International Journal of Medical Science and Education

An official Publication of Association for Scientific and Medical Education (ASME)

www.ijmse.com *Original Research Article* pISSN- 2348 4438 | eISSN-2349- 3208

# EVALUATION OF HISTOPATHOLOGICAL PATTERN OF THYROID LESIONS AT TERTIARY CARE CENTER

**Dr. Vinita Jain**

*1. Assistant Professor, Department of Pathology , Pacific Medical College and Hospital, Udaipur*
*Corresponding author - **Dr. Vinita Jain**

Email id – jvinita30@yahoo.com

***Received:24/07/2018*** ***Revised:22/10/2018*** ***Accepted:05/11/2018***

## ABSTRACT

**Background:** Pathologic lesions of the thyroid gland are of importance not only because they affect the functions of other organs but also since most are amenable to highly effective surgical or medical treatment. **Material & Methods**: In the present cross-sectional prospective study 100 biopsies were fixed in formalin and embedded in paraffin. The sections were stained with hematoxylin and eosin. Special stains like Congo Red, Periodic acid Schiff and reticulin were used whenever needed. **Results:** Multinodular goiter is the most common non-neoplastic thyroid lesion (54%) followed by thyroiditis. There were only 3 cases of toxic goiter among all the thyroid lesions received. Among the 100 thyroid lesions, there were 17% carcinomas. The frequency of carcinomas among the total thyroid lesions is almost same for both males and females (8% and 9%). Papillary carcinoma was the most frequent malignancy, out of which half were of the micropapillary subtype. **Conclusion:** Multinodular goiter was found to be the most common thyroid lesion in this study. Papillary carcinoma was the most common malignant neoplasm.

**Key words:** Multi nodular goiter, Thyroiditis, Thyroid carcinoma, Papillary carcinoma

## INTRODUCTION

Thyroid gland is a butterfly shaped endocrine gland situated in the anterior aspect of root of the neck, consists of two bulky lateral lobes connected by a relatively thin isthmus. Thyroid produces several hormones such as thyroxine (T4), triiodothyronine (T3) and calcitonin. Disorders of thyroid comprise a group of commonly encountered endocrinological disease. The incidence and prevalence of these thyroid diseases in a given community are variable depending on various factors. It is most prevalent in mountainous areas but also occurs in non-mountainous areas remote from sea. [1]The thyroid gland produces hormones that control oxygen consumption, the metabolism of macromolecules, the basal metabolic rate of most body cells and are necessary for normal growth and maturation as well as proper development of the central and peripheral nervous system.[2],[3]

Pathologic lesions of the thyroid gland are of importance not only because they affect the functions of other organs but also since most are amenable to highly effective surgical or medical treatment. They range from congenital lesions, goitre (hyperplastic/metabolic), inflammatory to neoplastic

lesions. These diseases present clinically either as conditions associated with hyperthyroidism/ hypothyroidism or as mass lesions. [3] Surgical excision and histopathological evaluation are crucial to establish diagnosis in the latter scenario. Thyroid diseases were thought to be uncommon in Africans in the early 1960s and 1970s, and gross underreporting is blamed for this scenario. [4] It is now known that diseases of the thyroid gland are the second most common endocrine disorders seen in endocrinology clinics in Nigeria, while thyroid surgery constitute a significant proportion of surgical practice in Nigeria. [5],[6],[7]

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 itis 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.

## MATERIALS & METHODS

The present cross-sectional observational study was conducted at 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 start of study. All biopsies were fixed in formalin and embedded in paraffin. The sections were stained with hematoxylin 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. Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

## RESULTS

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

Multinodular goiter is the most common non-neoplastic thyroid lesion (54%) followed by thyroiditis. There were only 3 cases of toxic goiter among all the thyroid lesions received. Among the 100 thyroid lesions, there were 17% carcinomas. The frequency of carcinomas among the total thyroid lesions is almost same for both males and females (8% and 9%). 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). There was one metastatic thyroid carcinoma from a 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 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 (79) far outnumbered males (21). Multinodular goiter accounted for 54% cases, forming the most common pathologic lesion. This is similar to studies by B. Tsegaye et al and Ashwini Kolur et al.13,14 Among the non-neoplastic category of thyroid lesions, thyroiditis was the next common pathology accounting for 20% of the total. This included Hashimoto's and Lymphocytic thyroiditis. Hashimoto's Thyroiditis was seen as an associated finding in 5% of cases.

Thyroid malignancy accounted for 17% cases. 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 17% thyroid malignancies, 8% were males and 9% were females. The total number of males in the present study was only 21, out of whom 8 had malignant thyroid pathology, whereas the number of females was 79, with 9% thyroid malignancies. 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 (12%) as seen in previous studies.7,14 Of these, 6 cases (50%) were of the micropapillary subtype, with a diameter less than 1 cm. The second most common type was follicular carcinoma (4%), of which 2 had capsular invasion alone, one had vascular invasion alone and one had both capsular and vascular invasion. None of these showed distant metastasis at the time of presentation. Other types included well differentiated 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. Papillary carcinoma was the most common malignant neoplasm. The micropapillary variant comprised 50% of the papillary carcinoma.

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