



## STUDY OF MALIGNANCY IN SOLITARY NODULE OF THYROID – HOSPITAL BASED PROSPECTIVE STUDY

### General Surgery

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### ABSTRACT

**Introduction:** Nodular goitre has become a common endocrine problem in the world today, it is defined as the presence of a palpable nodule in the otherwise normal thyroid gland. The aim of this study was to study the incidence of malignancy and other clinical parameters of solitary thyroid nodules. Incidence of malignancy was 10-20%, being more common in females with a mean age of 35 years.

**Methods:** A prospective study was done in 83 patients with solitary thyroid swelling by taking their detailed medical history and conducting clinical examinations under the Department Of General Surgery, ASRAM Medical College, Eluru from June 2016 to May 2018

**Results:** Swelling in front of the neck was the most common presentation. Mean age of the incidence of solitary thyroid nodule was 35 years. Incidence of malignancy in solitary thyroid nodule was 16.86% and were frequent in females than males in the ratio of 7.3:1.

**Conclusions:** From the results obtained and observations done we can conclude that 16.86% of solitary thyroid nodules are malignant, with female preponderance and a mean age of 35 years.

### KEYWORDS

Fine needle aspiration cytology (FNAC), Solitary thyroid Nodule, Malignancy, age, sex, incidence.

### INTRODUCTION

Thyroid gland is the most accessible and largest endocrine gland in the body. Normal thyroid gland is impalpable. It was one of the earliest endocrine glands to be recognized, investigated and researched into. It is situated in the lower part of the front and sides of neck. Its main function is to regulate the basal metabolic rate, stimulate somatic and psychic growth. Thyroid nodule is a palpably or radiologically distinct lesion from the surrounding thyroid parenchyma. Risk of malignancy in Solitary Thyroid Nodule is higher than multiple nodules. Hence, Solitary thyroid nodules have to be treated with high degree of suspicion and plan treatment systematically. Solitary nodules are one of the commonest presentations of thyroid disorder. Solitary thyroid nodules (STN) occur in 4 - 7% of the adult population. They are more common in females (6.4%) as compared to males (1.5%). Papillary and follicular cancer comprises the vast majority (90%) of all thyroid cancer. Aims of this study was to study the incidence of malignancy in solitary nodule thyroid along with the Age and Sex distribution.

### MATERIAL AND METHODS

A prospective study was carried out on 83 patients with solitary thyroid swelling by taking their detailed medical history and conducting clinical examinations under the Department Of General Surgery, ASRAM Medical College, Eluru from June 2016 to May 2018.

The patients were referred to the hospital for palpable swellings in thyroid gland among which few were picked up on routine clinical examination.

#### Inclusion criteria

- Patients with solitary thyroid swelling
- Patients between 11 to 60 years of age
- Both male and female patients.

#### Exclusion criteria

- Patients with thyroid swellings other than solitary nodules clinically and surgically proved (multinodular goitre)
- Thyroiditis cases
- Patients unfit for surgery under anesthesia
- Patients unwilling for the interventions.

Patients below the age of 10 years, pregnant females, those with history of radiation exposure to neck, and those patients with family history of thyroid cancers were excluded from the study too. Case records of 83 solitary thyroid nodules were analyzed. Solitary thyroid

nodule was a single nodule of either lobe or isthmus of the thyroid gland. The recorded proformas included history, through clinical examination, investigations which were needed for the study including FNAC, thyroid function tests, and x-ray neck with special emphasis on the rate of growth of the swelling, any change in voice, pressure symptoms, and any clinical evidence of thyroid dysfunction. None of the patients had history of exposure to Radiation.

**Table-1: Distribution of age and sex in the incidence of solitary thyroid nodule**

S. No	Age Distribution	Males	Females
1	10-19	1	5
2	20-29	3	3
3	30-39	1	35
4	40-49	-	12
5	50-59	4	10
6	60 and above	1	8
Total		10	73

### RESULTS

10 male (12.04%) and 73 female (87.95%) patients in the age group of 10-60 and above years with palpable solitary thyroid nodule were evaluated (Table 1). As per the sex distribution table we can see that the majority of patients were females, with a male female ratio of 1:7.3 (73 of 83), (Table 1) and the incidence of malignancy in STN was more in females.

After the final histopathology, the Adenomatous colloid goiters were observed in 26 patients, followed by Nodular goiter in 14 patients. There were 11 patients who had Follicular adenoma. Of the 83 specimens examined, 10 were papillary carcinomas, 4 were follicular carcinomas (Table-2). The incidence of malignancy in the present series is 16.86% which is comparable with other studies. In the present series, papillary carcinoma is the commonest malignancy of Solitary Thyroid Nodule 10 (71.4%) of the total of 14 malignancies (Table-3)

In this series, the prevalence of malignancy is significantly higher in patients above 60 years of age, and females had more number of malignant nodules than males (Table-3). The mean age of the incidence of solitary thyroid nodule is 35 years. Regardless of age, males had malignant lesions in 10% compared to females with 19.17%. This can be explained by the reason that the number of females in this series is 7.3 times the number of males.

**Table-2: Results of histopathology of the biopsies in solitary thyroid nodule (n=83)**

Histopathologic findings in patients with solitary thyroid nodule		
Histopathologic Diagnosis	Number of Patients	%
Benign lesions		
Adenomatous colloid goitre	26	31.32
Follicular adenoma	11	13.25
Hashimoto's thyroiditis	4	4.81
Simple cyst	2	2.40
MNG	6	7.22
Nodular goiter	14	16.86
Hurthle cell adenoma	4	4.81
Fibrosing thyroiditis	2	2.40
Malignant lesions		
Papillary CA	10	12.04
Follicular CA	4	4.81

**Table-3: Distribution of type of malignancy in different age groups in solitary thyroid nodule (n=14)**

Age group	Papillary CA	Follicular CA	Total
10-19	1	-	1
20-29	1	-	1
30-39	2	1	3
40-49	1	-	1
50-59	2	1	3
60 and above	3	2	5
Total	10	4	14

## DISCUSSION

Solitary thyroid nodule is a common disease having an incidence of 4-7% reported in the general population and mostly benign<sup>12</sup>. Incidence of thyroid malignancy in patients with a palpable nodule ranges from 10% to 20%, according to some authors it is even up to 50%. However Stoffer et al reported that 13.8% of glands resected in thyroid operation for any reason contained carcinoma. Many surgeons would advise routine surgical resection for every solitary thyroid nodule. Such a policy resulted in many patients undergoing unnecessary operations for what was subsequently shown to be benign thyroid disease. It is therefore logical to propose a more selective surgical policy for patients with solitary thyroid nodules. 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<sup>6</sup>.

In our present scenario, though follicular neoplasms were more frequently seen in FNAC, after final Histopathology, papillary carcinomas were frequent 10 of 14, and the remaining 4 were follicular carcinomas. Among the 10 papillary carcinomas, 3 were follicular variants, 1 showed adjacent Hashimoto's (table-2). There is also a female preponderance of 87.95%, and the male to female ratio is 1:7.3. The highest numbers of thyroid nodules were seen in the age group of 20-40 years, the mean age of patients was 35 years. The youngest patient was of 13 years. The age group between 20-50 years is susceptible for hormonal changes, hence the peak incidence during this period (table-1).

The age distribution pattern is an important and crucial aspect as the incidence of malignancy in solitary nodule thyroid is high at both extremes of age. Hence the nodules occurring in patients younger than 20 years and older than 50 years have to be considered malignant until proven otherwise. There is increased incidence of thyroid nodules with age, however 90% of the lesions in the females are benign which in the present series is 80.1%. In 1975 Gogas JG, Skalhøe GD, in their study on 1300 thyroidectomies of which 70 had carcinoma. The incidence of malignancy in solitary nodule was 9.7% the risk of malignancy was higher in males (9.2%) than in females (4.3%).

In the present series, out of a total of 10 males, 1 had malignant nodules (10%) while 73 females had 15 malignant nodules (19.17%). In present series, the incidence of malignancy in solitary thyroid nodule is 16.86% which is comparable to the incidence in other series in which it varies from 5% to 30%<sup>4</sup> (table-4).

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. The great majority of which were papillary adenocarcinoma.

Md. Abul Hossain<sup>13</sup>, et al in 2014 observed that male to female ratio was 1:7 and the highest number of patients with thyroid nodule were found in age group 31-40 years. The relative frequency of malignancy in solitary thyroid nodule was 28% Naz akhtar<sup>14</sup> et al in 2015 in their study noted that Majority of the patients i.e. 53(42.7%) were between 31-40 years. Malignancy in solitary thyroid nodule shows 19(15.3%) Ramesh babu and Madhavishyamala<sup>15</sup> in 2015 studied on malignant incidence in solitary nodule thyroid. The female male ratio is 8:1. The peak age incidence is in 21-30yrs of age group. The incidence of malignancy being 10.83%.

In another study by Dr Aimal Munir Tarrar<sup>8</sup>, et al from April 2002 to April 2003, 60 patients with clinical solitary thyroid nodule were included. Maximum malignant cases were (50%). Papillary CA was the common malignancy (50%).

G. A. Khairy<sup>10</sup> 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.

**Table-4: Comparison of results with other similar studies**

C. Leigh <sup>8</sup>	1969	20.9%
A K Sarda <sup>5</sup>	1997	10.8%
Mazaffer et al <sup>4</sup>	1998	11-12%
Aimal Munir et al	2002-2003	13.3%
G.A Khairy et al	2004	13.9%
Talepoor et al	2005	15.8%
Catherine Ihre Lundgreen <sup>10</sup>	2007	20.9%
Judy Jin et al	2009	15%
Salim Ahmed et al <sup>7</sup>	2011	12.3%
Md. Abul Hossain, Md. Zakaria Sarkar, et al	2014	28%
Naz akhtar <sup>13</sup> Majeedullahbuzdar,	2015	15.3%
Rameshbabu, Madhavi shyamala <sup>14</sup>	2015	10.83%
Present series	2016	18.51%

## CONCLUSION

Results were compared with available literature reported previously. The solitary thyroid nodules were seen in very less cases of surgical admissions with 3rd decade having the peak incidence. There are no cases below 10 years of age. Papillary carcinoma is the most common malignancy observed constituting to 80% of the malignancies. Further studies are needed to explore the suitable cause and prevention for papillary carcinoma.

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