

A Study of Incidence of Malignancy in Solitary Nodule of Thyroid

S. Anitha¹, T.R. Ravimohan¹

ABSTRACT

Introduction: Common presentation of thyroid disorders is solitary nodule. A discrete swelling in an otherwise impalpable gland is termed as solitary nodule of thyroid. The majority of solitary thyroid nodules are benign. The incidence of malignancy is 10-20%, being more common in females with a mean age of 35 years. Present study was aimed to identify the incidence of malignancy in solitary nodule thyroid.

Material and methods: The study was carried out in upgraded department of general surgery, Osmania General Hospital, Hyderabad, in 108 patients with solitary thyroid nodule from June 2009 to November 2011

Results: The solitary thyroid nodules were seen in 1.76% of surgical admissions. The mean age of the incidence of solitary thyroid nodule is 35 years. The incidence of malignancy in solitary thyroid nodule is 18.51%. The solitary thyroid nodules were frequent in females than males in the ratio of 6.71:1.

Conclusions: It is concluded from the present series that 18.15% of solitary thyroid nodules are malignant, with female preponderance and a mean age of solitary thyroid nodule is 35 years.

Keywords: Solitary thyroid nodule, Malignancy, age, sex, incidence.

INTRODUCTION

Thyroid nodules are a common clinical problem. Thyroid nodule is a palpably or radiologically distinct lesion from the surrounding thyroid parenchyma. There is a high risk of malignancy in STN than in multiple nodules. Because of this reason, Solitary thyroid nodules have to be treated with high degree of suspicion and plan treatment in a systematic manner. 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. Further, thyroid cancers are aggressive if in children with early metastasis to the surrounding structures and to regional lymph nodes and distant sites including lungs and bones. Aims of study were to study the incidence of malignancy in solitary nodule thyroid and to study the Age and Sex distribution of solitary nodule thyroid.

MATERIAL AND METHODS

A study was carried out on 108 patients who were admitted and operated for solitary thyroid nodule at Osmania General Hospital, Hyderabad, during the period of June 2009 to November 2011. Sample size was based on inclusion and exclusion criteria.

The patients were referred to this tertiary hospital for palpable swellings in thyroid gland, some were picked up on routine clinical examination, as well as on ultrasonography

thyroid. 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. The case records of 108 solitary thyroid nodules were analyzed. The 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.

RESULTS

14 male (12.96%) and 94 female (87.03%) patients in the age group of 10-60 and above years with palpable solitary thyroid nodule were evaluated (Table 1). The percentage of STN among total surgical admissions is 1.67%. Sex distribution shows majority of patients were females, with a male female ratio of 1:6.71 (94 of 108), (Table 1) and the incidence of malignancy in STN was more in females

After the final histopathology, the Adenomatous colloid goiters were observed in 32 patients, followed by Nodular goiter in 22 patients. There were 18 patients who had Follicular adenoma. Of the 108 specimens examined, 16 were papillary carcinomas, 4 were follicular carcinomas (Table-2). The incidence of malignancy in the present series is 18.51% which is comparable with other studies. In the present series, papillary carcinoma is the commonest malignancy of Solitary Thyroid Nodule 16 (80%) of the total of 20 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 35.71 years. Regardless of age, males had malignant lesions in 14.28% compared to females with 17.02%. This can be explained by the reason that the number of females in this series is 6.7 times the number of males

DISCUSSION

The solitary thyroid nodule is rather a common disease having an incidence of 4-7% reported in the general population and mostly benign.^{1,2} The major concern in such patients is

¹Post Graduate, Assistant Professor of Surgery, Osmania Medical College and Hospital, Hyderabad, Telangana, India

Corresponding author: Dr. S. Anitha, Flat no 101, Hardik legacy, Padmaranagar Hyderabad, Telangana, India

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S. No	Age Distribution	Males	Females
1	10-19	-	6
2	20-29	5	2
3	30-39	1	33
4	40-49	3	12
5	50-59	5	8
6	60 and above	-	8
Total		14	94

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

Histopathologic findings in patients with solitary thyroid nodule		
Histopathologic Diagnosis	Number of Patients	%
Benign lesions		
Adenomatous colloid goitre	32	29.62
Follicular adenoma	18	16.66
Hashimotos thyroiditis	7	6.48
Simple cyst	2	1.85
MNG	5	4.62
Nodular goiter	20	18.51
Hurthle cell adenoma	3	2.77
Fibrosing thyroiditis	1	0.92
Malignant lesions		
Papillary CA	16	14.81
Follicular CA	4	3.70

Table-2: Results of histopathology of the biopsies in solitary thyroid nodule (n=108)

Age group	Papillary CA	Follicular CA	Total
10-19	-	1	1
20-29	5	-	5
30-39	4	1	5
40-49	1	-	1
50-59	2	-	2
60 and above	4	2	6
Total	16	4	20

Table-3: Distribution of the type of malignancy in different age groups in solitary thyroid nodule (n=20)

C. Leigh ⁸	1969	20.9%
A K Sarda ⁵	1997	10.8%
Mazafferi et al ⁴	1998	11-12%
Aimal Munir et al	2002-2003	13.3%
G.A Khairy ⁹ et al	2004	13.9%
Talepoor et al	2005	15.8%
Catrherine Lundgreen ¹⁰	2007	20.9%
Judy Jin ¹¹ et al	2009	15%
Salim Ahmed et al ⁷	2011	12.3%
Md. Abul Hossain, ¹² Md. Zakaria Sarkar, et al	2014	28%
Naz akhtar ¹³ Majeedullahbuzdar,	2015	15.3%
Rameshbabu, Madhavi shyamala ¹⁴	2015	10.83%
Present series	2016	18.51%

Table-4: Comparison of results with other similar studies

the potentiality of a thyroid nodule to malignancy. The incidence of thyroid malignancy in patients with a palpable nodule ranges from 11% to 20%, while according to some authors, 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.⁶ In this study, the accuracy of FNAC is 98.1%.

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.

In another study by Dr Aimal Munir Tarrar⁸, 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. Khairy¹⁰ 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.

In the present series, though follicular neoplasms were more frequently seen in FNAC, after final Histopathology, papillary carcinomas were frequent 16 of 20, and the remaining 4 were follicular carcinomas. Among the 16 papillary carcinomas, 4 were follicular variants, 1 showed adjacent Hashimoto's, 1 was a Hurthle cell variant (table-2).

There is also a female preponderance of 87%, and the male to female ratio is 1:6.71. 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 11 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 important 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 83.3%. In 1975 Gogas JG, Skalheas 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 14 males, 2 had malignant nodules (14.28%) while 94 females had 16 malignant nodules (17.02%). In present series, the incidence of malignancy in solitary thyroid nodule is 18.51% which is comparable to the incidence in other series in which it varies from

5% to 30%⁴ (table-4).

Md. Abul Hossain¹³, 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 akhtar¹⁴ 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 Madhavishyamala¹⁵ 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%.

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 commonest 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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