

Frequency of Malignancy in Solitary Thyroid Nodule in a Tertiary Level Hospital of Bangladesh

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How to cite this paper: Rashid, MdS., Akhter, N., Rahman, MdS., Majumder, J.A., Delwar, A.H.M. and Mustafa, MdG. (2019) Frequency of Malignancy in Solitary Thyroid Nodule in a Tertiary Level Hospital of Bangladesh. *International Journal of Otolaryngology and Head & Neck Surgery*, 8, 132-138.

<https://doi.org/10.4236/ijohns.2019.84015>

Received: May 21, 2019

Accepted: July 5, 2019

Published: July 8, 2019

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Abstract

Objectives: To determine the frequency of thyroid malignancy in clinically and sonographically solitary thyroid nodule in patients undergoing thyroidectomy in Comilla Medical College Hospital. **Methods:** A cross sectional study was carried out at the Department of Otolaryngology and Head Neck Surgery of Comilla Medical College Hospital during the period from January 2016 to January 2019. This study includes all patients admitted and undergoing surgery with solitary thyroid nodule. **Results:** Out of 188 patients 146 patients were female and 42 patients were male with female:male ratio of 3.4:1. Out of 188 patients 24 patients were found histologically thyroid malignancy. Among them 14 patients were male and 10 patients were female. Papillary carcinoma was found in all cases. **Conclusions:** Follicular carcinoma is rare in our country. Histopathological examiners may not efficiently be doing their job to differentiate carcinoma from adenoma.

Keywords

Solitary Thyroid Nodule, Papillary Carcinoma, Follicular Carcinoma

1. Introduction

Nodular goiter is a common disease in our country. Iodine deficiency is the main cause. Though fortification of salt with iodine is mandatory in our country, lack of monitoring fails its purpose. Fluctuation of iodine level in blood in growing age and pregnancy causes abnormal stimulation to follicular cells which results in nodular goiter. Rise of incidence of thyroid malignancy is due to rad-

iation hazard in occupation, X-ray and CT scan [1] [2].

The solitary thyroid nodule may be defined as a discrete swelling in an otherwise impalpable gland. The swelling is often noticed accidentally by the patients or drawn to her attention by a family member, friend or neighbor. The nodule may also be encountered as an incidental finding when a patient is examined for some unrelated disease. About 70% of discrete thyroid swelling are clinically isolated. A nodule may be adenoma, cyst, multinodular goitre, thyroiditis or thyroid carcinoma [3].

Occasionally in macroscopically solitary nodule may present microscopic nodule throughout the gland. Worldwide incidence of thyroid carcinoma is about 3.7 per 100,000 populations per year [4]. There is a female preponderance of approximately 3:1 [5].

Nodules in the thyroid gland are important for their malignant potential. It is the highest among the cancer affecting endocrine glands. The importance of solitary thyroid nodule lies in the significant risk of malignancy compared with the other thyroid swelling. Many studies have been published on the risk of malignancy in patients with thyroid nodule; these studies show that the risk of malignancy is low, approximately 5%, unless the patient has an underlying risk factor, such as a history of external neck irradiation [6].

Cancer of the thyroid gland occurs at earlier ages in most part of the world. It is commonest between 20 - 40 years of age [7]. Frequency of malignancy in thyroid nodule varies among different studies in our country and worldwide. One study in our country by Rahman MJ *et al* shows percentage of malignancy in nodular goitre is 8.1% and in solitary thyroid nodule is 21.44% [7]. One study by Ashraf SA *et al.* shows incidence of malignancy in thyroid nodule is 9.89% [8]. Another study by Gandolfi PP *et al.* shows 5% [9].

Purpose of this study was to find out the relative frequency of malignancy in solitary thyroid nodule in our region.

2. Methods

Simple random sampling of prospective cross-sectional study was done. The study was carried out at Comilla Medical College Hospital during the period from January 2016 to January 2019. This study includes all the patients admitted with clinically and sonographically diagnosed as solitary thyroid nodule. All the patients treated surgically, and histopathological examination carried out. Data were analyzed by standard statistical methods. Results were analyzed by proper test of significance.

3. Results

Figure 1 shows most of the patients are at the 31 - 40 years' age range and lowest at the 11 - 20 years' age range.

Figure 2 shows 78% patients are female and 22% patients are male.

Figure 3 shows among 24 of malignant patients 14 patients are male and 10

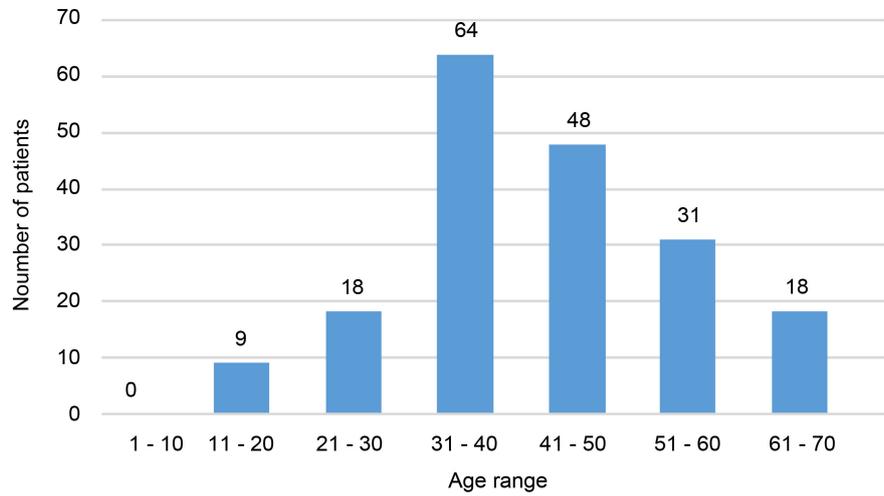


Figure 1. Age distribution (n = 188).

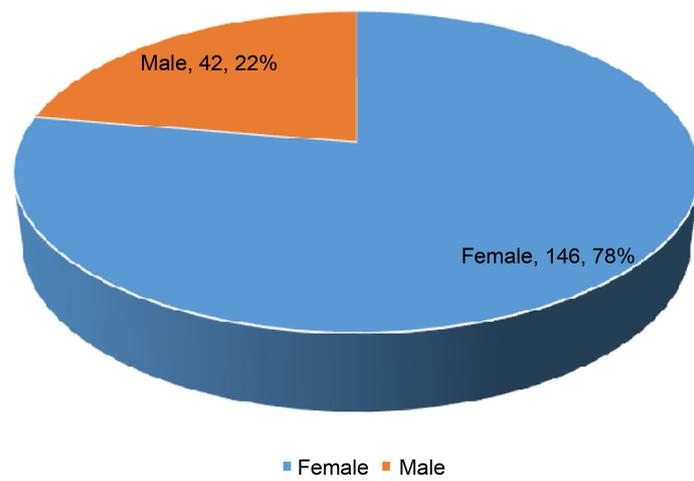


Figure 2. Sex distribution (n = 188).

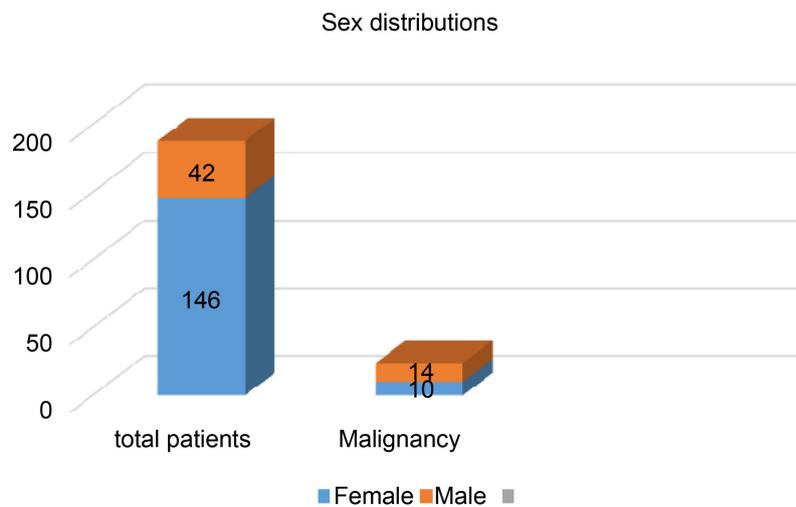


Figure 3. Shows among 24 of malignant patients 14 patients are male and 10 patients are female.

patients are female.

Table 1 shows among 24 of malignant patients most of the patients are 31 - 40 years' age group.

Figure 4 shows FNAC findings. 170 patients are nodular goitre, 13 patients are papillary carcinoma and 5 patients diagnosed as follicular adenoma.

Table 2 shows consistency of malignant thyroid nodules is hard. Most of the firm nodules are benign.

Table 3 shows 100% malignant thyroid nodules are papillary carcinoma.

Table 4 shows type of operation done in according to the nature of nodules.

Table 1. Prevalence of malignancy (age relation) n = 188.

Age groups	Total number of patients	Number of malignant patients	Percentage
11 - 20	9	0	0%
21 - 30	18	4	22.2%
31 - 40	64	10	15.6%
41 - 50	48	5	10.41%
51 - 60	31	4	12.9%
61 - 70	18	1	5.55%

Table 2. Association of histopathological findings with the consistency of solitary thyroid nodule (n = 188).

Consistency	No of Patients	Malignancy	Percentage of Consistency (n = 188)	Percentage of malignancy (n = 24)
Firm	143	4	76%	16.66%
Cystic	24	2	13%	8.33%
Hard	21	18	11%	75%

Table 3. Histopathological patterns of malignancy (n = 24).

Histological pattern	Number of patients	Percentage
Papillary carcinoma	24	100%
Follicular carcinoma	0	0%
Medullary carcinoma	0	0%
Anaplastic carcinoma	0	0%
Lymphoma	0	0%

Table 4. Types of thyroidectomy (n = 188).

Name of operations	Number of patients	Percentage
Hemithyroidectomy	170	90.42%
Subtotal thyroidectomy	5	2.65%
Total thyroidectomy	13	6.91%

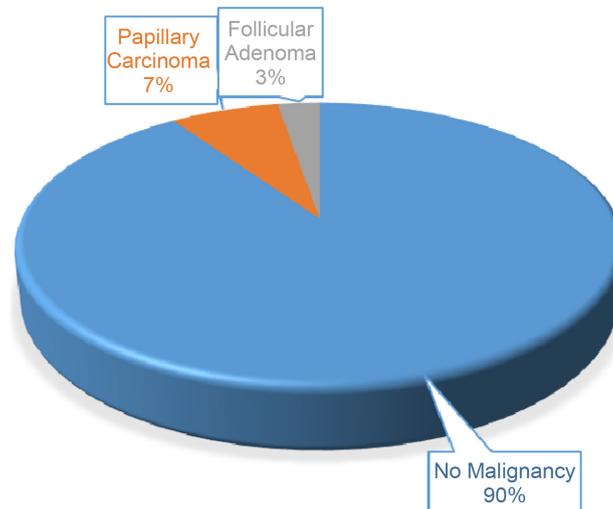


Figure 4. Preoperative FNAC findings.

4. Discussion

In this series 188 patients of nodular goiter studied prospectively during the period of 3 years, who underwent surgery in Otolaryngology department of Comilla Medical College Hospital. It is a 500-bed tertiary level hospital. This medical College is situated 100 km east of Capital Dhaka. In some extent it represent relative incidence of thyroid malignancy in Bangladesh.

In this study age of the patients ranged from 15 years to 62 years. 9 patients (4.7%) were in 11 - 20 years range group. 18 patients 9.6% were in 21 - 30 years, 64 patients 34.1% were in range 31 - 40 years' age group. 48 (25.6%) patients were in 41 - 50 years. 31 (16.4%) patients were in 51 - 60 years' age group. 18 (9.6%) patients were in 61 - 70 years' age group.

Most of the patients were in 31 - 40 years range. Mean age of the patients were 41.8 year. A similar study was done in home and abroad shows similar pattern of age distribution [10] [11] [12] [13].

In this study of 188 patients 146 (77.65%) were female and 42 (22.34%) were male. Female male ratio is 3.4:1. Goitre is more common in females worldwide. All the patients were present with painless neck swelling. All patients were evaluated clinically, biochemically and sonographically. All patients were euthyroid before surgery. FNAC report shows nodular goitre in 170 (90.4%) patients, papillary carcinoma in 13 (6.91%) patients and follicular adenoma in 5 (2.65%) patients.

Solitary thyroid nodules are usually firm in consistency. Out of 188 patients in this study of solitary thyroid nodule 143 (76%) are firm, 24 (13%) are cystic and 21 (11%) are hard in consistency. Malignant lesion was more common in hard nodule. Hardness and irregularity, due to calcification may simulate malignancy. Islam *et al.* 2009, found majority of the nodules were firm (72.03%), 11.02% were cystic and 16.95% were hard [14]. A study showed incidence of malignancy in solid nodule is 9% and in cystic nodule is 0% [15]. Another study showed inci-

dence of malignancy in cystic nodule is <2% [16].

Hemithyroidectomy were done in 170 (90.4%) patients. In that case only one lobe of thyroid gland was involved and no malignancy was found in FNAC. Decision was made on peroperative evaluation. Total thyroidectomy was done in 13 (6.91%) cases where FNAC report positive for malignancy. Subtotal thyroidectomy was done in 5 (2.65%) cases. Decision was made on preoperative and peroperative evaluations. Other study in our country showed similar pattern of FNAC Finding [8] [10]. Younger female patients with papillary carcinoma who underwent hemithyroidectomy no further operation done but in other patients with papillary carcinoma completion thyroidectomy was done followed by radioablation.

All specimen of thyroidectomy sends for histopathological examination. Out of 188 patients of nodular goitre 24 (12.76%) patients including 13 patients who are previously diagnosed by FNAC were found papillary carcinoma of thyroid. In this study no other variants of malignancy were found. Follicular carcinoma is rare in our country in different study in home and abroad shows incidence of malignancy in nodular goitre 7.5% - 13% [8] [9]. Hossain MA *et al.* in 2014 incidence was 28% [10]. Alam MM *et al.* in 2004 and Sattar MA *et al.* in 2003 incidence was 15% - 22% [12] [13].

Out of 24 patients 14 patients were male and 10 patients were female. Male female ratio is 1.4:1. 4 (22.2%) patients were at the age range of 21 - 30 years out of 18. 10 (15%) patients were in 31 - 40 years out of 64, 5 (10.4%) were in 41 - 50 years out of 48, 4 (12.9%) were in 51 - 60 years out of 31 and 1 (5%) were in 61 - 70 years' age group out of 18. Similar pattern of age distribution was found in other study in our country [8] [10].

In this series of 188 patients 13 patients were diagnosed papillary carcinoma by FNAC. On histopathological examination including 13 patients 11 more were diagnosed papillary carcinoma. In this series FNAC sensitivity is 69.2%. Follicular carcinoma is uncommon in our country. In this series we have found not a single case of follicular carcinoma in nodular goitre. All other study in home and abroad follicular carcinoma was found. Rahman MM *et al.* showed 20% [10]. Hossain MA *et al.* showed 4% [11].

5. Conclusion

Nodular goitre is very common in our country. Females are most commonly affected. But carcinoma in nodular goitre predominantly affects male patients. FNAC and histopathological evaluation are mandatory for proper treatment of every patient. Sample size and study period are not enough to show the complete picture. But with this study we can plan our future strategy for better management of goitre patient in Bangladesh.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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