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# HISTOPATHOLOGY OF THYROID LESIONS: A CROSS- SECTIONAL STUDY

Pathology

**Dr Deepika** Assistant Professor, Department Of Pathology, ESIC Medical College & Hospital, Kalaburagi, Karnataka, 585106

**Dr Shushan Shweta Jayker** Associate Professor, Department Of Pathology, ESIC Medical College & Hospital, Kalaburagi, Karnataka, 585106

## ABSTRACT

**Background-** The thyroid gland lesions are the most common endocrine disorders encountered globally. Thyroid lesions may be developmental, inflammatory, hyperplastic and neoplastic. **Objectives-** To find out spectrum of various thyroid lesions. **Material & Methods-** A cross sectional study was conducted at ESIC Medical College, Kalaburagi from Jan 2019 to Jan 2022. Institutional Ethical Committee clearance was obtained. Patients who underwent Thyroidectomy procedures for various thyroid lesions were enrolled. Statistical analysis was done using SPSS version 16 and the data was analyzed and tabulated according to age and gender distribution. **Results-** Out of 148 specimens, 122 (82.43%) cases of non-neoplastic lesions and 26 (17.57%) cases of neoplastic lesions were present. There were 25 males and 123 females with a male to female ratio of 1:4.9. The age ranged from 16 to 73 years with most common age group of 21-40 years. In non-neoplastic lesions, the predominant lesion was the colloid goiter with 101 (82.78%) cases followed by lymphocytic thyroiditis with 10 (08.19%) cases and Graves disease with 07 (5.74%). In neoplastic lesions, papillary carcinoma was the commonest lesion with 14 (53.85%) cases followed by follicular carcinoma with 05 (19.23%) cases and follicular adenoma with 04 (15.38%) cases. There were also 02 (7.69%) cases of anaplastic carcinoma in neoplastic lesions. **Conclusion-** Colloid goiter and Papillary carcinoma were the most common benign and malignant thyroid lesions with a female predominance. Other uncommon lesions like anaplastic carcinoma were also noted.

## KEYWORDS

## INTRODUCTION

The thyroid organ is a butterfly-model organ made out of globular right and left flaps associated in the midline by a meagre organisation named isthmus.[1,2] The prevalence and pattern of thyroid disorders depend on various factors including sex, age, ethnic and geographical patterns. Thyroid disorders are endemic in mountain regions, where the soil, water and food contains little iodine.[3]

Thyroid lesions may be developmental, inflammatory, hyperplastic and neoplastic. Diseases of the thyroid gland are common and comprise a spectrum of entities causing systemic disease (Grave's disease) or a localised abnormality in the thyroid gland such as nodular enlargement (goitre) or a tumour mass.[4]

Most of the thyroid disorders are benign in nature and thyroid enlargements are seen more common in females than in males.[5,6] The greater part of thyroid lesions consists of non-neoplastic lesions and 5% of the thyroid lesions are neoplastic whereas remaining of the lesions are due to inflammatory or developmental reasons. [1,7]

From a clinical standpoint, the possibility of neoplastic disease is of major concern in patients who present with solitary thyroid nodules because of risk of malignancy in them.[8] Adenoma is the commonest benign tumor of the thyroid. Thyroid cancer is the most frequent endocrine malignancy. Although thyroid nodules are common, differentiated and undifferentiated thyroid carcinomas are relatively rare, constituted 0.5% to 1% of all cancer worldwide. Long standing goiter is regarded as one of the most frequent risk factor for the development of thyroid cancer.[9]

The present study aimed to identify the histopathological spectrum of thyroid gland lesions in our institution.

## MATERIALS AND METHODS

A three year retrospective study was conducted for 148 cases from Jan 2019 to Jan 2022 in the Department of Pathology, ESIC Medical College and Hospital, Kalaburagi.

Ethical Clearance was taken from the Institutional Ethical Committee.

### Inclusion Criteria

Lobectomy, Hemi thyroidectomy, subtotal thyroidectomy and total thyroidectomy specimens received for histopathological examination.

### Exclusion Criteria

1) Autolyzed specimen
2) Inadequate biopsy

Detailed information regarding age, gender, duration of lesion, side of lesion along with relevant investigation like Thyroid function tests were collected from Histopathology records of Department of Pathology. Statistical analysis was done using SPSS version 16.

## RESULTS

**Table 1- Gender distribution of Thyroid lesion**

| GENDER | NO. OF CASES | PERCENT OF CASES |
|---|---|---|
| MALE | 25 | 16.89 |
| FEMALE | 123 | 83.11 |
| TOTAL | 148 | 100 |

Sin the present study, out of total 148 cases, 123 were females while remaining 25 cases were males with a male to female ratio of 1:4.9.(Table 1)

**Table 2: Age-wise distribution of Thyroid lesions.**

| AGE IN YEARS | NO. OF CASES | PERCENT OF CASES |
|---|---|---|
| 0-20 | 05 | 3.37% |
| 21-40 | 84 | 56.75% |
| 41-60 | 50 | 33.78% |
| >60 | 09 | 6.10% |

Most common age group in present study was 21-40 years (56.75%) (Table2)

**Table 3.Neoplastic and non-neoplastic distribution of Thyroid lesions**

| THYROID LESION | | NO. OF CASES | PERCENT OF CASES |
|---|---|---|---|
| NON-NEOPLASTIC | COLLOID GOITRE | 101 | 82.78% |
| | GRAVE'S DISEASE | 07 | 05.74% |
| | HASHIMOTO'S THYROIDITIS | 04 | 03.28% |
| | LYMPHOCYTIC THYROIDITIS | 10 | 08.19% |
| NEOPLASTIC | FOLLICULAR ADENOMA | 04 | 15.38% |
| | HYALINIZING TRABECULAR ADENOMA | 01 | 03.85% |
| | PAPILLARY CARCINOMA | 14 | 53.85% |

| | | | |
|---|---|---|---|
| | FOLLICULAR CARCINOMA | 05 | 19.23% |
| | ANAPLASTIC CARCINOMA | 02 | 7.69% |

Out of 148 cases, 122 were non-neoplastic and 26 were neoplastic (Table3). Colloid goitre was the most common non-neoplastic lesion with 101(82.78%) cases. This was followed by Lymphocytic Thyroiditis with 10 (08.19%), Grave's disease with 07 (05.74%) and Hashimoto's thyroiditis with 04(03.28%) cases respectively. Out of 26 neoplastic lesions, Papillary carcinoma was the dominant lesion with 14(53.85%) cases (Figure 2), followed by Follicular carcinoma with 05(19.23%), Follicular adenoma with 04 (15.38%), Anaplastic carcinoma 02(7.69%) and Hyalinizing trabecular adenoma with 01(03.85%) cases respectively.

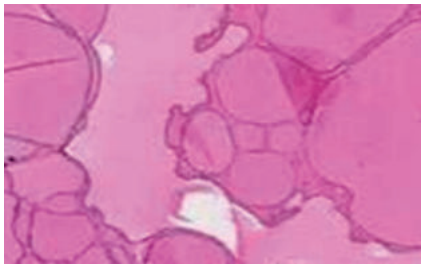

**Figure 2: Colloid goitre**

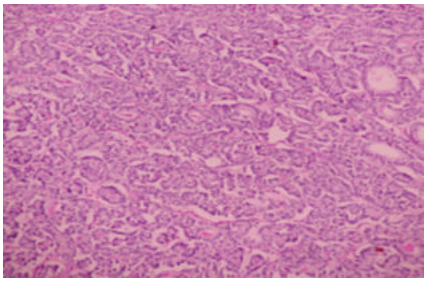

**Figure 2: Papillary carcinoma of Thyroid (PTC)**

**Table 4: Distribution of histological diagnosis of cases according to gender.**

| Histological Diagnosis | Male | Percent % | Female | Percent % | Total Cases | Percent % |
|---|---|---|---|---|---|---|
| COLLOID GOITRE | 12 | 48 | 89 | 72.36 | 101 | 82.78% |
| GRAVE'S DISEASE | 02 | 08 | 05 | 4.06 | 07 | 05.74% |
| HASHIMOTO'S THYROIDITIS | 01 | 04 | 03 | 2.44 | 04 | 03.28% |
| LYMPHOCYTIC THYROIDITIS | 04 | 16 | 06 | 4.88 | 10 | 08.19% |
| FOLLICULAR ADENOMA | 02 | 08 | 02 | 1.63 | 04 | 15.38% |
| HYALINIZING TRABECULAR ADENOMA | 00 | 00 | 01 | 0.81 | 01 | 03.85% |
| PAPILLARY CARCINOMA | 02 | 08 | 12 | 9.76 | 14 | 53.85% |
| FOLLICULAR CARCINOMA | 02 | 08 | 03 | 2.44 | 05 | 19.23% |
| ANAPLASTIC CARCINOMA | 00 | 00 | 02 | 1.63 | 02 | 7.69% |

Among non- neoplastic lesions ,we found that colloid goitre was the commonest non-neoplastic lesion.It was affirmed in 89 cases of females and 12 cases of males with male to female ratio of 1:7.4 (Table 4). Grave's disease was seen in 5 females and 2 males, Hashimoto's thyroiditis in 3 females and 1 male and Lymphocytic thyroiditis with 6 females and 4 males respectively. Female predominance was noted in all the lesions.In neoplastic lesions, Papillary carcinoma was the dominant lesion with 14(53.85%) cases where 12 female cases outnumbered 2 males. No male involvement was noted in the cases of Hyalinizing trabecular adenoma and Anaplastic carcinoma.

## DISCUSSION

Non-neoplastic and neoplastic thyroid lesions are common all over the world with varying prevalence and extent attributed to iodine deficiency and other environmental influences[7]In the present study, the mean age of the patients was 35.4 years and the highest frequency (56.75%) was within 21-40 years of age. Similar results were found in a study conducted by Islam et al.2009 and Gupta A et al.2016, where the majority of the patients were within 21-40 years of age. Whereas in the study conducted by Singh P et al. 2000, the commonest age group was 12-80 years. In Rangaswamy M et al study, the most common age range was 11-70 years. The youngest patient in our study was a girl of 16 years and the oldest patient was a man of 73 years both with colloid goitre.

In our study, out of 148 cases, females (123) outnumbered the males with male to female ratio of 1:4.9. Similar to our study, female predominance is seen in studies conducted by Singh P et al.2000, female:male was 4.7:1.5, Sangall G, et al 2006, female:male was 4.21:1 and Mandal S, et al female:male was 5:1. It is due to fact that thyroid disorder is female prone owing to the presence of estrogen receptors in the thyroid tissue.[11]

In the present study, the most dominant thyroid lesion found was colloid goiter which constituted 82.78%. It was similar to studies conducted by Illorin and Sreedevi et al.3

In our study lymphocytic thyroiditis constituted 10 cases (8.19%) and it was seen in 6 females and 4 males, which was in correspondence with Gupta A et al.2016. Hashimoto thyroiditis is an auto-immune disease characterized by widespread lymphocytic infiltration, fibrosis and parenchymal atrophy with oxyphilic changes. It is a painless goiter and there are no early symptoms.[26]

In our study, non- neoplastic lesions 122 cases (82.43.6%) predominated over neoplastic 26 (17.57 %) cases. This finding was similar to studies conducted by Ghartimagar et al who reported 246 (71.3%) cases of non-neoplastic lesions, and 99 (28.69%) cases of neoplastic lesions. Also study conducted by Gupta et al showed similar results with 72 non-neoplastic and 28 neoplastic lesions.

## CONCLUSION

Colloid goitre was the most common non-neoplastic thyroid lesion while papillary carcinoma thyroid was the most commonly encountered neoplastic lesion. A female predominance was noted in all the thyroid lesions with most of them occurring in an age group of 21-40 years. Uncommon lesions like anaplastic carcinoma were also noted.

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