

Original Research

Histopathological study of neoplastic lesions of thyroid in a tertiary care centre

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ABSTRACT:

Aim: Histopathological study of neoplastic lesions of thyroid in a tertiary care centre. **Methods:** The Department of Pathology conducted this retrospective analysis. Thyroidectomy specimens from lobectomy, partial thyroidectomy, subtotal thyroidectomy, and complete thyroidectomy were used in this investigation. FNAC evaluated each patient before to surgery. Histopathological report forms included detailed information on age, gender, clinical data (hypothyroid, hyperthyroid, and euthyroid), pertinent investigations such as Fine Needle Aspiration Cytology, USG reports, thyroid scan, and operation. **Results:** The total number of thyroid specimens received was 140. Neoplastic lesions, mostly adenomas and carcinomas, were detected in 120 instances (85.71 percent) of thyroidectomy specimens. There were 95 (79.17 percent) female cases and 25 (20.83 percent) male cases, for a female:male ratio of 3.8:1. Adenomas were found in 33 of the 120 neoplastic tumours (27.5 percent of the neoplastic category). There were 26 instances of follicular adenoma and 7 cases of Hurthle cell adenoma identified, accounting for 17.5 percent and 5.83 percent of all neoplastic thyroid lesions, respectively. Thyroid cancer accounted for 71.67 percent of all neoplastic lesions. Papillary carcinoma was the most prevalent malignant tumour in this research, accounting for 70% (81.39%) of all malignant tumours. This investigation found 10 instances of follicular carcinoma and 6 cases of medullary carcinoma, accounting for 6.67 percent and 3.33 percent of all malignant neoplasms, respectively. **Conclusion:** females accounted for 79.17 percent of patients with neoplastic thyroid lesions, and the frequency increased with age. Papillary carcinoma was the most prevalent kind of thyroid cancer, accounting for 58.33% of all thyroid malignancies, whereas follicular adenoma was the most common benign tumour.

Keywords: Thyroid cancer, neoplastic lesions

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INTRODUCTION

The thyroid gland is an essential organ that serves significant physiological tasks in the body. The thyroid gland is in charge of maintaining homeostasis and bodily integrity. ¹ Thyroid problems are frequent endocrine illnesses found internationally, and their prevalence varies by geographical area. Thyroid illnesses appear as thyroid gland enlargement (goitres) or changes in its hormone levels, or both. ² Thyroid problems are the most frequent endocrine illnesses in India. ³ Thyroid problems impact 42 million persons in India. ⁴ Thyroid nodules are clinically visible in 4-5 percent of the population. ⁵ The vast majority of thyroid swellings are benign. Only around 5% of them are cancerous. ⁶ First screening techniques for thyroid lesions include an ultrasonogram, a thyroid function test, FNAC, and a

radio nucleotide scan, with FNAC regarded as the best initial diagnostic procedure. Thyroid developmental, inflammatory, hyperplastic, and neoplastic illnesses are widespread in clinical practise globally. ⁷ Goitre may be caused by biosynthetic abnormalities, autoimmune disorders, or nodular diseases. This research aims to determine the prevalence of different thyroid lesions in thyroidectomy specimens and classify them as neoplastic or non-neoplastic.

METHODS AND MATERIALS

After receiving clearance from the protocol review committee and the institutional ethics committee, this retrospective investigation was carried out in the Department of Pathology. Thyroidectomy specimens from lobectomy, partial thyroidectomy, subtotal

thyroidectomy, and complete thyroidectomy were used in this investigation. Clinico-radiological results, cytology, and other pertinent laboratory studies were used to make the decision to operate on the patient. FNAC evaluated each patient before to surgery. Some of the patients got thyroid scanning and thyroid gland ultrasonography. Histopathological report forms included detailed information on age, gender, clinical data (hypothyroid, hyperthyroid, and euthyroid), pertinent investigations such as Fine Needle Aspiration Cytology, USG reports, thyroid scan, and operation results. The gross characteristics of the specimen obtained were documented. Following the preparation of the tissue, routine staining with hematoxylin and eosin (H&E) stain was performed. Histopathology slides were collected from the repository and evaluated for the retrospective analysis. According to the WHO histological classification of thyroid tumours, thyroid illnesses were classed as non-neoplastic and neoplastic lesions, which were further sub-classified as benign and malignant.

STATISTICAL INVESTIGATION

The data was then processed and displayed in a tabular format using Microsoft Office 2009.

RESULTS

A total of 140 thyroid specimens were obtained. Neoplastic lesions, mostly adenomas and carcinomas, were detected in 120 instances (85.71 percent) of thyroidectomy specimens. There were 95 (79.17 percent) female cases and 25 (20.83 percent) male cases, for a female:male ratio of 3.8:1. Adenomas were found in 33 of the 120 neoplastic tumours (27.5

percent of the neoplastic category). There were 26 instances of follicular adenoma and 7 cases of Hurthle cell adenoma identified, accounting for 17.5 percent and 5.83 percent of all neoplastic thyroid lesions, respectively (Table 1). The age of the benign thyroid neoplastic lesions analysed varied from 12 to 68 years, with a mean age of 38.14 years, and the relative peak age of incidence was noted in the 25-35 year age group (28.33 percent). The young age group (25 years) and the senior age group (over 65 years) accounted for 8.33% and 6.67% of cases, respectively. In this investigation, one 36-year-old patient was diagnosed with a well-differentiated tumour of unclear malignant potential (WDT-UMP) because to suspicious nuclear characteristics but no capsular invasion. Malignant thyroid lesions made up 71.67 percent of all neoplastic lesions (n=86). The age range of the examined malignant thyroid neoplastic cases spanned from 12 to 70 years, with the relative peak age of incidence in the age group of 25-35 years, followed by the second greatest peak in the age group of 35-45 years. (Table 2). Papillary carcinoma was the most prevalent malignant tumour in this research, accounting for 70% (81.39%) of all malignant tumours. There were 12 (17.14 percent) men and 58 (82.86 percent) females in these instances, for a female:male ratio of 4.83:1. The majority of the patients (n=22; 31.43 percent) were between the ages of 25 and 35. This investigation found 10 instances of follicular carcinoma and 6 cases of medullary carcinoma, accounting for 6.67 percent and 3.33 percent of all malignant neoplasms, respectively. In our analysis, no cases of anaplastic cancer were found.

Table-1: Gender distribution as per histologic type

| Histologic type | Gender | | Total |
|----------------------|--------|------|-------|
| | Female | Male | |
| Follicular Adenoma | 20 | 6 | 26 |
| Hurthle cell Adenoma | 6 | 1 | 7 |
| Papillary Ca | 58 | 12 | 70 |
| Follicular Ca | 6 | 4 | 10 |
| Medullary Ca | 4 | 2 | 6 |
| WDT-UMP | 1 | 0 | 1 |
| Total | 95 | 25 | 120 |

Table-2: Age distribution of patients with neoplastic thyroid lesions

| Age (in years) | Benign | | Malignant | | | WDT-UMP | Total (%) |
|----------------|--------------------|----------------------|---------------------|----------------------|---------------------|---------|-----------|
| | Follicular Adenoma | Hurthle cell Adenoma | Papillary Carcinoma | Follicular Carcinoma | Medullary Carcinoma | | |
| Below 25 | 1 | 1 | 7 | 1 | - | - | 10 |
| 25-35 | 7 | 2 | 22 | 1 | 2 | - | 34 |
| 35-45 | 7 | 1 | 17 | 3 | 2 | 1 | 31 |
| 45-55 | 6 | 2 | 13 | 1 | 1 | - | 23 |
| 55-65 | 2 | 1 | 7 | 3 | 1 | - | 14 |
| Above 65 | 3 | - | 4 | 1 | - | - | 8 |
| Total | 26 | 7 | 70 | 10 | 6 | 1 | 120 |

DISCUSSION

Thyroid diseases, both neoplastic and non-neoplastic, are common all over the world, with varying frequency and incidence depending on iodine deficiency status.² Thyroid disease affects approximately 42 million people in India. Thyroid diseases are important because the majority of them can be managed medically or surgically.⁹ Thyroidectomy is now a routine procedure as a result of safe anaesthesia, antiseptics, fine surgical instruments, and the development of new techniques, and it offers many patients the chance of cure.¹⁰ Thyroidectomy specimens made up 1.67 percent of all surgical pathology specimens received in our department during our study. Thyroid specimens made up 1.5 percent of all histopathological specimens in the research, according to Abdulla et al (2006).¹¹ Thyroid illnesses have historically been shown to have a female predominance due to the presence of oestrogen receptors in thyroid tissue.¹² There were 95 (79.17 percent) female cases and 25 (20.83 percent) male cases, for a female:male ratio of 3.8:1. Similar findings have been reported by Ashwini et al. (2014), Gupta A et al. (2016), Salama et al. (2009), Fahim et al. (2012), and Mandal S, et al.¹³⁻¹⁷.

Patients in our research varied in age from 12-68 years for benign neoplasms, with a mean age of 38.14 years, to 12-72 years for malignant neoplasms, with a mean age of 42.3 years. Darwish et al. (2006) found similar findings in a research where the age range for malignant lesions was 21-82 years and 20-69 years for adenomas.¹¹ Singh P et al. (2000) performed a research with 108 patients ranging in age from 12 to 80 years, with a mean age of 47 years.¹⁸ Fahim et al. (2012) and Veyseller et al. (2012) discovered similar findings (2009).^{16,19} The highest age of incidence in our research was 25-35 years for benign neoplasms and 25-35 years for malignant neoplasms, which is consistent with the findings of Gupta A et al (2016), who reported the peak age for thyroid illnesses to be 21-40 years.¹⁴ According to Islam et al. (2009), the majority of the patients were between the ages of 21 and 40.²⁰

Within the neoplastic group, malignant lesions outnumbered benign adenomas in our analysis. Our results are comparable to those of Abdulkader et al. (2014), who reported 81 neoplastic cases, 88.8 percent of which were malignant.²¹ Papillary carcinoma was the most prevalent malignant tumour in this research, accounting for 70% (81.39%) of all malignant tumours. This discovery was consistent with the findings of Chukudebelu et al. (2012), Abdulkader et al. (2014), and Gupta A et al. (2015). (2016).^{14,21,22} Our findings are consistent with worldwide distant and current statistics on the pattern and incidence of thyroid neoplasms, particularly the preponderance of papillary carcinoma. Our observation of an increasing trend in papillary carcinoma diagnosis among malignant thyroid

tumours is similar with Yang et al. (2013), Yildiz et al. (2014), and Amphlett et al. (2014). (2013).²³⁻²⁵

Follicular adenoma was the most prevalent benign thyroid tumour in our analysis, accounting for 77.78 percent of benign neoplasms, which is consistent with Ariyibi et al. (2013), who observed follicular adenomas in 89.5 percent of cases.²⁶

CONCLUSION

In conclusion, females accounted for 79.17 percent of patients with neoplastic thyroid lesions, and the frequency increased with age. Papillary carcinoma was the most prevalent kind of thyroid cancer, accounting for 58.33% of all thyroid malignancies, whereas follicular adenoma was the most common benign tumour.

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