign and malignant lesions. The findings indicated that out of 63 swellings observed, 9 were malignant and the remaining were benign lesions. FNAC has been able to differentiate benign and malignant lesions in 65.7% subjects observed. Further clinical specimens have been evaluated by histopathological examination (HPE). The results displayed that among all the 63 solitary nodule of thyroid cases studied 5 cases (7.9%) were malignant lesions while the rest of 58 (92%) cases were benign lesions (Table 2). Thus, FNAC has been proved to be an efficient diagnostic tool in identifying benign or malignant lesions.

The clinical examination of STN subjects showed that the swelling in front of the neck is the most common symptom which has been observed in all the subjects. The other symptoms noticed in STN include pain in 3 subjects (4.7%). Further examination by palpation in cervical lymph nodes was observed in 53.9% (34 subjects). Whereas Dysphagia 1.5%. Hoarseness 3.1%, Hard consistency 7.9% and Local fixity was seen in 3.1% of STN subjects respectively. In present study commonest surgery performed was Hemithyroidectomy in 56 cases. Total thyroidectomy with LN was done in 2 cases and 3 cases of total thyroidectomy respectively (Table 4).

**Table 1. Distribution of Solitary Thyroid Nodule According to Age and Sex**

Age	Males	Females	Percentage
10-20	3	07	15.8
21-30	3	11	22.2
31-40	5	14	30.1
41-50	0	09	14.2
51-60	0	7	11.1
>60	0	4	6.3
<b>Total</b>	<b>11</b>	<b>52</b>	<b>100</b>



**Table 2. Nature of Thyroid Nodules in FNAC and Histopathology**

Thyroid nodules	FNAC	Histopathology
Benign <ul style="list-style-type: none"> <li>Benign Nodular colloid</li> <li>Hashimoto's thyroiditis</li> <li>Follicular adenoma/neoplasm</li> </ul>	54 (85.7%)	58 (92.06%)
Malignant <ul style="list-style-type: none"> <li>Papillary carcinoma</li> <li>Non Hodgkin lymphoma</li> </ul>	09 (14.2%)	05 (7.9%)

**Table 3. Clinical Presentation of Solitary Thyroid Nodules**

Sign and Symptoms	Frequency	Percentage
Swelling in front of neck	100	100
Palpable cervical lymph nodes	34	53.9
Dysphagia	01	1.58
Hoarseness	02	3.1
Hard consistency	05	7.9
Local fixity	02	3.1
Pain	03	4.7

**Table 4. Type of Surgery Done**

Type of Surgery	No. of Cases
Hemithyroidectomy	56
Total thyroidectomy	3
Near-total thyroidectomy	2
Total thyroidectomy with LN dissection	2

## DISCUSSION AND CONCLUSION

Thyroid nodules are common, yet treatment modalities range from observation to surgical resection. Because thyroid nodules are frequently found incidentally during routine physical examinations, clinical decision making depends on proper evaluation of the thyroid nodule. The aims of our prospective study were to evaluate the pathological conditions and to assess the outcome of the management of solitary thyroid nodule. In the present study age of the patient ranged from 10-60 yrs with median age of 35 yrs. The number of males in the present study was 11 and females were 52. In the present study, clinical examination of STN subjects showed that the swelling in front of the neck is the most common symptom which has been observed in all the subjects. The other symptoms noticed in STN include pain, palpation in cervical lymph nodes, Dysphagia, Hoarseness, Hard consistency and Local fixity. Our observations are consistent with other studies [8]. However, the success of FNAC is depends upon several important contributing influences including aspirator experience, skillful cytological interpretation and a rational analysis based upon a synthesis of cytological and clinical information in the context of an individual patient [9]. Further histopathological examination was also done in the present study and was compared with the

FNAC observations indicating the efficiency of FNAC in identifying benign or malignant lesions. Our FNAC findings indicated that out of 63 swellings observed, 5 were malignant and the remaining were benign lesions. FNAC has been able to differentiate benign and malignant lesions in 65.7% subjects observed. Similar observations were also made by earlier authors in their study that the solitary thyroid nodule found usefulness of Fine Needle Aspiration Cytology in the diagnosis [10]. They suggested that pre-operative fine needle aspiration cytology is a must for the diagnosis and deciding the line of treatment. In our study, the specificity for cytological diagnosis of neoplasia was 87.0%, sensitivity of 100%, positive predictive value of 100%, negative predictive value of 93.5% and diagnostic accuracy of 91.0%. Our observations were in accordance with several earlier studies [11-13]. In present study commonest surgery performed was Hemithyroidectomy in 56 cases followed by Total thyroidectomy, Near-total thyroidectomy and Total thyroidectomy with LN dissection. To conclude, although a thorough history and clinical examination are indispensable, FNAC is essential to decision making and is able to provide highly accurate information that will ultimately determine the management of a nodule.

## REFERENCES

- Gharib H, Papini E and Paschke R. (2008). Thyroid Nodules, A Review of Current Guidelines, Practices, and Prospects. *European Journal of Endocrinology*, 159, 493-505.



2. Gharib H and Papini E. (2007). Thyroid Nodules, Clinical Importance, Assessment, and Treatment. *Endocrinology and Metabolism Clinics of North America*, 36, 707-735.
3. Usha Menon V, Sundaram KR, Unnikrishnan AG, Jayakumar RV, Nair V, Kumar H. (2009). High prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. *J Indian Med Assoc*, 107, 72-7
4. Salabe GB. (2001) Pathogenesis of thyroid nodules, histologic classification? *Biomed Pharmacother*, 55, 39-53.
5. Castro, M.R. and Gharib, H. (2003) Thyroid Fine-Needle Aspiration Biopsy, Progress, Practice, and Pitfalls. *Endocrine Practice*, 9, 128-136.
6. Castro, M.R. and Gharib, H. (2005) Continuing Controversies in the Management of Thyroid Nodules. *Annals of Internal Medicine*, 142, 926-931.
7. Hegedus, L. (2004). The Thyroid Nodule. *New England Journal of Medicine*, 351, 1764-1771.
8. Lawrence W, Jr., Kaplan BJ. Diagnosis and management of patients with thyroid nodules. *Journal of Surgical Oncology*. 2002, 80(3), 157-170
9. Bajaj Y, De M, Thompson A. (2006). Fine needle aspiration cytology in diagnosis and management of thyroid disease. *Journal of Laryngology and Otology*. 120(6), 467-469.
10. Flanagan MB , Ohori NP , Carty SE , Hunt JL. (2006) Repeat thyroid nodule fine needle aspiration in patients with initial benign cytologic results. *Am J Clin Pathol*. 125, 698-702
11. Afroze N , Kayani N , Haasan S H. (2002) Role of Fine Needle Aspiration Cytology in the Diagnosis of Palpable Thyroid Lesions . *Indian L Pathol Microbiol*, 45(3) , 241 – 6
12. .Al-Sayer HM, Krukowski ZH, Williams VMM and Matheson NA. (1985) Fine Needle Aspiration Cytology in Isolated Thyroid Swellings, a Prospective two year Evaluation. *British Medical Journal*, 290 (6840), 1490 – 92
13. Ikram M, Hyder J, Muzaffar S, Hasan SH. (1999) Fine Needle Aspiration Cytology in the management of thyroid pathology the Aga Khan University Hospital experience. *J Pak Med Assoc* 49(6), 133-5.
14. Mahar SA, Husain A, Islam M. (2006). Fine Needle Aspiration Cytology of Thyroid Nodule , Diagnostic Accuracy and Pitfalls. *J Ayub Med Coll Abbottabad* 18(4), 26-9.

