

Original Research Article

Our experience of clinico-pathological study of thyroid swelling

Vilas R. Kirdak, Sambhaji G. Chintale*, Sonali P. Jatale, Kaleem A. Shaikh

Department of Otorhinolaryngology, JIUS IIMSR, Warudi Tq., Badnapur Dist., Jalna, Maharashtra, India

Received: 28 June 2018

Revised: 30 July 2018

Accepted: 31 July 2018

***Correspondence:**

Dr. Sambhaji G. Chintale,

E-mail: drsamchinto@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Diseases of thyroid gland are extremely common. Majority of palpable thyroid swellings are asymptomatic occurs in 5% of the population. The main objective of present study is to know the accuracy of FNAC in preoperative diagnosis of clinically palpable thyroid swelling and evaluate the efficiency of FNAC, USG, and TFT in differentiating between benign and malignant thyroid swelling and their confirmation by histopathological reports after operation.

Methods: This prospective study is carried out in 120 cases of thyroid swelling attending to the ENT opd at our hospital. Pearson chi square test used as statistical tool to analyse the data. All patients informed written consent taken. The patients are subjected to detailed history with thorough clinical examination, pathological and radiological investigation. FNAC, USG and TFT were done in each case. The result of FNAC was interpreted.

Results: The present study includes 120 cases. All patient examined clinically, pathologically and radiological. The common age group of presentation of thyroid swelling is between second to fourth decade. Youngest patient is of 15 yrs. old and oldest is being 68 yrs of age. All 120 cases were evaluated preoperatively and provisional diagnosis was made on the basis of FNAC, TFT and USG. 111 Cases were operated out of total 120 cases. So, the overall accuracy of FNAC in comparisons to HPR is 99.15% with no false positive reports.

Conclusions: The overall incidence of the malignancy in thyroid swelling varies from 10% to 30% according to various studies, in our study the overall incidence of malignancy in thyroid swelling was 5.8%. High index of suspicion should be kept in mind during physical examination for detection of malignancy. FNAC should be done in all cases preoperatively FNAC is safe procedure and cost effective.

Keywords: Thyroid swelling, Goiter, Cytology, Histopathology, Sonography

INTRODUCTION

The thyroid gland is unique among endocrine gland in that it is the first endocrine gland to appear in the foetus. It is the largest endocrine gland 9 (weighing about 25g and is the only one which is amenable to direct physical examination of its superficial location. Diseases of thyroid gland are extremely common. Palpable thyroid nodule of which majority are asymptomatic occurs in 5% of the population.¹⁻³ Estimate are that about 1% of the women will have hypothyroidism a similar number hyperthyroidism and 3 to 4% clinically detectable thyroid

nodule at some times in their lives. Prevalence rate in male are considerable lower, but still significant while most dreaded thyroid condition -thyroid storm and myxoedema coma, sever graves ophthalmopathy and anaplastic thyroid carcinoma are uncommon thyroid disorders as group can cause considerable morbidity. Because of the possibility of the malignancy, sometime clinicians those in the surgical field recommended that all the nodules be removed. On the other hand, endocrinologist recommend that FNAC be performed as the initial steps of evaluation in order to avoid unnecessary surgery this thoughts were in the past.

Because the thyroid nodularity is common, it would be impossible to operate on every patient with a thyroid mass, as the incidence of malignancy is quite low compared with over all incidence of thyroid nodularity. So the goal of diagnostic workup is to select that patient for surgery who has a high likelihood of harbouring malignancy in the nodule. At one extreme, the diagnosis of malignancy may strongly suspected on clinical ground (male, sex growing nodule, firm/hard nodule, ill-defined nodule margin, cervical adenopathy, dysphonia, dysphagia and cough) and such patient generally require open exploration. On the other hand one finds many patients in whom the history and clinical findings are not so conclusive. Many investigations are used to differentiate between benign and malignant nodule so as to avoid surgery in those who don't need it. Among these FNAC, USG AND TFT are commonly used in association with the clinical feature but there are drawbacks of each technique and the final answer to the problem is still elusive.

The present study is undertaken to evaluate the utility of FNAC in preoperative diagnosis of thyroid swelling and evaluate the efficiency of FNAC, USG, TFT in differentiating between benign and malignant thyroid swelling. On USG the findings of micro/ macro calcification, lymphadenopathy. Hyper vascularity, hypoechocity, degenerative changes with multiple fluids areas are mostly suggestive of malignancy. While in multinodular toxic goiter, with deranged TFT is the incidence of malignancy is higher the present study is carried out in the department of ENT from May 2015 to May 2018, in this study a modest attempt is made to do comprehensive study of clinical profile and pathological correlation of thyroid swelling.

METHODS

This prospective study is carried out on 120 cases of thyroid swelling attending to the dept. of ENT OPD at JIUS IIMSR Warudi Taluk. Badnapur Dist, Jalna during the period of May 2015 to May 2018. For the purpose of inclusion in this study, a thyroid swelling was defined as clinically palpable lesion involving either lobe or the isthmus of the thyroid gland.

Inclusion criteria

- All the patient present with thyroid swelling to ENT department.
- Patient referred from other department to ENT department for thyroid swelling evaluation

Exclusion criteria

- Those patients who are not giving consent and not willing for surgery.
- Those patients having pubertal goiter.

The entire patient subjected to detailed history of with thorough clinical examination of, pathological and radiological investigation. FNAC, USG and TFT were done in each case. The result of FNAC was interpreted as benign, malignant and inadequate aspirate. sonographically, the nodule were evaluated for size, location, echo texture, margins, presence of halo, calcification, accessory nodule, associated cervical lymphadenopathy and consistency (colloid, cystic, or mixed) in order to differentiate between benign and malignant nodules. Patient with deranged TFTs were treated medically. Then the patient underwent surgery and histopathological examination of the specimen was obtained. Finally, the histopathology reports were correlated with the findings of FNAC in order to evaluate their sensitivity and specificity by statistical methods.

RESULTS

The present study includes 120 cases which are studied thoroughly clinically, pathologically and radiological and after analyzing following observation were made.

Table 1 showing age distribution of patients in which the common age group of presentation of thyroid swelling is between 2nd to 4th decades. Youngest patient is of 15 years. old and oldest is being 68 of age.

In the present series of 120 cases 110 (91.66%) cases of thyroid swelling were females and 10 (8.33%) cases were male.

Table 1: Showing age distribution of patients.

Age (in years)	Female	Male
11-20	12	1
21-30	28	2
31-40	40	4
41-50	14	1
51-60	10	1
61- 70	6	1
Total	110	10

Table 2: Showing the clinical symptoms in 120 cases.

Sr. no	Clinical symptoms	No of cases
1	Thyroid swelling	120
2	Pain	10
3	Dysphagia	14
4	Change in voice	1
5	Palpitation	6
6	Sweating	8
7	Heat tolerance	4
8	Eye signs	5
9	Weakness	6
10	Cold intolerance	4
11	Menstrual irregularities	2
12	Weight loss	10

Patient of thyroid swelling mainly present with swelling in the anterior aspect of neck in midline (120 cases). One patient had change in voice. Toxic thyroid symptoms were present in few with eye signs in 5 cases (4.1%), heat tolerance in 4 cases (3.3%), palpitation in 6 (5%) cases, wt. loss in 10 (8.3%) cases, and menstrual irregularity in 2 (1.2%) cases. Dysphagia was next common symptoms (11.6%).

Table 3: Showing duration of swelling.

Duration of swelling	Cases (n=120)	Percentage (%)
Less than 6month	20	16.66
6 month-11 year	35	29.16
1 year-2 years	25	20.83
2 years to 3 years	30	25
More than 5 years	10	8.33

Maximum patient present with complaining of swelling in the neck with duration of 6 month to one year 35 cases (29.16%).

Table 4: Showing findings on local examination.

Sr no	On examination	No of cases	Percentage (%)
1	Consistency		
	Soft	52	43.33
	Firm	63	52.5
	Hard	5	4.16
2	Cervical lymph node	3	2.5

Majority cases 63 (52.2) had firm to hard consistency of the swelling. 5 (4.16%) cases had hard swelling. With cervical lymphadenopathy, which were clinically diagnosed to be malignant thyroid swelling found in 3 cases (2.5%).

Table 5: Showing comparison of pre and post-operative findings of thyroid swellings.

Sr no	Thyroid swelling	Preoperative	Post-operative
1	Solitary nodule	20	18
2	Multinodular	24	22
3	Diffuse	34	32
4	Thyroid cyst	28	26
5	Carcinoma	6	7
6	Thyroiditis	8	6
	Total	120	111

All 120 cases were evaluated preoperatively and provisional diagnosis was made on the basis of FNAC, TFT and USG. 111 Cases were operated out of total 120 cases. Preoperatively 6 cases of malignancy were diagnosed while 1 case was missed (were reported on

HPR). One case multinodular goiter found to be malignant on HPR. Hypothyroid and hyperthyroid cases were medically treated initially and are on follow up.

Table 6: Showing fine needle aspiration cytology reports in 120 cases.

Sr no.	FNAC reports	No of cases (male+female)	Percentage (%)
1	Colloidal goiter	48 (4+44)	21.81
2	Thyroiditis	8 (0+8)	6.66
3	Thyroid cyst	30 (4+26)	25
4	Benign thyroid lesion	18(0+18)	18
	Carcinoma		
5	Papillary	5 (1+4)	4.16
	Follicular	1 (0+1)	1.66
6	Inconclusive	9 (1+8)	8.25
	Total	120 (10+110)	

Among 6 cases of carcinoma detected on FNAC cytology 5 were papillary thyroid and 1 follicular carcinoma. 25% cytology had cystic aspirates

Table 7: Showing the histopathological reports in operated cases.

Sr no	HPR reports	No of cases (male+female)	Percentage (%)
1	Colloidal goiter	46 (4+42)	38.33
2	Thyroid cyst	22 (4+18)	18.33
3	Adenoma	18 (0+18)	15
4	MNG	11(0+21)	9.16
5	Thyroiditis	7 (0+7)	5.83
6	Carcinoma		
	Papillary	5(2+3)	4.16
	Follicular	2(0+2)	1.66
	Total	111	

Among these 38.33% colloidal goiter and 9.16% multinodular goiter were reported. Thyroid cyst was reported in 18.33%. Adenoma was the 3rd most common lesion carcinoma was reported in 7 cases of which majority was papillary carcinoma and 2 case of follicular carcinoma reported.

DISCUSSION

In present study most common age of presentation thyroid disease is in second to fourth decades youngest was 15 yrs. female patient and oldest being 68 yrs. female patient.

Ananthakrishnana showed highest incidence in in third and fourth decades of solitary thyroid nodule.⁴ Fenn et al showed the highest incidence of solitary thyroid swelling in fourth decade in large series of cases not a single case was below 10 years of age.⁵

Psarra showed that thyroid nodules are more frequent in the age group of 21 to 41 yrs. while they are common in extremes of ages.⁶

Bhansali noted an incidence of 52% in the same age group. The peak incidence of multinodular goiter was in fourth and fifth decades of which two cases of toxic goiter presented in third decade.⁷ Kapur noted hyper functioning of gland in multinodular goiter between fourth and sixth decade he also noted solitary thyroid nodule become toxic between fourth and fifth decade among 8 cases of malignancy 6 papillary cases were noted in third and fifth decade.⁸ According to Kaplan over half of papillary carcinoma of thyroid clinically manifest before the age of 49 yrs. In our series of 120 cases 110 females and 10 males presented with thyroid swelling, showing a female preponderance with ratio 11:1 male. Messaries 75 showed high preponderance of female over male in ratio 8:1.⁹

Psarras given high preponderance of female similarly with 7:1.⁶

Alhadeff, Lindsay swelling in the neck is the commonest presentation symptoms.¹⁰

One patient complained of change in voice with vocal cord paresis on 70 degree examination. History of change in voice is common symptom of advanced malignancy. It may be sometime caused by benign large nodule compressing the recurrent laryngeal nerve hamburger B.¹¹

Symptoms of toxicity were present in 5(4.16%) cases with eye sign, in heat tolerance in 4 (3.33%) cases palpitation in 6 (5%) cases, weight loss in 10 (8.3%) cases menstrual irregularity in 2 (1.66%) cases. Toxic nodules are less likely to be malignant Messaries.⁹

Ananthakrishnana found swelling as the commonest in 94% cases, pain in 10% change in voice in 9.2% and pressure symptoms in 13.9%.⁴ Duration of swelling in our study varies from about 6 month to 6 years. Maximum patient present with complain of swelling in neck with duration of 6 month to 1 year. According to Sarkar et al the duration varied from 3 month to 20 years. Ananthakrishnana observed duration from 4 days to 17 years one third of which were less than 6 month duration.

In case of multinodular goiter, surface was nodular with firm consistency. Risk of malignancy has been described in literature to the tune of 2-2.7. rapid increases in size of one of the nodule, change in consistency pain, change in voice makes the diagnosis of MNG less likely Till.¹²

In our study 24 cases of multinodular goiter. In Framingham study, incidence was higher in female incidence of malignancy in MNG was 7.6% in the series of Anne McCall.¹³

In present study solitary thyroid nodule present in 20 cases. In Ananthakrishnana study STN is common in female similarly Messaries study female preponderance seen

Vittal noted 47% patient with swelling of less than one year duration.¹⁴ in our study diffuse goiter was found in 35 cases. In present study 7 cases of carcinoma studied of which 5 was papillary carcinoma (2 in male 3 in female) and 2 were follicular carcinoma presented in female Shroff et al reported M:F 1:1.3. Prakash et al had M:F ratio 1.3:1. Fen et al had M: F ratio 1:2.⁵

These cases presented with hard swelling and cervical lymphadenopathy in our present study 8 cases of thyroid cyst studies which present with firm to cystic consistency

Crile's cyst of thyroid gland appears to be of two types the commonest and most difficult to recognize clinically is colloid cyst filled with thin brownish fluids. Sometimes they are recognizing by their roundness, hard tense consistency and from rapid growth. Less common but easily recognizable are cyst that result from haemorrhage in to an adenoma or in to surrounding thyroid. Most of them are clinically recognized from history of sudden rapid appearance or growth often associated with pain or discomfort.¹⁵

7 cases of thyroiditis, all female, were diagnosed. They complained of pain and discomfort, dysphagia. There was diffuse enlargement with firm consistency on palpation. Friedman reported that Hashimoto's thyroiditis it is can present as nodule. In present study, thyroid functions test were carried out in each case and among them 20 cases had derange results. 14 were hypothyroid and 6 were hyperthyroid patient were treated accordingly. Vital et al 94 reported 82.4% euthyroid. 7.3% hyperthyroid and 8.5% hypothyroid patient.¹⁴ Diagnostic strategy using initial fine needle aspiration biopsy for palpable thyroid nodule easy found to be safe and cost effective.¹⁶⁻¹⁸ FNAC was performed in each case of series. Commonest reporting on FNAC was colloidal goiter in 48 cases, other common finding was thyroid cyst in 30 cases and benign lesion of thyroid in 18 cases. Thyroiditis in 8 cases and carcinoma in 6 cases and inconclusive in 8.25% No serious adverse effect and no seeding of tumor cell in the needle tract have been reported. FNAC is now considered as safe, useful, and cost effective. The accuracy of FNAC is 95%.¹⁹⁻²¹ According to Kaplan, the incidence of FNAC is as follows 65% colloidal goitre, 2% benign thyroid lesion. 5% malignancy, 10% non-diagnostic. Kin Lysterly stated FNAC as diagnostic procedure of choice in solitary nodule, in his review of total 641 patient undergoing FNAC 68% had benign cytological findings. 7 were false negative, 4% malignant and 20% had intermediate results.²⁰

Routine use of FNAC in evaluation of thyroid nodule can reduce the need for diagnostic thyroidectomy by 20-50% while increasing the yield of cancer diagnosis in thyroid nodule. In present study, 111 of the 120 were operated

and thyroid tissue sent for histopathology reporting. The results confirmed the preponderance of colloidal goiter 38.33%. Rest being 18.33% thyroid cyst, 15% thyroid Adenoma, 9.16% multinodular goiter 5.83% thyroiditis, papillary carcinoma in 4.16% and follicular carcinoma in 1.6%.

Ananthkrishnan had benign lesion 84.7%, malignancy in 15.3% histopathological; 50.9% benign lesion were follicular adenoma.⁴ 36.6% adenomatous goiter. 1.2% was colloidal goiter 3.6% Hashimotos thyroiditis and 2.3% thyroid cyst.

Nagore et al had histopathological incidence of adenoma to be 44%, nodular goiter 33% and malignancy 11%.²¹

In similar study, incidence of thyroid cancer was similar between patient with solitary nodule (175 of 1181 patient 14.8%) and patient with multiple nodule (120 of 804, 14.9%). The incidence of malignancy in MNG was 7.6% in series of Ann McCall.¹⁴ About 3.7% of MNG showed malignant changes as reported by William

Thus in present study-total no of malignancy based on HPR 7, clinically diagnosed 3, FNAC diagnosed malignancy 6, missed preoperatively 1

So, the overall accuracy of FNAC in comparisons to HPR IS 99.15% with no false positive reports.

Malignant (positive) results can be identified reliably by the cytopathology. The most frequent malignant lesion encountered is PTC. One of the main roles of USG in the assessment of thyroid swelling is to distinguish non operative between solid and cystic lesion.

In our study, there were 55 cystic lesions, 45 solid nodule and 20 were mixed type of nodules. In our study all 7 cases of malignancy recognized by USG were confirmed by HPE later on.

High resolution ultrasound is the best imaging modality for objectively detecting size, number and cellular nature of nodules. Katz and Kane et al found that USG was unable to differentiate thyroiditis and malignant lesions.²⁶

CONCLUSION

Thyroid nodules are common with prevalence in general population. The overall incidence of the malignancy in thyroid swelling varies from 10% to 30% according to various studies, in our study the overall incidence of malignancy in thyroid swelling was 5.8%. Female have higher preponderance for thyroid disease male patients are at higher risk of malignancy even though thyroid disease is uncommon. Clinical diagnosis of benign disease has high index of diagnosis accuracy.

This study helps to clinician and general physician to know the preoperative evaluation of cases with respect to

utilisation of facility like FNC, USG, and comparing the result with postoperative HPR and helping for early diagnosis and management of thyroid diseases without missing confirmatory diagnosis. So it necessary to keep high index of suspicion during physical examination for detection of malignancy. FNAC should be done in all cases preoperatively. FNAC is safe procedure and cost effective. FNAC has high diagnostic accuracy 99.15% and help to differentiate benign and malignant lesions.

ACKNOWLEDGMENTS

Study is conducted at ENT department of our institute thanks to my entire colleague for their kind support and anaesthesia department for their kind support.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Lawrence W Jr, Kaplan BJ. Diagnosis and management of patient with thyroid nodules. *J Surg Oncol.* 2002;80:157-70.
2. Quadbeck B, Pruellage J, Roggenbuck U, Janssen OE, Mann K, et al. Long term follow of thyroid nodule growth. *Exp Clin Endocrinol.* 2002;110:348-54.
3. Miller JM. Evaluation of thyroid nodule. *Med Clinic of North Am.* 1985;69:1063.
4. Ananthkrishnan N, Madhava Rao M, Narasimhan R, Veliath AJ. The single thyroid nodule. 503 pts. *Indian Journal of Surgery.* 1993;55(10):487-92.
5. Fenn AS. Solitary nodule of thyroid. *Ind J Surg.* 1980;42:175-1.
6. Psarras, Papadopaoulous SN, Livadas D, Koutras DA. Single thyroid nodule. *Br Surg* 1972;59:545-8.
7. Bhansali SK. Solitary thyroid nodule 600 cases. *Ind J Surg.* 1982;44:547-61.
8. Kapur MM, Sarin R, Karmarkar MG, Sarda AK, Solitary thyroid nodule. *Indian J Surg.* 1982;44:174-9.
9. Messaries G, Kyriakou K, Vasilopolous P, Tountas C. Single thyroid nodule & C A *BMJ Surg.* 1974;61:943-4.
10. Lindsay S, Dailey ME, Friedlander J, Yee G, Soley MH. Chronic thyroiditis. Clinical and pathological study of 354 patient's *J Clin Endocrinol Metab.* 1952;12:1578-600.
11. Hamburger JI, Hamburger SW. Fine needle biopsy of thyroid nodules. *N Y State J Med.* 1986;86:241-9.
12. Till AS. Types of carcinoma of thyroid and their presentation. *Br J Surg.* 1965;52(10):734-5.
13. Anne McCall. Harriet J, et al. Incidence of thyroid CA in cold nodule and MNG. *S Surg.* 1986;100(6):112-32.

14. Vittal S, Kumar KB, Chandrashekar M, Suchitra V, Jeevarathinam R. Thyroid Surgery. *Indian J Surg.* 1993;22(4):53-6.
15. Crile GJr. Treatment of thyroid cyst by aspiration. *Surgery.* 1966;59:210-1.
16. Khalid AN, Hollenbeak CS, Quraishi SA, Fan CY, Stack BC Jr. Cost effectiveness of iodine 131 scintigraphy The Ultrasonography and Fine Needle Aspiration Biopsy in the Initial Diagnosis Of Solitary Thyroid nodule. *Arch Otolaryngol Head Neck Surg.* 2006;132:244-50.
17. Burch HB. Evaluation of and management of the solid thyroid nodule. *Endocrinol Metab Clin North Am.* 1995;24:663-710.
18. Castro MR, Gharib H. Thyroid fine needle aspiration biopsy. *Endocr Pract.* 2003;9:128-36.
19. Cochand-Priollet B, Guillausseau PJ, Chagnon S, Hoang C, Guillausseau-Scholer C, Chanson P, et al. The diagnostic value of fine needle aspiration biopsy under ultrasonography in non-functional thyroid nodule; A prospective study comparing cytologic and histologic findings. *AM J Med.* 1994;97:152-157
20. Kim H. Historical aspect and anatomy of thyroid 14th ed. 1993:556-557.
21. Nagori, Algotar MJ. Solitary thyroid nodule 100 cases. *Ind J Surg.* 1992;54(2):75-8.
22. Alta Villa G, Pascal M, Nenci I. Fine needle aspiration cytology of thyroid gland disease. *Act Cytology.* 1990;34(2)251-6.
23. Bouvet M, Feldman JI, Gill GN, Dillmann WH, Nahum AM, Russack V, et al. Surgical management of the thyroid nodule: patient selection based on the results of fine-needle aspiration cytology. *Laryngoscope.* 1992;102(12):1353-6.
24. Sonkhya N, Kaur K, Bapna AS, Mital P. A comparative study of fine needle aspiration cytology, ultrasonography and radio nucleotide scan in the management of solitary thyroid nodule. a prospective analysis of fifty cases. *Indian J Otolaryngol Head Neck Surg.* 2002;54(2):96-101.
25. Mondal A, Sadhukhan B, Roychaudhuri BK, Banerjee S. Cytodiagnostic accuracy of fine needle aspiration biopsy of cold nodule of thyroid. *Indian J of Otolaryngol Head Neck Surg.* 1992;2:63-5.
26. Katz JF, Kane R. A Thyroid nodule: sonographic pathologic correlation. *Radiology.* 1984;151:741-5.

Cite this article as: Kirdak VR, Chintale SG, Jatale SP, Shaikh KA. Our experience of clinico-pathological study of thyroid swelling. *Int J Otorhinolaryngol Head Neck Surg* 2018;4:1156-61.