

Original Research Article

A study on the histopathological pattern of thyroid lesions in a tertiary care hospital

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ABSTRACT

Background: Thyroid diseases are one of the most common endocrine disorders affecting the general population. They range from non-neoplastic to neoplastic lesions. The prevalence and pattern of these disorders depend on various factors including sex, age, ethnic and geographical patterns. The aim of the present study was to determine the pattern of thyroid lesions in thyroidectomy specimens received in the pathology department of MOSC Medical College Hospital, Kolenchery, Kerala, India.

Methods: It was a 6 year retrospective study (January 2010 to December 2015) of all thyroidectomy specimens received in the Pathology department. All the biopsy reports were reviewed and different lesions were categorized according to age and gender distribution.

Results: There were a total of 801 specimens, of which 716 were females and 85 were males. Maximum number of thyroid lesions were seen in the age group 41-50 yrs. Multinodular goiter was the most common non-neoplastic thyroid lesion (71.5%) followed by thyroiditis. There were 151 carcinomas (18.8%). Maximum numbers of carcinomas were seen in age group 31-40 (28.8%). The frequency of carcinomas among the total thyroid lesions was almost same for both males and females (18.82% and 18.85%). Papillary carcinoma was the most frequent malignancy, out of which half were of the micro papillary subtype.

Conclusions: Multinodular goiter was found to be the most common thyroid lesion in this study. The percentage of malignant thyroid tumors was high compared to other studies done in Kerala. Papillary carcinoma was the most common malignant neoplasm. The micropapillary variant comprised 50% of the papillary carcinoma.

Keywords: Thyroidectomy specimens, Multi nodular goiter, Thyroiditis, Thyroid carcinoma, Papillary carcinoma

INTRODUCTION

Diseases of thyroid gland are among the most abundant endocrine disorders worldwide second only to diabetes and India is no exception.¹ Thyroid disease is being increasingly diagnosed with greater awareness and is one of the chronic non-communicable diseases affecting women more, though males are not spared of the ailment.

The prevalence and pattern of thyroid disorders depend on various factors including sex, age, ethnic and

geographical patterns.² Thyroid disorders are four times more in females than in males.^{3,4} They are endemic in mountainous regions, where the soil, water and food contain little iodine.⁵

Thyroid lesions range from non-neoplastic to neoplastic. Multinodular goiter is the commonest cause of thyroid enlargement followed by thyroid tumors.⁶ Most of the tumors are benign in nature, but can simulate malignancy.⁷ Thyroid cancer is a relatively rare malignancy, representing only 1.5% of all cancers, but it

is the commonest endocrine cancer accounting for 92% of all endocrine malignancies. Papillary carcinoma is the most common thyroid malignancy followed by follicular carcinoma, medullary carcinoma, anaplastic carcinoma and lymphoma.⁸ Very rarely the thyroid gland can also be the site of metastasis. The increasing incidence of thyroid carcinoma warrants the need for institutions to provide a data base of its demographic and clinical profile.

The present study aims to determine the pattern of thyroid lesions in thyroidectomy specimens received in the pathology department of MOSC Medical College Hospital, Kolenchery, Kerala, India.

METHODS

A total of 801 thyroidectomy specimens received in the histopathology laboratory, from January 2010 to December 2015 (6 years), were included in the study. All biopsies were fixed in formalin and embedded in paraffin.

The sections were stained with haematoxylin and eosin. Special stains like Congo Red, Periodic acid Schiff and reticulin were used whenever needed. After pathological diagnosis, the demographic data and final report were systematically entered into the register. The biopsy registers were reviewed and different lesions were categorized. Age and sex-wise variations of the lesions were noted.

The study proposal was reviewed and accepted by the hospital ethical committee. Statistical analysis was done using the frequency distribution table in Microsoft Excel Office.

RESULTS

A total of 801 thyroidectomies were performed during the 6 year study period. The specimens received ranged from total thyroidectomies to lobectomies. There were 716 females and 85 males.

Table 1: Age wise distribution of thyroid lesions.

Age group (years)	N	%
0-10	1	0.1
11-20	6	0.7
21-30	79	9.9
31-40	215	26.8
41-50	248	31
51-60	175	21.8
61-70	59	7.4
71 and above	18	2.2

Maximum number of thyroid lesions were seen in the age group 41-50 (31%), followed by third decade (26.8%). The least number of lesions were seen in children under

10 years of age. Incidence of thyroid pathology was found to be very minimum (0.8%) upto 20 years of age.

Table 2: Proportion of various thyroid lesions in males and females.

Diagnosis	Male	Female	N	%
MNG	50	382	432	53.9
MNG+thyroiditis	9	132	141	17.6
Papillary carcinoma	4	53	57	7.1
Papillary micro carcinoma	5	52	57	7.1
Hashimoto's thyroiditis	5	32	37	4.6
Follicular carcinoma	6	29	35	4.4
Follicular adenoma	3	24	27	3.3
Toxic goiter	1	5	6	0.7
Lymphocytic thyroiditis	0	5	5	0.6
deQuervain thyroiditis	0	1	1	0.1
Hyalinising trabecular tumor	0	1	1	0.1
Anaplastic carcinoma	1	0	1	0.1
Metastatic carcinoma	0	1	1	0.1

Multinodular goiter is the most common non-neoplastic thyroid lesion (71.5%) followed by thyroiditis. There were only 6 cases of toxic goiter among all the thyroid lesions received. Among the 801 thyroid lesions, there were 151 carcinomas (18.8%).

Table 3: Age wise distribution of thyroid carcinomas.

Age group (years)	N	%
0-10	0	0
11-20	0	0
21-30	22	14.7
31-40	43	28.8
41-50	42	28.2
51-60	31	20.8
61-70	9	6.04
71 and above	4	2.7

Maximum numbers of carcinomas are seen in age group 31-40 with 43 cases, followed closely by fourth decade. There were no thyroid malignancies upto second decade. The numbers of malignancies were very minimum above 70 years (2.7%).

Table 4: Sex wise distribution of carcinomas.

Sex	N	%
Male	16/85	18.82
Female	135/716	18.85

The frequency of carcinomas among the total thyroid lesions is almost same for both males and females (18.82% and 18.85%).

Table 5: Histopathologic subtypes of carcinomas.

Type of carcinoma	N	%
Papillary micro carcinoma	57	37.7
Papillary carcinoma	57	37.7
Follicular carcinoma	35	23.2
Anaplastic carcinoma	1	0.7
Metastatic carcinoma	1	0.7

Papillary carcinoma was the most frequent malignancy, out of which half were of the micropapillary subtype. One of the thyroidectomy specimens showed two different primary malignancies (follicular carcinoma and papillary micro carcinoma). Anaplastic carcinoma was seen in only one thyroidectomy specimen. There was one metastatic thyroid carcinoma from a primary lung carcinoma.

DISCUSSION

According to WHO, 7% of the world population is suffering from clinically apparent goiter. Majority of these patients are from developing countries where the disease is attributed to iodine deficiency.⁹ Thyroid enlargement may be in the form of multinodular, solitary or diffuse goiter.¹⁰ Thyroid diseases are generally more prevalent in females.¹¹ Benign neoplasms outnumber thyroid carcinomas by a ratio of nearly 10:1.^{3,12}

In the present study, thyroid lesions were found to be most prevalent in the third and fourth decades. The number of female patients (716) far outnumbered males (85). Multinodular goiter accounted for 71.5% (573) cases, forming the most common pathologic lesion. This is similar to studies by B. Tsegaye et al and Ashwini Kolar et al.^{13,14} Among the non-neoplastic category of thyroid lesions, thyroiditis was the next common pathology accounting for 22.97% of the total. This included Hashimoto's, Lymphocytic and deQuervain thyroiditis. Thyroiditis was seen as an associated finding in 17.6% of multinodular goiters.

Thyroid malignancy accounted for 151 cases (18.8%). This high prevalence of malignancy among surgically resected thyroid specimens in our hospital could be due to the fact that it is a tertiary care centre with a large number of referral cases. The percentage of malignancy was only 8.37 in a similar study from Central Kerala.¹⁴ Like the non-neoplastic lesions, thyroid malignancies were also found to be more common in third and fourth decades. Out of the 151 thyroid malignancies, 16 were males (10.73%) and 135 were females (89.3%). The total number of males in the present study was only 85, out of whom 16 had malignant thyroid pathology (18.8%), whereas the number of females was 716, with 135 thyroid

malignancies (18.9%). Thus the proportions of malignancy among the thyroid lesions were almost the same in both males and females.

Papillary carcinoma was the most common thyroid malignancy (75%) as seen in previous studies.^{7,14} Of these, 57 cases (50%) were of the micropapillary subtype, with a diameter less than 1 cm. The second most common type was follicular carcinoma (22.1%), of which 20 had capsular invasion alone, 2 had vascular invasion alone and 13 had both capsular and vascular invasion. None of these showed distant metastasis at the time of presentation. Other types included well differentiated carcinoma and anaplastic carcinoma. There was one case of metastasis from carcinoma lung.

CONCLUSION

Multinodular goiter was found to be the most common thyroid lesion in this study. The percentage of malignant thyroid tumors was high compared to other studies done in Kerala. Papillary carcinoma was the most common malignant neoplasm. The micropapillary variant comprised 50% of the papillary carcinoma.

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