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EVALUATION OF HISTOPATHOLOGICAL PATTERN OF THYROID LESIONS AT TERTIARY CARE CENTER

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ABSTRACT

Background: The thyroid hormones control the metabolism of macromolecules, oxygen consumption and the basal metabolic rate (BMR) of body cells and are essential for healthy growth and maturation of the body as well as they are essential for proper development of the peripheral and central nervous system. **Material & Methods**: In the present cross-sectional prospective study 100 biopsies specimen were fixed in formalin and then embedded in paraffin, and after that, the sections were stained with hematoxylin and eosin stain. Special stains like Periodic acid Schiff, Congo Red, and reticulin, were used whenever and as needed. **Results:** Multinodular goiter was the most common non-neoplastic thyroid lesion (54%) which is followed by thyroiditis. There were only three patients of toxic goiter among all the thyroid specimens received and examined. There were 17% of specimens diagnosed as carcinomas. Papillary carcinoma was found the most common malignancy, out of which half of the specimens were of the micropapillary subtype. One of the thyroid lesion specimens showed two different primary malignancies (papillary microcarcinoma and follicular carcinoma). **Conclusion:** Most common type of lesion was non-neoplastic and among this most common type was multinodular goiter and among the neoplastic lesions and the most common type was papillary carcinoma of the thyroid.

Keywords: Multinodular goiter, Thyroiditis, Thyroid carcinoma, Papillary carcinoma

INTRODUCTION

The thyroid gland is a butterfly-shaped endocrine gland which is situated anatomically in the anterior aspect of the root of the neck and comprises of two bulky lateral lobes which are connected by a thin isthmus **(1)**. The thyroid gland secretes several hormones such as triiodothyronine (T3), thyroxine (T4) and calcitonin. Disorders of hormones produced by thyroid gland consists of a group of commonly reported endocrinological disease. The prevalence and magnitude of all the thyroid disorders are associated and dependent on numerous risk factors and confounding factors **(2)**. Thyroid disorders are endemic in mountainous, hilly areas also seen in higher frequencies in non-mountainous hilly areas which are remotely situated from the sea. The thyroid hormones control the metabolism of macromolecules, oxygen consumption and the basal metabolic rate (BMR) of body cells and are essential for healthy growth and maturation of the body as well as they are essential for proper development of the peripheral and central nervous system **(3)**.

Pathologic evaluations of lesions of the thyroid gland are of research importance because they directly affect the functioning of other organs of the body and along with that histopathological result forms the basis of highly effective medical and surgical treatment **(4)**. The range of thyroid lesions is varied from congenital lesions to hyperplastic or metabolic goiter and inflammatory to neoplastic thyroid lesions. Patients with thyroid lesions generally present to health facilities either as signs & symptoms of hyperthyroidism and hypothyroidism or as mass lesions. Histopathological evaluation is very deciding for Surgical excision and key-factor to establish the diagnosis in the latter phase. It is now well documented that thyroid gland lesions and disorders are the second most common endocrine disorders reported from India as well as all around the globe **(5)**.

Thyroid lesions vary from non-neoplastic to neoplastic; the most common thyroid lesion is multinodular goiter which is followed by thyroid tumors **(6)**. Most of the thyroid tumors are benign, and the malignant thyroid lesions are accounting only for 1.5% of all cancers. However, among the endocrine malignancies, thyroid cancers represent approximately 92% of all endocrine cancers. Among the thyroid malignancies, the most common is papillary carcinoma which is followed by follicular carcinoma, medullary carcinoma, anaplastic carcinoma, and lymphoma, while metastasis is reported rarely **(7)**. Hence, as the incidence of thyroid carcinomas are increasing nowadays, so the present study was conducted to estimate the burden of diseases and to determine the histopathological pattern of thyroid lesions in thyroidectomy specimens.

MATERIALS & METHODS

The present cross-sectional observational study was conducted at the department of pathology of our tertiary care hospital. The study duration was of one year from June 2017 to May 2018. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info software version 7.2. Clearance from Institutional Ethics Committee was taken before the start of the study. All biopsies specimens were subjected to fixing in formalin and then embedded in paraffin, and after that, the staining of sections was done with hematoxylin and eosin stain. Special stains like Periodic acid Schiff, Congo Red and reticulin, were used whenever and as needed. After a detailed pathological examination, the demographic data of the patient and the final diagnosis report were systematically recorded into the register. The data of different lesions were later on taken and organized from biopsy registers for analysis along with the demographic variables. Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if the p-value was less than 0.05.

RESULTS

In the present study, A total of 100 thyroidectomy specimens were studied during the one-year study period. The study specimens received were ranged from lobectomies to total thyroidectomies. There were 79 females and 21 males. The maximum number of patients of thyroid lesions were found in the age group of 41-50 years (32%), followed by patients in the third decade of life (27%). The least number of lesions were reported in the age group of 11-20 years. Maximum numbers of patients having carcinomas are found in the age group of 31-40 years with 43 %, followed by patients in the fourth decade of life. We found no patients of thyroid malignancies up to the second decade of life. The numbers of thyroid malignancies were very minimum among patients above 70 years (1%). (Table 1)

Table 1: Distribution of study participants according to age.

Age group (years)	No. of patients (%)
11-20	1
21-30	9
31-40	27
41-50	32
51-60	22
61-70	7
71and above	2

In the present study, the magnitude of multinodular goiter was the most common and accounted for 54% non-neoplastic thyroid lesions which are followed by cases of thyroiditis. Among all the thyroid specimens

received and examined, there were only three patients of toxic goiter. Among the 100 thyroid lesions, there were 17% of specimens diagnosed as carcinomas. The overall magnitude of malignancy among the total thyroid specimens was nearly similar for both males and females (8% and 9%). In the present study, papillary carcinoma was reported to be the most prevalent malignancy, out of which 50% patients of the specimens were had the micropapillary subtype. Out of the total lesion specimens, one thyroid specimens had two different primary malignancies (papillary microcarcinoma and follicular carcinoma). There was one specimen of metastatic thyroid carcinoma which was from primary lung carcinoma. (Table 2)

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

Diagnosis	Male	Female	No. of patients (%)
MNG	7	47	54
MNG+thyroiditis	3	12	15
Papillary carcinoma	3	3	6
Papillary micro carcinoma	2	4	6
Hashimoto's thyroiditis	1	4	5
Follicular carcinoma	2	2	4
Follicular adenoma	1	3	4
Toxic goiter	1	2	3
Lymphocytic thyroiditis	0	2	2
Metastatic carcinoma	1	0	1

DISCUSSION

According to the world health organization, 7% of the global population is reported to have a clinically apparent goiter. Majority of these goiter patients are living in developing countries where the etiopathogenesis is iodine deficiency **(8)**. Non-neoplastic thyroid enlargement reported in the form of multinodular goiter and solitary or diffuse goiter **(9)**. Thyroid disorders are generally more prevalent among females **(10)**. Benign cancers of the thyroid gland are more prevalent than neoplastic lesions of the thyroid gland, and the ratio was reported to be as high as 10:1 **(11)**.

In the present study, A total of 100 thyroidectomy specimens were studied during the one-year study period. The study specimens received were ranged from lobectomies to total thyroidectomies. There were 79 females and 21 males. The maximum number of patients of thyroid lesions were found in the age group of 41-50 years (32%), followed by patients in the third decade of life (27%). The least number of lesions were reported in the age group of 11-20 years. Maximum numbers of patients having carcinomas are found in the age group of 31-40 years with 43 %, followed by patients in the fourth decade of life. We found no patients of thyroid malignancies up to the second decade of life. The numbers of thyroid malignancies were very minimum among patients above 70 years (1%). A study conducted by B. Tsegaye et al. reported similar results to present study and found that the most common type of non-neoplastic lesion of the thyroid was multinodular goiter and the most common type of neoplastic lesion was papillary carcinoma of the thyroid **(12)**. A study conducted by Ashwini Kolur et al. reported similar results to present study and found that the most common type of non-neoplastic lesion of the thyroid was multinodular goiter and the most common type of neoplastic lesion was papillary carcinoma of the thyroid **(13)**.

In the present study, the magnitude of multinodular goiter was the most common and accounted for 54% non-neoplastic thyroid lesions which are followed by cases of thyroiditis. Among all the thyroid specimens received and examined, there were only three patients of toxic goiter. Among the 100 thyroid lesions, there were 17% of specimens diagnosed as carcinomas. The overall magnitude of malignancy among the total

thyroid specimens was nearly similar for both males and females (8% and 9%). A study conducted by Sushel C et al. reported similar results to present study and found that out of studied 140 thyroid specimens most common type of lesions were non neoplastic and among these approximately 60% had adenomatous goiter nodules and among the neoplastic lesions and the most common type of neoplastic lesion was papillary carcinoma of thyroid **(14)**.

In the present study, papillary carcinoma was reported to be the most prevalent malignancy, out of which 50% patients of the specimens were had the micropapillary subtype. Out of the total lesion specimens, one thyroid specimens had two different primary malignancies (papillary microcarcinoma and follicular carcinoma). There was one specimen of metastatic thyroid carcinoma which was from primary lung carcinoma. A study conducted by Albasri A et al. reported similar results to present study and found that out of studied 292 thyroid specimens most common type of lesions were non neoplastic and among these approximately 58% had colloid goiter nodules and among the benign tumors follicular adenoma was the most frequent benign tumor and among the neoplastic lesions and the most common type of neoplastic lesion was papillary carcinoma of thyroid **(15)**.

CONCLUSION

We concluded from the present study that most common type of lesions were non-neoplastic and among these most common type was a multinodular goiter, and among the neoplastic lesions, the most common type of neoplastic lesion was papillary carcinoma of the thyroid. Out of which 50% of patients of the specimens were had the micropapillary subtype. Out of the total lesion specimens, one thyroid specimens had two different primary malignancies (papillary microcarcinoma and follicular carcinoma). There was one specimen of metastatic thyroid carcinoma which was from primary lung carcinoma.

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