

A STUDY OF SOLITARY NODULE OF THYROID IN A TERTIARY CARE CENTRE**D Dorai¹, P Abishek², A Anandi³, R Suresh Kumar⁴, Dinesh⁵**

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Background: A thyroid nodule is a discrete and radiographically definable lesion within the thyroid. Because of possibility of malignancy, some clinicians especially those in surgical subspecialties recommend that all nodules have to be removed. **Aim:** To determine the demographics of thyroid nodule in the study population in relationship to age and sex. To study the role of FNAC in management of solitary nodule of thyroid. To determine the frequency of malignancy in solitary nodule of thyroid. **Materials and Methods:** Sixty-one patients, all patients admitted with features suggestive of non-toxic palpable solitary thyroid nodule and operated were included. Statistical analysis was done by SPSS and compared using Chi-Square test or Fisher's exact test. **Results:** Out of 61 patients only 8 patients were diagnosed to be malignancy postoperatively. Female preponderance is observed and most common malignancy was papillary carcinoma followed by follicular carcinoma. **Conclusion:** From this study we have concluded that the frequency of thyroid malignancy in clinically benign thyroid disorder was 13%. Thus, benign thyroid disorders should not be neglected since they may become malignant.

INTRODUCTION

A solitary nodule is a goitre, on clinical examination appears to be a single nodule in one lobe of thyroid with no palpable abnormalities elsewhere in the gland.^[1] A single nodule in the thyroid is a definite clinical entity with important pathological significance. Thyroid nodule refers to distinct lesion within thyroid gland that is palpable or radiologically distinct from surrounding thyroid tissue.^[2] The incidence of solitary thyroid nodule in India is 9%.^[3] Thyroid nodules are four times more common in females.^[4] It is found to be malignant in male population.^[5] The usual presentation of a thyroid nodule is an asymptomatic mass that is discovered by either the patient or the clinician. Nodules of at least 0.5cm to 1cm can be usually be detected by palpation, although estimates of nodule size vary from physician to physician. It can be difficult to palpate any nodule in patient with a thick, short neck. Possible diagnosis are Adenoma, carcinoma, thyroid cyst, palpable nodule of an evolving multi nodular goitre. Most of the nodules are benign and malignancy not rarer. Warren H Cole stated that incidence of malignancy is higher in Solitary nodule when compared to multi nodular goitre.^[6] Solitary nodules are treated with high suspicion and plan accordingly.^[7] Solitary thyroid nodules occur 4-7%

of the adult population with female preponderance, papillary and follicular cancer comprises the majority. They are classified into benign and malignant nodule. Benign nodules are adenomas, colloid nodules, cysts, granulomatous, thyroiditis and congenital anomalies. Malignant nodules can be classified as differentiated thyroid cancer (papillary, follicular, hurthle cell carcinoma), medullary thyroid carcinoma and Anaplastic thyroid carcinoma. It is recommended that all thyroid nodules more than 1cm in size should undergo evaluation.^[2] Fine needle aspiration is the mainstay in the evaluation of thyroid nodule followed by ultra sonogram and thyroid profile. Fine needle aspiration cytology of thyroid, first line diagnostic test for evaluation of solitary thyroid nodule as well as diffuse thyroid swelling for confirming a benign lesion.^[8]

Aims and Objectives

1. To determine the demographics of thyroid nodule in the study population in relationship to age and sex.
2. To study the role of FNAC in management of solitary nodule of thyroid
3. To study the thyroid functional status in patients with solitary nodule of thyroid.
4. To determine the frequency of malignancy in solitary nodule of thyroid.

MATERIALS AND METHODS

This retrospective study was conducted in the Department of General Surgery, Stanley Medical College Hospital during the period of 1 year (January 2024-January 2025) with study population of 61. All patients admitted with features suggestive of solitary nodular thyroid were selected by random sampling method and studied in detail clinically and recorded as per the proforma. Routine investigations and specific investigations including FNAC of the nodule, Thyroid profile, IDL, Plain X-ray neck, USG neck were done in all cases. All the patients were managed by surgery and diagnosis was confirmed by histopathological examination. and operated are included in this study.

The patients with diffuse goitre, multinodular goitre, pregnant females, previous history of radiation exposure to neck, family history of thyroid carcinoma were excluded from the study.

Records of all the patients diagnosed as Solitary Nodule of Thyroid and operated (either hemi or total thyroidectomy) obtained from the Department of General Surgery and the Medical Records Department in Govt. Stanley Medical College and Hospital, Chennai.

Statistical Analysis

The collected data entered in the Microsoft Excel 2016 and analysed with IBM SPSS Statistics for Windows, Version 23.0. (Armonk, NY: IBM Corp). To describe about the data descriptive statistics frequency analysis, percentage analysis used for categorical variables and for continuous variables the mean and S.D used. To find the association of significance in categorical data the Chi-Square test or Fisher's exact test used.

RESULTS

The present study was conducted in Stanley Medical College between January 2024 and January 2025. 61 patients with solitary nodule of thyroid who underwent Hemithyroidectomy or Total Thyroidectomy were studied.

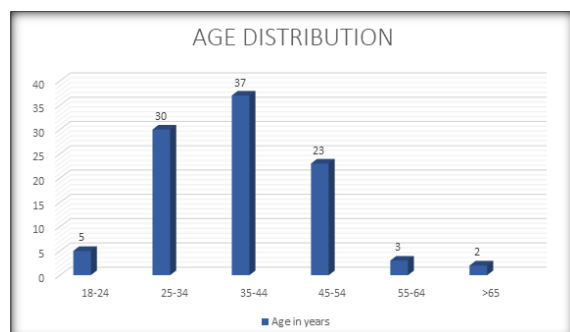


Figure 1: Age distribution

The table 1 shows the age distribution which depicts the 35-44 age group occupying the maximum patients.

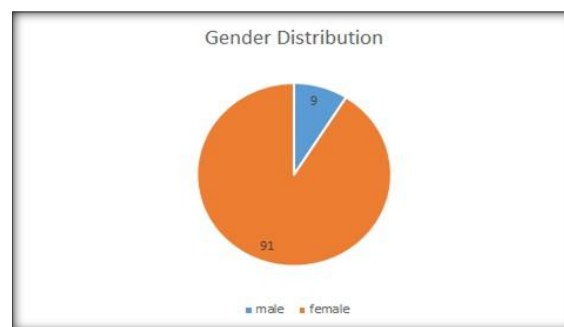


Figure 2: Gender distribution

The table 2 shows the Gender distribution wherein Females accounts to 91% and Males 9%.

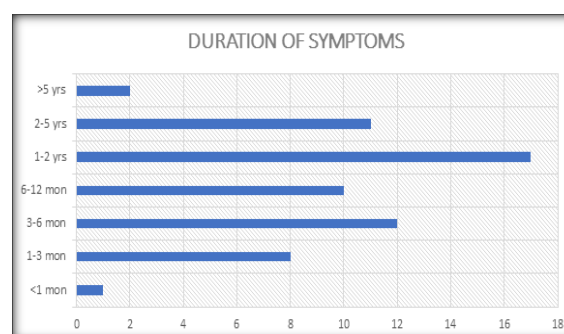


Figure 3: Duration of symptoms

In our study, duration of onset symptoms varied from 1 month to 6 years. Also, duration of malignant nodules extend from 1 month to 4 years.

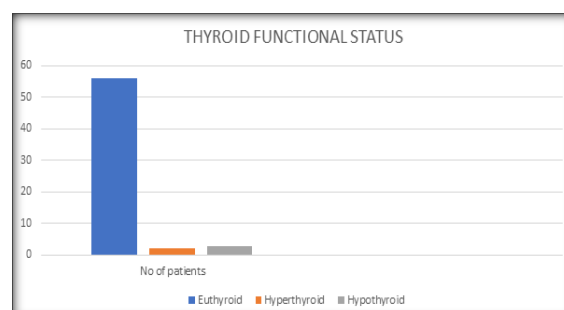


Figure 4: Thyroid functional status

Out of 50 cases, two presented with features of thyrotoxicosis, one with hypothyroidism and rest all were in euthyroid state.

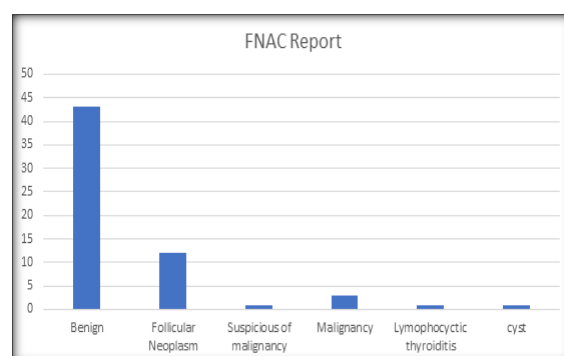


Figure 5: FNAC report

Out of 12 follicular neoplasms, two turned out to be follicular carcinoma. One suspicious (of papillary carcinoma) case confirmed papillary carcinoma on histopathological examination. Three cases of papillary carcinoma were diagnosed pre-operatively by FNAC alone.

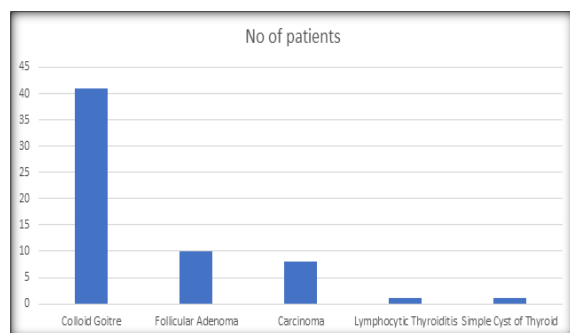


Figure 6: No of patients

Out of 61 cases, majority were colloid goitre and eight were malignant – 6 papillary carcinoma and 2 follicular carcinomas.

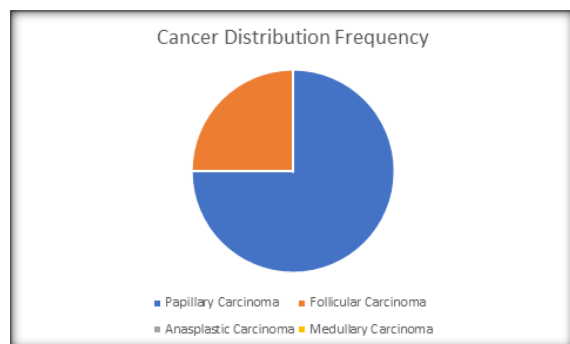


Figure 7: Cancer distribution frequency

From the study, out of 8 carcinomas, were 6 papillary and 2 follicular: no case of medullary or anaplastic or lymphoma was detected. Papillary carcinoma accounts to 75% and follicular carcinoma accounts to 25%.

Out of 61 cases, most common age distribution was in 35–44-year age group with percentage of 36.7%. Most common gender distribution were females (91%). Duration of onset of symptoms varied from 1

month to 6 years. Also, duration of malignant nodules extends from 1 month to 4 years. One case presented with features of thyrotoxicosis, one with hypothyroidism and rest all were in euthyroid state. Patients with thyrotoxicosis were made euthyroid using antithyroid drugs and operated and both cases turned out to be toxic follicular adenoma. Patient with hypothyroidism was treated with thyroxine, USG neck revealed multiple nodules and managed by subtotal thyroidectomy, histopathological examination confirmed the diagnosis of multi-nodular goitre.

Fine Needle Aspiration Cytology is the important investigation in the evaluation of solitary nodule of thyroid. All 61 cases were subjected to FNAC during the course of evaluation. FNAC reports are mainly categorized into 6 entities- Benign, follicular neoplasm, suspicious of malignancy, malignant, lymphocytic thyroiditis, cysts. In our study, out of 12 follicular neoplasms, two turned out to be follicular carcinoma. One suspicious (of papillary carcinoma) case confirmed papillary carcinoma on histopathological examination. Three cases of papillary carcinoma were diagnosed pre-operatively by FNAC alone. Two cases diagnosed as cysts by FNAC confirmed to be simple cysts on histopathological examination. FNAC has key role in diagnosis of solitary thyroid nodule because it is safe, minimally invasive and cost effective diagnostic tool for preoperative assessment of patients with thyroid nodule to help the surgeon in management of these nodules.^[9]

Out of 61 cases, eight were malignant – 6 papillary carcinoma and 2 follicular carcinomas. Ultrasonography detected suspicious findings in two cases among eight malignant cases – 1 papillary and 1 follicular. Three cases of papillary carcinoma were diagnosed with certainty by FNAC, one case was suspicious which turned out to be papillary CA on histopathological examination. Two cases of follicular carcinoma were diagnosed follicular neoplasm, one of them showed suspicious features on ultrasonographic examination.

From the study, Papillary carcinoma accounts to 75% and follicular carcinoma accounts to 25% and others like anaplastic and medullary carcinoma was not seen.

Table 1: Age Distribution

Age distribution		
	Frequency	Percent
18-24	5	5
25-34	18	30
35-44	22	36.67
45-54	14	23.33
55-64	2	3.33
≥65	2	1.67
Total	61	100

Table 2: Gender Distribution

Gender distribution		
	Frequency	Percent
Female	55	90.16

Male	6	9.84
Total	61	100.0

Table 3: Symptom Duration

Duration of symptoms	No of patients
<1 mon	1
1-3 mon	8
3-6 mon	12
6-12 mon	10
1-2 yrs	17
2-5 yrs	11
>5 yrs	2

Table 4: Thyroid Functional Status

Thyroid Functional status	No of patients
Euthyroid	56
Hyperthyroid	2
Hypothyroid	3
Total	61

Table 5: FNAC Reports

FNAC Reports	No of patients
Benign	43
Follicular Neoplasm	12
Suspicious of malignancy	1
Malignancy	3
Lymphocytic thyroiditis	1
cyst	1

Table 6: Histopathological Diagnosis

HPE Reports	No of patients
Colloid Goitre	41
Follicular Adenoma	10
Carcinoma	8
Lymphocytic Thyroiditis	1
Simple Cyst of Thyroid	1

Table 7: Type of Carcinoma

Cancer Distribution		
Carcinoma	Frequency	Percent
Papillary Carcinoma	6	75
Follicular Carcinoma	2	25
Anaplastic Carcinoma	0	0
Medullary Carcinoma	0	0

DISCUSSION

The solitary thyroid nodule is rather a common disease having an incidence of 4-7% reported in the general population and mostly benign. The major concern in such patients is the potentiality of a thyroid nodule to malignancy. In 1964 Veith FJ, Brooks JR, Grigsby WP, et al: reported a series of 299 patients who were found to have single thyroid nodules at the time of surgery, there was a 5:1 female to male ratio. In my study female preponderance of about 91%. The incidence of thyroid malignancy in patients with a palpable nodule range from 11% to 20%. At present, fine needle aspiration cytology (FNAC) is the most reliable and widely used diagnostic tool in the clinical work up of solitary thyroid nodules. In this study, the accuracy of FNAC is 98%. In another study by Dr Aimal Munir Tarrar et al, from April 2002 to April 2003, 60 patients with clinical solitary thyroid nodule were included in which Papillary CA was the common malignancy

50%.^[11] G. A. Khairy studied on the surgical and histological data of 172 patients with solitary thyroid nodules who underwent surgery were reviewed. Thirteen point nine percent (13.9%) of patients were found to have malignancy; most of them were papillary type.^[11] In my study Most common malignancy was papillary carcinoma (75%) followed by follicular carcinoma(25%).

CONCLUSION

From this study we conclude that Solitary nodule of thyroid is more common in females with age group of 35-45 years. Most of the patients with solitary nodule of thyroid present with swelling alone. Most of the patients with solitary nodule of thyroid are in euthyroid state and only few presents with toxicity and hypothyroidism. FNAC is the investigation of choice in the evaluation of solitary nodule of thyroid. Papillary carcinoma is the most common malignancy

of thyroid, followed by follicular carcinoma. From this study we have concluded that the frequency of thyroid malignancy in clinically benign thyroid disorder is 13%. Thus, benign thyroid disorders should not be neglected since they may become malignant.

Conflict of interest statement nil

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