

The Pattern of Thyroid Disease in Non-Toxic Solitary Thyroid Nodule

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This study of 100 cases was carried out at surgical unit of Mayo Hospital Lahore to evaluate the pattern of thyroid disease in non-toxic solitary thyroid nodule over the period of two years (December, 1995 to November, 1997). The male to female ratio was 1:10. The study consisted of only those cases where Fine Needle Aspiration Cytology (FNAC) and biopsy both were done. Eighty-three (83%), cases confirmed on FNAC were proved by histopathology except 2 (2.40%). Four cases (4%) reported on FNAC as "Malignant cell seen" were confirmed on histopathology as malignant, predominantly papillary cell carcinoma (62.5%). Out of benign lesions 60 (65.21%) were follicular adenomas, 28 (30.43%) colloid nodules, 03 (3.26%) degenerative cyst and 01 (1.08%) parathyroid adenoma.

Key words: Non-toxic solitary thyroid nodule (STN), Ultrasonography, FNAC, Histopathology.

The importance of discrete swellings lies in the risk of neoplasia compared with other thyroid swellings¹. Some 05-20% of solitary swellings prove to be malignant^{1,4}. Ultrasonography is widely used as investigation of choice supplemented with clinical examination in determining the physical characteristics of thyroid swelling¹. The investigation proceeds with FNAC to determine whether the lesion is benign, malignant or indeterminate on cytology basis. The cytologically malignant and indeterminate lesions were operated and benign were not, unless for pressure symptoms, cosmetic reasons and patient wishes.

This study was carried out to evaluate the diagnostic value of FNAC and to compare its results with histopathology and to evaluate the pattern of thyroid disease in non-toxic solitary thyroid nodule.

Patients and methods

This study was conducted in surgical unit of Mayo Hospital, Lahore. All patients below 12 years of age, multinodular goitre (proved on thyroid ultrasonography), and toxic goitre (proved on thyroid hormonal profile) were excluded from this study. All patients were subjected to pre-operative thyroid ultrasonography, FNAC, serum T-3 & T-4, TSH, indirect laryngoscopy, evaluation by an anaesthetist apart from routine investigations.

All patients were eventually subjected to surgery and histopathology was done. The histopathology results were later compared with cytopathology outcome. Thyroid lobectomy with isthumectomy was performed on all except where there was cytological evidence of malignancy, where definitive procedure was done.

Results

One hundred patients included in this study were between 13 to 70 years of age with majority of between 21 to 50 years. The male to female ratio was 1:10. The results of cytological diagnosis of non-toxic solitary thyroid nodules are shown in Table 1.

Table 1. FNAC Results compared with histopathology

FNAC	n=100	Histopathology	
		Benign	Malignant
Benign	83 (83%)	81(97.59%)	2 (2.40%)
Indeterminate	13 (13%)	11(84.61%)	2(15.38%)
Malignant	04 (04%)	Nil	4(100%)

Table 2 Histopathological diagnosis of non-toxic solitary thyroid nodule (STN)

Malignancy	n=8(08%)	Histopathology	
		Benign	Malignant
Malignancy	n=8(08%)	Papillary Carcinomas	05 (62.5%)
		Follicular Carcinomas	03 (37.5%)
Benign	n=92 (92%)	Follicular adenomas	60 (65.21%)
		Colloid nodules	28(30.43%)
		Degenerative cysts	03(3.26%)
		Parathyroid adenoma	01(1.08%)

Discussion

Almost all malignant nodules are non-toxic but other thyroid swellings like follicular adenoma, colloid nodule, cyst and thyroiditis can also manifest as non-toxic solitary thyroid nodule.

In this series eighty-three patients (83%) were diagnosed as benign lesions but on histopathological report proved as malignant in two (2.40%) out of these 83 patients. FNAC has high rate of accuracy in different series of study. In our study the accuracy of FNAC is 97.57% comparable with world literature, 95%, 95%, 98% and 98.5%^{2,7}

The incidence of malignancy in our study is 08%, which is again comparable with various studies from abroad^{8,9}. Among the malignant cases, 62.5% were papillary carcinoma and 37.5% were follicular carcinoma. The papillary carcinoma is the most commonly diagnosed. malignancy of thyroid as reported in many of the series^{1,3,8,10}

Sixty patients (65.21%) of follicular adenomas reasonably high incidence need further evaluation or study, as these are not comparable with available data.^{1,7}

FNAC can not be the sole diagnostic agent¹¹ while dealing with indeterminate lesions, Therefore in such circumstances clinical criteria to assist in diagnosis and selection for operation i.e, hard irregular swelling with any apparent fixity which is highly suspicious of malignancy. Further, recurrent laryngeal nerve paralysis suggested by hoarseness and a nonocclusive cough and confirmed by indirect laryngoscopy is almost pathognomonic¹

There were 13 cases of indeterminate lesions where the cytodiagnoses was suspect either probably benign or malignant. In our study eleven (84.61%) patient turned out to benign and two (15.38%) as malignant in indeterminate nodule on histopathology which conform to others^{5,8,10,11}.

Table 3. Comparison of various studies

Source	Cytodiagnosis	Histopathological Diagnosis		
		Total	Benign	Malignant
Hamming ¹⁰ et al 1990	Benign	92	89 (97%)	3(3%)
	Indeterminate	41	35 (85%)	6(15%)
Altavilla ⁸ et al 1990	Benign	160	152(95%)	8(5%)
	Indeterminate	53	37(70%)	18(30%)
Present study 1997	Benign	83	81(97%)	2(3%)
	Indeterminate	13	11(84)	2 (16%)

Conclusion

FNAC is safe, easy to perform, reliable and cost-effective but may not be the sole diagnostic agent where there is large indeterminate fraction of patients. Therefore to avoid misdiagnosis of carcinoma of thyroid in non-toxic solitary thyroid nodule resection should be advised after FNAC in the following circumstances:

- 1: All proven malignant nodules.
- 2: All cytological diagnosed follicular neoplasms.
- 3: All lesions exhibiting an atypical but non-diagnostic cellular pattern on cytology
- 4: Where on clinical grounds the index of suspicious of malignancy is high even if the cytology report suggests benign disease.

Thyroid ultrasonography may be used to confirm solitary or multiple, solid or cystic swellings of the thyroid which can change the diagnostic /treatment plan..

References

1. RCG Russel, Normans, Williams et al: Thyroid Gland and Thyroglossal tract, Bailey & loves, Short Practice of Surgery 2000,Ed.23, 726-730
2. A H Soomro S A Shaikh H Abro et al: Comparison of fine needle aspiration cytology with open biopsy in thyroid nodule ,Pak. J .Surg. Jul-Sep 1996,12: 88-89
3. Rojeski MT, Ghirib H : Nodular thyroid disease evaluation and management .N Eng J Med 1985; 313: 428-36
4. Reeve TS, Delbridge L, Soan D, Crummer P; The impact of fine needle biopsy on surgery for single thyroid nodules Med J Aust. 1986; 145: 308-11
5. Mazzaferri EL, DeLos Santos ET, Rofagha-Keyhani S: Solitary thyroid nodule; Diagnosis and management Med Clin North Am 1988; 72: 1177
6. Cusick El Carol A Machintosh, Zygmunt H Krukowski et al: Management of isolated thyroids swellings : a prospective six year study of fine needle aspiration cytology in diagnosis BMJ 1990; 301: 318-21
7. A.S Chughta, M. Khalil, A Rashid et al, Fine needle aspiration cytology in the diagnosis of palpable thyroid lesions. Pakistan journal of Surgery 1996; 12: 88-90
8. Altavilla G, Pascale M and Nanci I; Fine needle aspiration cytology of thyroid gland diseases ACTA CYTOL 1990; 34; 251-256
9. Arora B, Klara R and Arora DR: Fine needle aspiration cytology of palpable thyroid lesions PAK J Otolaryngology 1993;9: 68-72
10. Hammung JF, Goslings BM, van Steens GL et al: The value of fine needle aspiration biopsy. Arch intern medicine 150; 113: 1990.
11. Kenneth A W: Cost effective evaluation of a patient with thyroid nodule: Surg Clin North Am. 1995; 75: 357-63
12. Calan RH, Strutt PJ, Kisken WA et al: Fine needle aspiration of thyroid nodules. Wisconsin Med J 90; 285: 1991.
13. Alden H , Harken, Ernest E. Et al: The thyroid nodules and cancer. Abenathys Surgical Secrets 3rd Ed. 1996: 179
14. Malik K , Channa A , Khan A, Waheed I: Pattern of thyroid disease, a study of 203 cases in Jinnah postgraduate Medical Centre Karachi (JPMC).In: The J Surg, PIMS, 1992; Vol. 3&4, P:17-19