

# INCIDENCE OF CARCINOMA THYROID IN SOLITARY THYROID NODULE AND PREVALENCE OF DIFFERENT TYPES OF THYROID MALIGNANCY: PROSPECTIVE STUDY IN A TERTIARY CARE HOSPITAL

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## ABSTRACT

### BACKGROUND

Thyroid carcinoma is the most common cancer in the world. The study aimed to look in to incidence of malignancy in solitary thyroid nodule and prevalence of different types of malignancy.

### MATERIALS AND METHODS

A prospective clinicopathological study of 151 patients diagnosed clinically as Solitary thyroid nodule evaluated and treated in King George hospital, Andhra medical college, Visakhapatnam over a period of 2 yrs. and 2 months from September 2015 to October 2017.

### RESULTS

Out of 151 cases, 133(88.08%) solitary thyroid nodules are benign, 18(11.92%) are malignant. Out of 18 malignant cases, 11 (61.11%) are papillary thyroid carcinoma, 6(33.33%) are follicular thyroid carcinoma, 1 (5.55%) is medullary thyroid carcinoma.

The peak age incidence of SNT is in the fourth decade of life (52 cases) and fifth decade (37 cases) followed by third decade (27 cases). The youngest being 15 years old girl and the oldest being 75 years old woman. Mean age is 39.10. The peak age incidence of malignancy in SNT is in the fifth decade of life (7 cases).

### CONCLUSION

Since the finding of a thyroid nodule is a common clinical problem and the proportion of such nodules that prove to be malignant is small, investigations are of immense help to corroborate with the clinical and morphological findings.

### KEYWORDS

Solitary Thyroid Nodule, Carcinoma of Thyroid, FNAC, Follicular Adenoma, Colloid Goiter.

**HOW TO CITE THIS ARTICLE:** Manmadha Rao V, Ashok P, Sanjay M, et al. Incidence of carcinoma thyroid in solitary thyroid nodule and prevalence of different types of thyroid malignancy: prospective study in a tertiary care hospital. J. Evid. Based Med. Healthc. 2018; 5(24), 1849-1851. DOI: 10.18410/jebmh/2018/386

### BACKGROUND

Thyroid carcinoma is the most common cancer in the world.<sup>1,2</sup> More than 75% of thyroid carcinoma cases occur in women making this the fifth most common malignancy in women. Although less than 25% of thyroid carcinomas occur in men, men account for 45% of mortality from thyroid carcinoma.<sup>3,4,5</sup> The incidence of PTC has been increasing rapidly in men and women. Of thyroid carcinomas, 90% to 95% are categorized as DTCs that arise from follicular cells. Papillary, follicular carcinomas are included in this category. MTC accounts for approximately 6% of thyroid cancers. Anaplastic thyroid carcinoma (ATC) is an aggressive malignancy that is responsible for less than 1% of thyroid carcinomas.<sup>4,5</sup>

*Financial or Other, Competing Interest: None.  
Submission 21-05-2018, Peer Review 26-05-2018,  
Acceptance 07-06-2018, Published 11-06-2018.*

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*DOI: 10.18410/jebmh/2018/386*



Solitary thyroid nodule is defined as presence of a palpable nodule in otherwise normal thyroid gland.<sup>1,2</sup> Increasing numbers of thyroid nodules are being found incidentally, possibly because of the increasing availability and sophistication of imaging techniques. Palpable thyroid nodules are present in 1% of men and 5% of women, and ultrasound-detectable thyroid nodules are present in 19% to 67%. The frequency of thyroid nodules increases with age. Most of these nodules are benign, but approximately 5% are thyroid cancers.<sup>2,3</sup> Risk factors include radiation exposure, particularly during childhood, family history of thyroid nodules, and iodine deficiency.<sup>2,3,4</sup>

### MATERIALS AND METHODS

This is a prospective clinicopathological study of 151 cases diagnosed clinically as Solitary Thyroid nodules, which were evaluated and treated in King George Hospital, Visakhapatnam, over a period of 2 years and 2 months (September 2015 - October 2017).

Inclusion Criteria comprises of Single visible or palpable swelling involving either one lobe or isthmus of thyroid gland, Single nodule with any pathology on FNAC, Single nodule irrespective of result of thyroid profile. Exclusion

criteria is Visibility or palpability of the opposite lobe (multi nodular goiter), Lateral aberrant thyroid is not included (occult primary), Thyroglossal cysts are excluded from our study, Previously operated cases.

A clinical study of 151 cases of solitary thyroid nodules was done by history, clinical examination and by doing relevant investigations after taking prior informed consent.

The investigations done include complete blood picture, Serum creatinine, thyroid profile, Fine Needle Aspiration Cytology, Indirect laryngoscopy, Ultrasound neck to exclude multinodularity, X-ray neck AP and lateral view, X-ray chest P A view.

Fine needle aspiration cytology was done in all cases of the solitary thyroid nodules and the patients were treated by hemithyroidectomy or total thyroidectomy depending on the FNAC report.

Histopathological reports of all the operated solitary thyroid nodules are analysed from the Department of Pathology of King George Hospital, Visakhapatnam. The detailed study of histopathological examination of all these nodules is made.

After completion of the study of proven 151 cases of solitary nodule of thyroid the findings and results were analysed, the pattern of lesions of the solitary thyroid is compared to studies of others.

**Statistical Analysis**

SPSS Version 21 was used for generating tables and graphs. Results are based on descriptive statistics.

**RESULTS**

Out of 151 cases, 133(88.08%) solitary thyroid nodules are benign, 18(11.92%) are malignant. The peak age incidence of SNT is in the fourth decade of life (52 cases) and fifth decade (37 cases) followed by third decade (27 cases). The youngest being 15 years old girl and the oldest being 75 years old woman. Mean age is 39.10.

There are 132 cases of females and 15 out of them are malignant. There are 19 cases of males and 3 out of them are malignant. The incidence of malignancy in SNT is 11.92%. Although, female patients outnumbered the males, the incidence of carcinoma in male patients is much higher, 5 times more than in female patients.

The peak age incidence of malignancy in SNT is in the fifth decade of life (7 cases). The youngest being 15 years old girl who suffered with papillary carcinoma of thyroid and the oldest being 70 years old woman who diagnosed to have papillary carcinoma of thyroid. Mean age is 40.5.

Among the 18 cases who diagnosed to have malignancy, 15 were male and 3 were female. Female sufferings with carcinoma outnumber the male by 5 times.

Out of 18 malignant cases, 11(61.11%) are papillary thyroid carcinoma, 6(33.33%) are follicular thyroid carcinoma, 1 (5.55%) is medullary thyroid carcinoma.

**DISCUSSION**

The aim of this study is to review the incidence of malignancy in solitary nodule of thyroid, to study the sex and

age difference in malignancy of solitary nodule of thyroid, and to study the prevalence of different types malignancy.

Thyroid nodules are very common in the general population and prevalence increases with age, particularly in women.<sup>1</sup> Thyroid nodules may be discovered by palpation during a physical exam in 3% to 7% of patients.<sup>2</sup> Nodules may also be found incidentally on imaging studies such as neck ultrasounds, computed tomography (CT) scans performed for unrelated reasons. Risk of malignancy is the same in nodules discovered by palpation and those discovered incidentally.<sup>3</sup>

The proportion of thyroid nodules that prove to be malignant is 10% to 15%.<sup>4,6</sup> Part of determination of malignancy is evaluation of individual risk assessment, which includes a detailed history and examination. Factors which increases risk for malignancy- Age. Patients age >70 years and <14 years have increased risk of malignancy.<sup>5,6</sup> Nodules discovered during childhood have a three- to four-fold higher risk of malignancy than adults.<sup>4,5</sup> Nodules carry a 33% to 37% chance of malignancy.<sup>7</sup>

The mean age of patients with malignancy in SNT is 39.72 years with range from 15-70 years. Peak incidence was observed in fifth decade. These results are comparable with other studies. Nagori et al,<sup>7</sup> Ananthkrishnan et al<sup>8</sup> have similar results with mean age of 41 years and 38.2 years respectively. Both have peak incidence in fifth decade of life.

Age	Total	Male	Female
10-20	02	-	02
21-30	02	-	02
31-40	03	01	02
41-50	07	01	06
51-60	02	01	01
61-70	01		01
71-80	01		01
	<b>18</b>	<b>03</b>	<b>15</b>

**Table 1. Age Distribution of Malignancy in SNT**

The proportion of thyroid nodules that prove to be malignant is 10% to 15%.<sup>4</sup> The incidence of malignancy in present study is 11.92%. Among the 151 cases evaluated, 131 cases were benign, 18 cases were malignant. These results are comparable with other studies. Nagori et al<sup>7</sup> evaluated 100 cases of SNT among them 89 cases were benign and 11 cases were malignant with incidence of 11%.

Although female patients outnumbered the males, the incidence of carcinoma in male patients is much higher about 5 times more than in female patients leading to the conclusion that solitary thyroid nodule in men must be viewed with great suspicion.

Of thyroid carcinomas, 90% to 95% are categorized as DTCs that arise from follicular cells. Papillary, follicular, and Hürthle cell carcinomas are included in this category.<sup>9</sup> Papillary thyroid cancer (PTC) is by far the most common (80% to 85%) compared to 10% to 15% follicular and 3% to 5% HCC. 31 MTC accounts for approximately 6% of thyroid cancers. Anaplastic thyroid carcinoma (ATC) is an aggressive malignancy that is responsible for less than 1%

of thyroid carcinomas.<sup>9</sup> In the different subtypes of thyroid carcinoma, prognosis mirrors incidence in that PTC, which is the most common thyroid malignancy, also carries an excellent prognosis in most patients, whereas ATC is far less common and carries a dismal prognosis.<sup>9</sup>

HPE Reports	Number of Cases	Percentage
Papillary Carcinoma	11	61.11
Follicular Carcinoma	06	33.33
Medullary Carcinoma	01	5.55
Anaplastic	-	-
Others- Lymphoma	-	-
<b>Total</b>	<b>18</b>	

**Table 2. Post-Operative HPE Report**

Differentiated thyroid carcinoma constitutes 94.44% of thyroid carcinoma with papillary carcinoma (61.11%) which is the predominant one followed by follicular carcinoma (33.33%). Medullary carcinoma constitutes 5.55% cases. We have no experience in anaplastic carcinoma and other rare type of malignant tumours of thyroid like lymphoma, secondaries to thyroid which constitutes <1% thyroid malignancy. These results are comparable with other studies. Among 503 cases studied by Annathakrishnan et al<sup>8</sup> group, 94.8% was attributed to differentiated carcinoma of thyroid and among DTC papillary carcinoma constitutes 62.3%; 32.5% attributed to follicular carcinoma of thyroid. Medullary carcinoma of thyroid constitutes 5.2%.

**CONCLUSION**

Since the finding of a thyroid nodule is a common clinical problem and the proportion of such nodules that prove to be malignant is small, investigations are of immense help to corroborate with the clinical and morphological findings. Fine needle aspiration and biopsy has been shown to establish a correct diagnosis in a substantial number of cases before resorting to surgery. Examination of tissue by frozen section during surgery is often unhelpful and its use is debatable.

Thyroid lobectomy then becomes the only alternative procedure in order to reach a correct diagnosis for SNT by histomorphological analysis.

**REFERENCES**

[1] Haugen BR, Alexander EK, Bible KC, et al. 2015 American thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the American thyroid association guidelines task force on thyroid nodules and differentiated thyroid cancer. *Thyroid* 2015;26(1):1-133.

[2] Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid* 2009;19(11):1167-1214.

[3] Hegedus L. Clinical practice. The thyroid nodule. *N Engl J Med* 2004;351(17):1764-1771.

[4] Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. *CA Cancer J Clin* 2015;65(1):5-29.

[5] Albores-Saavedra J, Henson DE, Glazer E, et al. Changing patterns in the incidence and survival of thyroid cancer with follicular phenotype—papillary, follicular, and anaplastic: a morphological and epidemiological study. *Endocr Pathol* 2007;18(1):1-7.

[6] Schneider AB, Sarne DH. Long-term risks for thyroid cancer and other neoplasms after exposure to radiation. *Nat Clin Pract Endocrinol Metab* 2005;1(2):82-91.

[7] Nagori LF, Algotar MJ. Solitary solid thyroid nodule. *Indian J Surg* 1992;54(2):75-78.

[8] Ananthakrishnan N, Rao KM, Narasimhans R, et al. The single thyroid nodule, South Indian profile of 503 patients with special reference incidence of malignancy. *Indian J Surg* 1993;55(10):487-492.

[9] Castro MR, Gharib H. Continuing controversies in the management of thyroid nodules. *Ann Intern Med* 2005;142(11):926-931.