

Thyroid swellings in a rural medical institution of telangana- Our experience

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Abstract

Background: Thyroid enlargement is called goiter. The prevalence of goiter in our country is increasing. It can be diagnosed with investigations like thyroid function tests, ultrasound, fine needle aspiration cytology, histopathology, contrast enhanced computer tomography. This study is about our experience of thyroid cases presented in a rural medical institution of Telangana state of South India. **Aims and objectives:** ¹To clinically identify various thyroid swellings. ²To work out the thyroid swellings by performing thyroid function tests, ultrasound, cytology, computerized tomography scan etc., and arrive at a diagnosis. ³To excise the specimen and conclude the diagnosis by histopathology. ⁴To subject the reports into a statistical study to get a conclusion on various pathologies. **Methodology:** A Descriptive study was performed during January 2017 to October 2018, who were operated at the department of ENT of a rural tertiary health care center and were evaluated with histopathological diagnosis and follow up postoperatively. **Result:** Most of the cases were females and diagnosed as colloid goiter. carcinoma incidence was 8.5 % in our study with papillary carcinoma 6%, follicular carcinoma 2%, follicular adenomas were 19%, nodular goitre with cystic change was 4%, hashimoto's thyroiditis 8%, thyro-glossal cyst 2%. The largest number of thyroid swellings were colloid goitre with cystic change 57.4 %. **conclusion:** Thyroid swellings are now commonly encountered in an ENT out patient. A proper protocol has to be followed which includes palpation, thyroid function tests, ultrasound neck, fine needle aspiration cytology which are simple, safe, cost effective modality in diagnosing thyroid disease with high accuracy and specificity in an aim to rule out malignancy thyroid which is important for an ENT, head and neck surgeon.

Key Word: Goiter, FNAC, HPE, Adenoma, Colloid, Multinodular Goiter, carcinoma

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INTRODUCTION

Thyroid gland is unique among endocrine organs. It is the largest endocrine gland in the body and the first to develop in fetal life¹. Goitre is the clinical observation of an enlarged thyroid gland. WHO defined goiter² as a thyroid gland, whose lateral lobes have a volume greater than the terminal phalanx of the thumb of a person being examined. It is classified as goiter in iodine deficient

areas, iodine replete areas and thyroid cancer. Nearly 10 percent of the population have nodular thyroid disease and half of them are solitary nodules³. Thyroid nodules are more common in women and increase in frequency with age. while thyroid nodules are common, thyroid cancer is uncommon, representing 0.5% of new malignancies⁴. The most common way for thyroid cancer is to present as a solitary thyroid nodule and the question is how to detect the 10 percent of the solitary nodules with cancer so that safe and effective surgery can be offered to those who require it. Fine needle aspiration is the cornerstone of investigation for majority of the cases in the evaluation and treatment. The prevalence of clinical syndrome varies considerably from area to area and is mainly determined by the availability of iodine. Simple goiter may develop into nodules and multiple nodules. Goiter prevalence is between 0 to 80 percent in areas of iodine deficiency. WHO identified 7% of world's population suffering from clinically apparent goiter⁵. It depends upon genetic, cultural, and dietary factors in

iodine deficient areas, particularly if the ingested iodine is less than 50 micrograms per day⁶. In iodine sufficient areas, goiter is most common in premenopausal women, physiological associated with pregnancy. Clinically goiter is graded as normal, palpable, visible⁷. Thyroid cancer is the most common endocrine tumor, with an incidence of 2 to 3 cases per 1 lakh persons, accounting to nearly 1% of new malignancies presenting as a solitary thyroid nodule in a eu-thyroid patient and incidence of malignancy is in between 10 to 20%. Thyroid cancers have favorable outcome in comparison to most solid tumors with 0.5 % of deaths among solid tumors. It is more common in women. Factors predisposing to malignancy are prolonged stimulation by elevated TSH, solitary nodule, ionizing radiation, genetic factors, chronic lymphocytic thyroiditis. For final diagnosis, FNAC and histopathological examination (HPE) are mandatory tests⁸. FNAC method was first published by Leyden in 1883⁹. The diagnosis of thyroid lesions using aspiration cytology was first reported by Martin and Ellis in 1930⁹. Practice guidelines set forth by American Thyroid Association and National Comprehensive Cancer Network states that FNAC should be used as initial diagnostic test because of its superior diagnostic reliability and cost effectiveness¹⁰. FNAC is diagnostic test for thyroid swelling. It is a simple, cost effective, and quick to perform procedure in the outpatient department, with excellent patient compliance. Important factor for satisfactory test includes representative specimen from the goiter and an experienced cytologist to interpret the findings⁸. FNAC, however, is not without limitations related to specimen adequacy, sampling techniques, skill of performing the aspiration, interpretation of the aspirate and overlapping cytological features between benign and malignant follicular neoplasm and also in the detection of some papillary carcinomas because of associated thyroid pathology including multinodular goiter, thyrotoxicosis and marked cystic changes. Here arises the need for histopathological examination, as it is considered the final diagnostic test. Thus even if non-surgical and non-invasive techniques can provide a diagnosis, the ultimate answer rests in the histopathological examination of the excised thyroid tissue. The purpose of this study is to rule out the malignant thyroid disease by subjecting the individuals to a proper diagnostic protocols and plan for surgery to the needed.

OBJECTIVES

1. To clinically identify various thyroid swellings
2. To work out the thyroid swellings by performing thyroid function tests, ultrasound, cytology, computerized tomography scan etc., and arrive at a diagnosis

3. To excise the specimen and conclude the diagnosis by histopathology
4. To subject the reports into a statistical study to get a conclusion on various pathologies

MATERIALS AND METHODS

A descriptive study was undertaken after taking the consent in 47 patients attending the otorhino laryngology [ENT] Department, MNR Medical college, sangareddy, Telangana state of southern India, with complaints of swelling in front of the neck in the thyroid region. Time period was January 2017 to October 2018.

Inclusion criteria

Patients with thyroid swellings with normal thyroid hormone profile who are fit to undergo thyroidectomy.

Exclusion criteria

Cases of thyroiditis, patients with co-morbidities and unfit for surgery, patients who refused surgery, patients with inoperable thyroid malignancy and patients who do not give consent for the study were excluded. Patients with a clinical history of thyroid enlargement, both sexes of all age groups were clinically examined for the goiter. They were graded as normal, palpable, visible and were subjected to thyroid function tests, ultrasonography neck, fine needle aspiration cytology. After initial evaluation and investigations patients were admitted and planned for surgery. On the basis of clinical findings, the swellings were graded as normal, palpable, visible. Out of 47 patients. Patient is asked for deglutition and see whether the gland is movable up and down and palpated for its diffuse, nodular or multinodular nature. Cysts feel hard due to filled fluid, colloid nodules feel doughy, chronic lymphocytic thyroiditis is firm. papillary and medullary cancers feel like hard rubbery nodules. Anaplastic tumors are hard, fixed, craggy, lymphomas are diffuse. Neck is palpated for lymph nodes, larynx, upper trachea. Video-laryngoscopy was done for vocal cord status. Thyroid function tests were done to know the hormonal status. Fine needle aspiration was done, which is a cheaper and easily available modality. The Bethesda protocol¹¹ was followed: Thy 1 Inadequate for diagnosis, Thy 2 Benign disease, thy 3 suspicious for Neoplasia, Thy 4 suspicious for malignancy, Thy 5 positive for malignancy. Ultrasonography of the neck was done to know the size of the gland, nodularity, exclusion of the contralateral disease¹². The resolution of Ultrasound can detect cysts as small as 1mm, solid mass as small as 3 mm. calcification seen may be non-specific. Radioactive iodine scan was reserved for a suspicious FNAC report and was further evaluated. Computer tomography was done in patients suspected for carcinoma. The following diagnostic flow chart was followed

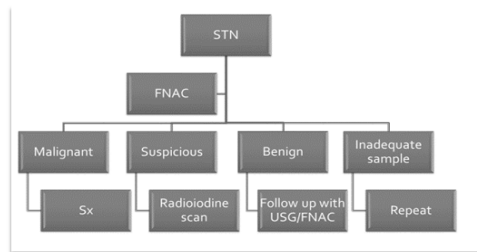


Figure1: Diagnostic protocol for the evaluation of solitary or dominant thyroid nodule

STN= solitary thyroid nodule, FNAC=fine needle aspiration cytology, USG =ultrasonography, S x = surgery

RESULT

Various indices were taken in tabular form and results were thus analysed by descriptive study with the help of community medicine faculty. The following are the results

Table1: Geographical distribution of patients

Region	Number	Percentage
Rural	41	87.23
Urban	6	12.76

Most patients were from a rural background [87 %] and the rest were from urban areas

Table 2: clinical pattern

Clinical finding	Number	Percentage
NORMAL	0	0
PALPABLE	6	12.76
VISIBLE	41	87.3

Most of the swellings were visible to the naked eye [87%], few of them were palpable [6%]

Table 3: sex distribution

Sex	No	Percentage
Males	8	17
Females	39	83

Majority of the patients were females 83%, and males were accounting to 17 percent

Table 4: Iodized salt usage

Iodized salt usage	Number of people	Percentage
Yes	19	40
No	28	60

60 % were not using iodised salt and 40 % were using iodised salt

Table 5: Age distribution

Age group	Number of patients	percentage
0-10	0	0
11-20	4	8
21-30	10	21
31-40	21	44
41-50	9	19
51-60	2	4
61-70	1	2
Total	47	100

Most number were falling in 31 to 40 years age group [44%], next was 21-30 years age [21%],next was 41- 50 year age [19 %],next was 11 to 20 years[8%],51 to 60 [4%],61 to 70 [2%],No case was between 0 to 10 years [0%].

Table 6: Laterality of the lesion

Side	Number of patients	Percentage
Left	16	34
Right	20	42
Diffuse Nodular	2	4
Diffuse colloid	2	4
Multi Nodular Goiter	5	10
Diffuse Goiter	1	2
Midline	1	2
Total	47	100

Most of the lesions were on the right side [42%], left [34%],multi nodular [10%],diffuse colloid [4%],diffuse goiter [2%],midline [2%]

Table7: Results of fine needle aspiration cytology

Diagnosis	Number	Percentage
Colloid	33	70.21
Follicular adenoma	2	4
Adenoma	4	8
Thyroiditis	3	6
Thyroid cyst	4	8
Suspicious of Follicular carcinoma	1	2
Total	47	100

Colloid 70 %,adenoma 8%,thyroid cyst 8%,thyroiditis 6%,follicular adenoma 4%,suspicious of follicular carcinoma 2 % of the cases

Table 8: Results of ultrasonography neck

Usg findings	Number of cases	Percentage
Colloid goiter with cystic change	27	57.4
Nodular goiter with cystic change	2	4
Follicular adenoma	9	19
Hashimoto 's thyroiditis	4	8
Papillary carcinoma	3	6
Suspicious of carcinoma	1	2
Thyro-glossal cyst	1	2
Total	47	100

Colloid goiter with cystic change 58%,follicular adenoma 19%,hashimotos thyroiditis 8%,papillary carcinoma 6%,nodular goiter with cystic change 4%,suspicious of carcinoma 2%,thyroglossal cyst 2%

Table 9: surgical procedure done

Procedure	Number of patients	Percentage
Left hemi thyroidectomy	15	32
Right hemi thyroidectomy	20	40
Total thyroidectomy	10	20
Sub total thyroidectomy	1	2
Sistrunk's surgery	1	2
TOTAL	47	100

right hemithyroidectomy 40%, left hemithyroidectomy 32%, total thyroidectomy 20%, subtotal thyroidectomy 2%, isthmus thyroidectomy 2%

Table 10: Histopathology report

Histopathology	Number of cases	Percentage
Colloid goiter with cystic change	27	57.4
Nodular goiter with cystic change	2	4
Follicular Adenoma	9	19
Hashimoto 's Thyroiditis	4	8
Papillary carcinoma	3	6
Follicular carcinoma	1	2
Thyro-glossal cyst	1	2
Total	47	100

colloid goiter with cystic change 57.4 %,follicular adenoma 19%,hashimotos thyroiditis 8%,papillary carcinoma 6%,nodular goiter with cystic change 4% ,follicular carcinoma 2%,thyroglossal cyst 2 %

Table11: Age groups in different studies.

Author(s)	Year	No. of cases	Age range (in years)	Mean age (in years)
Sangalli G <i>et al</i> 7	2006	5469	6-91	47.2
Aravinthan <i>et al</i> 8	2007	110	26-59	46
Handa U <i>et al</i> 9	2008	434	5-80	37.69
Mandal S <i>et al</i> 10	2011	120	15-71	-
Rangaswamy M <i>et al</i> 11	2011	585	11-70	40.57
Kumar A <i>et al</i>	2013	295	3-75	38.41
Sanjay kishve <i>et al</i>	2017	47	11-70	40.57

Table 12: Female to male ratio of thyroid lesions in various studies

Author	Year	Female:male ratio
Sangalli G <i>et al</i> 7	2006	4.21:1
Handa U <i>et al</i> 9	2008	6.35:1
Mandal S <i>et al</i> 10	2011	5:1
Kumar A <i>et al</i>	2013	6.02:1
Sanjaykishve <i>et al</i>	2017	4.875: 1

Table 13: Site of thyroid swelling in previous studies -Site (%)

Authors	Year	Right	Left lobe	isthmus	diffuse
Bhargav PRK and shekhar S ¹⁸	2011	-	-	-	41
Kumar A <i>et al</i>	2013	32.54	21.02	10.17	36.27
Sanjaykishve <i>et al</i>	2017	42	34	2	

Table 14: Comparison of duration of thyroid swelling(s)- Duration of swelling(s) (%)

Authors		< 1month	1-6 months	6-12m	>1 year
HandaU <i>et al</i> ¹⁵	2008	-	7.6	6.68	62.2
Kumar A <i>et al</i>	2013	23.39	29.83	13.9	32.88
Sanjaykishve <i>et al</i>	2017	2	28	32	38

DISCUSSION

Most of the patients belonged to rural population, 41cases 81%, rest of them urban,⁶ cases 12%.¹⁹ patients 40% were habituated to using iodized salt and the rest of the 28

[60%] were using un-iodized salt. Study included 6 patients [12%] with palpable thyroid gland and 41[81%] had visible thyroid gland. Most of the thyroid swellings in our study are colloid goitres,Most of the cases presented

as nodular goitres[clinically],highest number of patients belonged to 31– 40 year age group [44%], More common on the right side,In USG ,most patients were diagnosed as colloid Goitres with cystic change, least was thyro-glossal cyst. Most patients underwent hemi thyroidectomy [Right].Commonest histopathology was colloid goitre. Computer tomography scan with contrast was performed in all doubtful 10 patients who underwent total thyroidectomy .Among the 10 patients who underwent total thyroidectomy, selective neck dissection of level II, III was done in 4 patients based on CT scan report. Among the 4 cases, follicular carcinoma was 1 case out of 47 [2%], papillary carcinoma in 3 out of 47 cases [6%]. Complications: one patient had a voice change post-operatively , with weakness of right vocal cord movement ,for which follow up was done along with conservative management .Recovery of the voice occurred after 6 weeks. one patient after undergoing total thyroidectomy had tingling and numbness along with carpo-pedal spasm ,for which Intravenous calcium gluconate was given and permanent Calcium supplementation and thyroxine dosage 100 micrograms once a day was prescribed .Patient was followed every weekly and is on regular medication. All total thyroidectomy patients were prescribed thyroxine and calcium supplementation. one patient developed a stitch abscess during post-operative period and was managed with regular dressing. Rest of the 44 cases which were managed with various thyroid surgical procedures were uneventful. All the patients were advised to use iodized salt. Follow up protocol was for 1 week after discharge,¹ month and later every 6 monthly. Most of the patients are having no complaints during follow up. In our study the youngest patient was eleven years age - two patients with cytological diagnosis of thyro-glossal cyst. The oldest patient was of 70 years with cytological diagnosis of colloid goiter. Table 11 shows that wide age distribution was noted for various thyroid lesions in most of the study series. Our findings are comparable to the other mentioned studies.¹³⁻¹⁷ Table 12 shows that female: male ratio in our study was 6.02:1. It was comparable to the previous studies.^{13,15,16} Our findings are comparable to those reported by Bhargav *et al*.¹⁸

Clinical presentation

In 1993, Ananthakrishnan *et al* reported a clinic-pathological profile of 503 patients with a single thyroid nodule where the commonest symptom apart from swelling of thyroid gland was pain¹⁹.Handa *et al*¹⁵ stated in their study that the major presenting symptom was diffuse swelling and/or nodular swelling of the thyroid. Other less frequent symptoms included pain in the swelling, dysphagia, hoarseness of voice and cough. Three most common complaint of swelling in front of the

neck in present study is in accordance to above mentioned studies.

Duration of thyroid swelling(s)

Duration of thyroid lesions depends on severity of symptom, awareness of the patients at the time of consultation and socio-economic status of the patients. The duration thus varies from study to study. In the present study the maximum number of patients- 32.88% were having thyroid lesions with symptoms more than one year. Our study correlates with study by Handa *et al*¹⁵. Aravinthan *et al*¹⁴ suggested that non-palpable thyroid nodules less than 1 cm diameter are usually non-malignant. Jayaram *et al* stated that nodules less than 1 cm in diameter are not detected by palpation, but detected by USG thyroid examination¹⁴⁻¹⁷.The risk of malignancy being low, such small nodules as an incidental USG finding should not be made to undergo guided FNAC unless they have some strong clinical suspicion or family history. In our study, the majority of the swellings, 43 out of total 47 cases nearly 92 % were not associated with tenderness on clinical palpation of the thyroid lesions This finding is in accordance to study by Ananthakrishnan *et al*, which had 10% of their cases with associated pain and tenderness and non-tender thyroid lesions comprised 90% of the cases¹⁹.

Number of needle passes and nature of aspirate

The maximum number of patients yielded good cellularity on FNAC/FNC done once (65.08% cases). Least number of cases-11.12% cases were frank colloid in nature mainly seen in cystic thyroid lesions. Out of 47 thyroid aspirates, repeat aspiration due to sample inadequacy, poor preparation, was done in 34.92% cases (n=16). This discrepancy in our study can be attributed to inexperienced cytopathologists. In our study, the number of needle passes was restricted to less than three. In cases of inadequate smears by first sampling, repeat sampling was advised each time following a different needle track which reduced chances of blood aspirated from previous trauma. Jayaram and Orell *et al* suggested that the average number of needle passes recommended for adequate sampling of thyroid lumps is two to five²⁰. As thyroid gland is a highly vascular organ, with each impending trauma the chances of aspirating hemorrhagic fluid rises each time, so they advised to keep the number of aspirates to minimum. Mandal *et al* performed repeat aspiration in 5.5% (n=6) wherever the first thyroid aspirate was inadequate in their study of 120 cases¹⁶.

Adequacy of aspirated thyroid material

A FNA sample must be sufficient for an interpretation with a low likelihood of a false-negative diagnosis. Depending on the clinical and ultra-sonographic findings, persistently inadequate FNA results from a nodule necessitate surgery. Adequacy defines the quality and

quantity of a sample, a definition that varies not only with respect to the site sampled but also with respect to the type of lesion sampled. Hence, adequacy criteria are organ-specific. Some authors believe cellularity criteria for adequacy also vary depending on whether the aspirated lesion is solid or cystic and whether the aspirate was performed under palpation or ultrasound guidance. All thyroid FNAs must be technically adequate, with well-preserved and well-prepared thyroid follicular epithelial cells for interpretation. Aspirates that contain only cyst fluid, histiocytes, and erythrocytes are inadequate. Usually, 1-4 thyroid aspirates are suffice in single nodular lesion of diameter less than 3 cm whereas 4-8 aspirates are required for thyroid lesions more than 3 cm, which help reduce false negative rate. Jayaram and Orell²⁰ suggested that abundant clean colloid without altered blood or debris also indicates a benign diagnosis in a solitary nodule, but nevertheless the presence of a certain number of intact and well-fixed follicular epithelial cells is obligatory for a smear to be satisfactory. They opined that more than four needle passes were not readily accepted by patients causing local tissue trauma.

CONCLUSION

From our study experience, we could conclude that most of the thyroid enlargement coming to our hospital were from a rural background using non iodised salt .Most of the cases were females and diagnosed as colloid goitres.carcinoma incidence was 8.5 % in our study with papillary carcinoma 6% ,follicular carcinoma 2 % . follicular adenomas were 19 %,nodular goitre with cystic change was 4%,hashimoto's thyroiditis 8 % ,thyro-glossal cyst 2%. The largest number of thyroid swellings were colloid goitre with cystic change 57.4 %. Our study results helped us to know the incidence of thyroid enlargements and their histo-pathological diagnosis.

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