



Pattern of Thyroid Swelling – A Histopathological Study

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Article information

Received: 11-10-2021

Accepted: 05-12-2021

Cite this article:

Siddique MA, Islam MS, Kabir A, Mondol MTI, Alam MR, Awual SMA, Sarker UK, Afrin A, Kashem MA. Pattern of Thyroid Swelling – A Histopathological Study. Sir Salimullah Med Coll J 2022; 30: 75-82

Key words:

Goitre, papillary carcinoma, Histopathology.

Abstract:

Background: This is a cross sectional study. The purpose of the study was to determine the histopathological pattern in Thyroid swellings. The study was done in the department of Otolaryngology and Head-Neck Surgery, Sir Salimullah Medical College Mitford Hospital, Dhaka from December 2015 to December 2016. Fifty patients of Thyroid swelling were studied by detailed history, clinical examination, thyroid hormone assay, ultrasonography, Thyroid scan, FNAC and Histopathological examination.

Results: In this study it was found that Goitre is predominant in female. Among the 50 cases nodular colloid goitre was found in 25 cases in FNAC suspicious cell for malignancy in 2 cases, follicular neoplasm in 11 cases & malignancy in 11 cases. Histopathology reports were obtained in all cases. Histopathological findings of the swelling shows that 42.0% of the swelling are Nodular colloidal goiter and 24.0% tumor are follicular adenoma and thyroiditis was found in 8 % cases. Among malignancy papillary carcinoma was in 20% cases while follicular carcinoma and medullary carcinoma was 4% and 2% respectively. No case of anaplastic carcinoma and lymphoma was found. Proportion of papillary carcinoma was highest in the age group 30 years and below and proportion of follicular carcinoma was highest in age group above 50 years patients while nodular colloidal goiter was highest in age group 31 to 50 years patients. Thyroiditis was highest in the age group 31 to 50 year's patients and follicular adenoma was highest in the age group above 50 years patients. Proportion of follicular carcinoma (25.0%) and medullary carcinoma (12.5%) was higher in male patients than female. On the other hand proportion of nodular colloidal goiter (40.5%), thyroiditis (9.5%), papillary carcinoma (21.4%) and follicular adenoma (26.2%) was higher in female patients than male.

Conclusion: Clinical evaluation of goiter should be thorough, and use all means especially histopathologic study of the specimens to arrive at a definitive diagnosis as thyroid carcinoma is not uncommon.

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Introduction:

The thyroid gland is unique among the endocrine glands because of its size. It is the largest endocrine gland and one of the most responsive organs in the human body.¹ The thyroid is situated in the lower part of the front and sides of the neck. It regulates the basal metabolic rate, stimulates somatic and psychic growth, and plays an important role in calcium metabolism. The thyroid develops from a median endodermal thyroid diverticulum which grows down in front of the neck from the floor of the primitive pharynx, just caudal to the tuberculum impar.² Diseases of the thyroid are of great importance because most are amenable to medical or surgical management. They include conditions associated with excessive release of thyroid hormones (hyperthyroidism), those associated with thyroid hormone deficiency (hypothyroidism) and those that present as mass lesions of the thyroid.¹ Incidence of thyroid gland diseases also vary with geographical location.³ Thyroid disorders are one of the common problems encountered in clinical practice with majority of benign in nature.⁴ They are endemic in mountainous region of the world, where the soil, water & food supply contain little iodine.⁵ The prevalence of thyroid swelling ranges from 4% to 10% in the general adult population and from 0.2% to 1.2% in children.⁶ In our country the national prevalence rate is 10-15%,⁶ which indicate the whole country is endemic. The majority of clinically diagnosed thyroid swellings are non-neoplastic; only 5%-30% are malignant and require surgical intervention⁷.

Bangladesh is an endemic area for iodine deficiency goiter. In many cases, non-neoplastic goiter present as a solitary thyroid nodule (STN). Most of the STN are benign, few are malignant. The endemicity varies from one place to another. The highest prevalence in Bangladesh is in the district of Jamalpur, Rangpur; the range varies from 21-30%.⁶

Long standing goiter (more than 5 years) is regarded as a risk factor for the development of thyroid cancer.⁴ Thyroid cancer is a relatively rare malignancy, representing only 1.5% of all the

cancers, but it is the commonest endocrine cancer accounting for 92% of all endocrine malignancies.^{6,8,9} Papillary carcinoma is the most common thyroid cancer followed by follicular, medullary, anaplastic and lymphoma. So evaluation of thyroid swelling should be undertaken by careful history taking, physical examination and investigation like FT3, FT4, TSH level. FNAC and further evaluation by postoperative histopathological examination is needed. Histological examination of the removed thyroid swelling is the most accurate way to determine the pathology.¹⁰ Laboratory investigations other than FNAC have limited role to find out the histological nature of thyroid swelling. Isotope scan can demonstrate the functioning capacity of the nodule but cannot predict the histopathological character.¹¹ Ultrasonographic scanning is capable of differentiating solid from cystic lesion but cannot distinguish malignant from benign one.¹² As histopathology is the best way to determine the pathology, so this study will help to adopt the specific management approach. This will decrease extra surgical burden of the patient as well as decrease morbidity.

Methodology:

This is an observational type of cross sectional study carried out at the department of Otolaryngology & Head-Neck Surgery, Sir Salimullah Medical College and Mitford Hospital from December 2015 to December 2016. All patients (Bangladeshi male and female) with thyroid swelling admitted in ENT & Head-neck Surgery unit for operation. Due to limited time schedule only 50 patients are included into the study. Sampling technique was non random sampling. The patients will be selected using non probability, purposive sampling technique. Statistical Package for Social Sciences (SPSS) version 20.0 was used to analyze the data. New variables were constructed as per the requirement of analysis.

Result:

Table I
Lymph node swelling of the patients

Other swelling	Number	Percentage
Positive	5	10.0
Negative	45	90.0
Total	50	100.0

Table II
Consistency of the swelling

Consistency	Number	Percentage
Soft	3	6.0
Firm	22	44.0
Hard	11	22.0
Mixed	14	28.0
Total	50	100.0

Table III
Mobility of the swelling

Mobility	Number	Percentage
Mobile	44	88.0
Immobile	6	12.0

Table IV
Clinical symptom of the patients

Variable	Number	Percentage
Raised temperature		
Yes	2	4.0
No	48	96.0
Tenderness		
Present	3	6.0
Absent	47	94.0
Retrosternal extension		
Present	1	2.0
Absent	49	98.0
Bruit		
Present	1	2.0
Absent	49	98.0
Palpable lymphnode		
Present	5	10.0
Absent	45	90.0
Vocal cord palsy		
Present	3	6.0
Absent	47	94.0

Table V
FNAC findings of thyroid swelling

FNAC findings	Number	Percentage
Nodular colloid goiter	25	50.0
Papillary carcinoma	6	12.0
Follicular neoplasm	11	22.0
Suspicious for malignancy	2	4.0
Medullary carcinoma	5	10.0
Thyroiditis	1	2.0
Total	50	100.0

Table VI
USG findings of the swelling

USG nodularity	Number	Percentage
Solitary	20	40.0
Multiple	29	58.0
No nodularity	1	2.0
Total	50	100.0

Table VII
Treatment options of the patients

Treatment	Number	Percentage
Total thyroidectomy	20	40.0
Near total thyroidectomy	1	2.0
Right hemi thyroidectomy	8	16.0
Left hemi thyroidectomy	10	20.0
Total thyroidectomy with neck dissection completion thyroidectomy	5	10.0
Total	50	100.0

Table VIII
Histopathological findings of the swelling

Histopathological findings	Number	Percentage
Nodular colloid goiter	21	42.0
Follicular carcinoma	2	4.0
Thyroiditis	4	8.0
Papillary carcinoma	10	20.0
Follicular adenoma	12	24.0
Medullary carcinoma	1	2.0
Total	50	100.0

Table IX
Relationship between age and histopathological findings

Age in years	Histo- pathological findings						P
	Nodular colloidal goiter	Follicular ca	Associated thyroiditis	Papillary ca	Follicular adenoma	Medullary carcinoma	
≤30	6 31.6%	1 5.3%	0 0.0%	7 36.8%	5 26.3%	0 0.0%	0.131
31-50	11 47.8%	0 0.0%	4 17.4%	3 13.0%	4 17.4%	1 4.3%	
>50	4 50.0%	1 12.5%	0 0.0%	0 0.0%	3 37.5%	0 0.0%	
Total	21 42.0%	2 4.0%	4 8.0%	10 20.0%	12 24.0%	1 2.0%	

Table X
Relationship between sex and histopathological findings

Sex	Histo- pathological findings						P
	Nodular colloidal goitre	Follicular ca	Thyroiditis	Papillary ca	Follicular adenoma	Medullary carcinoma	
Male	3 37.5%	2 25.0%	0 0.0%	1 12.5%	1 12.5%	1 12.5%	0.004
Female	18 42.9%	0 0.0%	4 9.5%	9 21.4%	11 26.2%	0 0.0%	
Total	21 42.0%	2 4.0%	4 8.0%	10 20.0%	12 24.0%	1 2.0%	

Table XI
Relationship between FNAC and histopathological findings

FNAC	Histo- pathological findings						P
	Nodular colloidal goiter	Follicular ca	Papillary ca	Associated thyroiditis	Medullary carcinoma	Follicular adenoma	
Benign	19 63.3%	0 0%	1 3.3%	8 26.7%	2 6.7%	0 0.0%	<0.001
Malignant	2 10.0%	2 10.0%	3 15.0%	2 10.0%	10 50.0%	1 5.0%	
Total	21 42.0%	2 4.0%	4 8.0%	10 20.0%	12 24.0%	1 2.0%	

Discussion:

This cross sectional study was done in the department of Otolaryngology & Head – Neck Surgery, Sir Salimullah Medical College and Mitford Hospital from December 2015 to December 2016. For this study 50 patients of thyroid swelling were studied by detailed history, clinical examination, thyroid hormone assay, ultrasonology, thyroid scan, FNAC and histopathological examinations.

Both the neoplastic and non-neoplastic diseases of thyroid are common all over the world, with a varying frequency and incidences depending upon iodine deficiency status.²⁶

In our study mean age of the patients was 39.6±14.8 and ranged from 18 years to 80 years. Similar findings were found in a study in Pakistan by Ghafoor et al.²⁷ There are some other studies where it didn't match with our study.^{11,28,29}

Most of the patients were female (84.0%) and 16.0% of the patients were male. Thyroid diseases have historically been known primarily to affect the female sex. Similar are the findings in our study and recent literature from around the world ranging from 71.5% females in a study of 358 thyroidectomies from Pakistan (Fahim et al., 2012) to as high as 88.7% females from Zambia (Mirzakarimov et al., 2012). Intermediate figures of 77.46% from Ireland (Chukudebelu et al., 2012), 82.4% from Bangladesh (Rahman et al., 2013) and 84.8% from Turkey (Veyseller et al 2009) have also been reported in the studies from last couple of years. Within the Middle East region, we have figures of 76.36% females in 110 thyroidectomy cases from Bahrain (Darwish et al., 2006) and 78.9% females in 845 thyroidectomy cases from Western region of KSA (Salama et al., 2009).^{30,31,32,33,34,35,36} It is due to fact that thyroid disorder is female prone owing to the presence of estrogen receptors in the thyroid tissue.³⁷

Out of total patients' majority of the patients hailed from Dhaka zone and 14.0% of the patients hailed from Barisal zone. Distribution of patients in Chittagong zone, Rangpur zone was 8.0%, and 4.0%. study site of the research were situated in the capital of the country which shows significant reason behind most of the patients came from Dhaka division.

In our study about 40.0% of the patients swelling was central and 30.0% of the patients swelling position was right and left side respectively.

In a study Gupta et al shows right side (49%) of thyroid gland was more commonly involved which didn't show similarities with our findings.³⁸

In another study we have seen that right lobe is slightly more affected than left lobe.³⁹

We found all patients had swelling. Discomfort had among 32.0% of the patients and 20.0% of the patients been suffering from pain and dry cough while 22.0% of the patients had dysphagia. Hoarseness of voice and stridor was present in 6.0% and 4.0% of the patients, respectively. Cervical lymphadenopathy was found in 8% patient. Symptom varies according to the patients nature and race which we found in different studies.

In the study of Prakash et al thyroid swelling was in 95.55% cases, Sachdeva HS, et al thyroid swelling was in 90%, dysphagia in 33.33%, dyspnoea in 26.66% cases, Godinho-Matos et al thyroid swelling was in 100%, dysphagia in 4%, dyspnoea in 3%, pain in 8% and hoarseness of voice in 3% cases.^{40,41,42}

About two fifths of the patients swelling was firm in consistency and 28.0% of them were mixed in consistency while 22.0% of the swelling was hard in consistency and only 6.0% of the swelling was soft in consistency.

Firm nodules are the commonest form of solitary thyroid nodule. In a study of solitary thyroid nodules constituted 72.03% firm, 16.95% hard and 11.02% cystic which is consistent with our study.³⁹

Half of the swelling consistency in USG findings was mixed and 38.0% of them were solid. In USG findings nodularity of the swelling was multi nodular in 58.0% cases while only in 2.0% cases no nodularity was found in swelling. Ultrasonography is used to establish physical characteristics of nodule like the size, echo-structure (solid or cystic), shape and number of nodule(s), and extra nodular thyroid tissue. In a study by Gupta et al, of ultrasonography we found 90(90%) nodules were benign, 10 (10%) were malignant.³⁸

Nodular colloidal goitre and was found among 42.0% of the patients are 24.0% tumor are follicular

adenoma while 20.0% of the patients had Papillary carcinoma. Only 8.0% of the patients had thyroiditis while 4.0% and 2.0% of the patients had Follicular and Medullary carcinoma respectively. Malignancy was found among 26% of the patients which is not compatible with a study by Haque et al in Bangladesh. Neoplastic lesion was found in 53 cases (44.92%) out of 118 cases. Out of all neoplastic cases 31(58.41%) was benign (follicular adenoma) and 22 (41.51%) cases were malignant. Malignancy was about 18.65% of all thyroid swelling. Incidence of cancer in solitary thyroid nodule was 23.7%. In this study among 22 malignant cases 16(72.73%) were papillary carcinoma, 4(18.18%) were follicular carcinoma and 2(9.09%) cases were anaplastic carcinoma. It shows a clear predominance of papillary over follicular and anaplastic carcinoma. Malignancy was found more in hard nodule 14(63.63%). It is almost similar to another study 65%. Here hardness of nodule was due to malignancy and inflammatory conditions.³⁹

The frequency of follicular adenoma is reported in literature is more than the frequency of malignancy. In our series, similar frequencies of follicular adenoma and malignancy were found. In contrast to these reports higher frequency of malignancy was found than that of follicular adenoma in other studies.^{43,44,45}

Proportion of papillary carcinoma was highest in the age group 30 years and below and proportion of follicular carcinoma was highest in age group above 50 years patients while nodular colloid goiter was highest in age group 31 to 50 years patients. Similarly we found proportion of nodular goiter (37.50%), follicular carcinoma (25.0%) and medullary carcinoma (12.5%) was higher in male patients than female. On the other hand proportion of nodular colloid goiter (42.9%), associated thyroiditis (9.5%), papillary carcinoma (21.4%) and follicular adenoma (26.2%) was higher in female patients than male. In a study thyroid carcinoma is more common in females with a female to male ratio 8:1. However, Qari found male preponderance in a study of thyroid.

Age of the patients with thyroid cancer ranged from 24-74 years with a mean age 42 years which is in comparison with study conducted by Merchant. But the mean age was younger than 45-48 years old reported from other studies.^{43,44,46,47,48}

Conclusion:

All of the patients presented with a symptoms of neck swelling. Majority of the patients were between 3rd and 5th decade. Females were predominantly affected. The commonest lesion was multinodular goiter followed by follicular adenoma. Most common malignant lesion was papillary carcinoma. Follicular adenoma was most common benign lesion. Both papillary carcinoma and follicular adenoma was common in female. The drawback of the study was that it did not represent the whole country. Clinical evaluation of goiter should be thorough and use all means especially histopathologic study of the specimens to arrive at a definitive diagnosis as thyroid carcinoma is not uncommon.

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