

Histopathological Study of Thyroid Neoplastic Lesions in a Tertiary Care Hospital - A 5 Year Study

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ABSTRACT

Introduction: Diseases of the thyroid gland are common and comprise a spectrum of entities causing systemic disease or a localized abnormality in the thyroid gland such as nodular enlargement or a tumor mass. Thyroid cancer is a relatively rare malignancy, but it is the commonest endocrine cancer accounting for 92% of all endocrine malignancies. The aim of this study was to describe the pattern of thyroid malignancies in thyroidectomy specimens.

Material and Methods: This study was done in the Postgraduate Department of Pathology, Government Medical College, Srinagar and its associated hospitals over a period of five years from January 2013 to February 2018. The study was partly retrospective from Jan 2013 to July 2016 and partly prospective from August 2016 to Feb 2018. The thyroid diseases were classified on histological grounds into non-neoplastic and neoplastic lesions that were further sub-classified as benign and malignant as per the WHO histological classification of thyroid tumors.

Results: A total of 282 thyroid specimens were received during this study period. Neoplastic lesions were found in 204 cases (72.34%). 78.92% cases were females and 21.08% cases were males with a female: male ratio of 3.75:1. Out of 204 neoplastic lesions, 55 cases were benign accounting for 26.96% of neoplastic lesions. The age of the studied benign thyroid neoplastic lesions ranged from 9 years to 65 years with a mean age 38.11 years and the relative peak age of incidence was seen in 40-49 years age group (29.09%). Malignant thyroid lesions accounted for 72.55% (n=148) of all neoplastic lesions. The age of the studied malignant thyroid neoplastic lesions ranged from 9 years to 74 years with relative peak age of incidence between 20-29 years of age followed by 30-39 years age group. One case was diagnosed as well differentiated tumor of unknown malignant potential (WDT-UMP). Papillary carcinoma was the commonest malignant tumor seen in 85.14% (n=126) of all malignant lesions. Follicular adenoma was most common benign neoplasm.

Conclusion: Papillary carcinoma was the commonest malignant lesion while as follicular adenoma was the commonest benign adenoma.

Keywords: Thyroid, Follicular Adenoma; Papillary Carcinoma

depending upon iodine deficiency status.² There is enormous burden of thyroid diseases in the general population. Among all the endocrine disorders, thyroid disorders are the most common in India.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 localized abnormality in the thyroid gland such as nodular enlargement (goiter) or a tumor mass.⁴

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 cancer followed by follicular, medullary, anaplastic carcinoma and lymphoma.⁵ The diseases present clinically either as conditions associated with hyperthyroidism/hypothyroidism or as mass lesions. Surgical excision and histopathological evaluation are crucial to establish the diagnosis in the latter scenario. The objective of this study was to determine the spectrum of histopathological diagnoses encountered in patients undergoing thyroid surgeries.

MATERIAL AND METHODS

This study was done in the Postgraduate department of Pathology, Government Medical College, Srinagar and its associated hospitals over a period of five years from January 2013 to February 2018. The study was partly retrospective from Jan 2013 to July 2016 and partly prospective from August 2016 to Feb 2018. The material for this study consisted of thyroidectomy specimens including lobectomy, partial thyroidectomy, subtotal thyroidectomy and total thyroidectomy. The decision to operate on the patient was based on clinico-radiological findings, cytology and other relevant laboratory investigations. Every patient was preoperatively assessed by FNAC. Some of the patients had

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INTRODUCTION

Thyroid gland is one of the important organs, which plays wide and vital physiological roles in the body. The thyroid hormones affect all body organs and are responsible for maintenance of homeostasis and the body integrity.¹ Thyroid diseases are quite common. The incidence of thyroid diseases varies from one geographical region to another, mainly

Histologic type	Gender		Total
	Female	Male	
Follicular Adenoma	34	9	43
Hurthle cell Adenoma	11	1	12
Papillary Ca	102	24	126
Follicular Ca	8	6	14
Medullary Ca	5	3	08
WDT-UMP	1	0	01
Total	161	43	204

Table-1: Gender distribution as per histologic type

Age (in years)	Benign		Malignant		WDT-UMP	Total (%)
	Follicular Adenoma	Hurthle cell Adenoma	Papillary Carcinoma	Follicular Carcinoma		
<19	03	2	12	1	-	18(08.82)
20-29	11	3	38	2	2	56(27.45)
30-39	12	2	32	3	2	52(25.49)
40-49	12	4	21	1	3	41(20.10)
50-59	01	1	15	5	1	23(11.27)
60-69	04	-	05	2	-	11(05.39)
70-79	-	-	03	-	-	03(01.47)
Total	43	12	126	14	8	204(100)

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

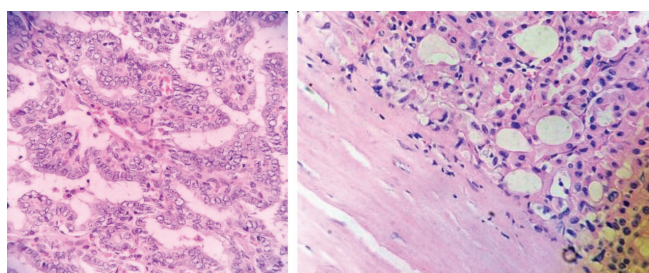


Figure-1: Microscopy of Papillary Carcinoma thyroid (400x); **Figure-2:** Microscopy of Follicular Adenoma (100x)

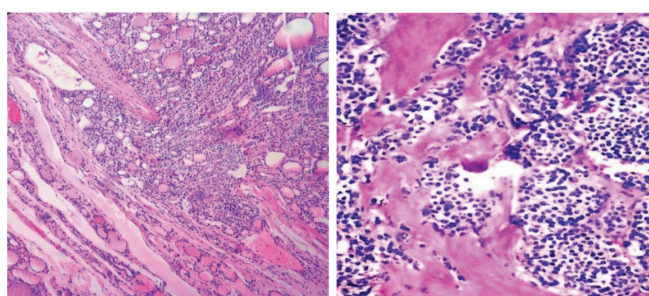


Figure-3: Microscopy of Follicular carcinoma (100x); **Figure-4:** Microscopy of Medullary carcinoma (100x)

undergone thyroid scanning and ultrasonography of thyroid gland. Detailed information regarding age, gender, clinical details(hypothyroid, hyperthyroid and euthyroid), relevant investigations like Fine Needle Aspiration Cytology, USG reports, thyroid scan and operative findings were obtained from histopathological report forms. Gross features of the specimen received were recorded. Representative tissue was taken and after processing the tissue, routine staining was carried out with hematoxylin and eosin (H&E) stain. For retrospective study the histopathology slides were retrieved from the archive and reviewed.

The thyroid diseases were classified on histological grounds into non-neoplastic and neoplastic lesions that were further sub-classified as benign and malignant as per the WHO histological classification of thyroid tumors.

STATISTICAL ANALYSIS

The data was subsequently analyzed and presented in a tabulated form with the help of Microsoft office 2007.

RESULTS

A total of 282 thyroid specimens were received over a period of five years, representing 1.21% of all the cases seen at the pathology department of Government Medical College, Srinagar. Neoplastic lesions were found in 204 cases (72.34%) of thyroidectomy specimens and were mainly adenomas and carcinomas. 78.92% cases were found to be females and 21.08% cases were males with a female: male ratio of 3.75:1. Among total of 204 neoplastic lesions, 55 cases were adenomas (26.96% of the neoplastic category) with a female: male ratio of 4.5:1. 43 cases of follicular adenoma and 12 cases of Hurthle cell adenoma were diagnosed accounting for 21.08% and 5.88% respectively of all neoplastic thyroid lesions (Table 1). The age of the studied benign thyroid neoplastic lesions ranged from 9 years to 65 years with a mean age of 38.11 years and the relative peak age of incidence was seen in 40-49 years age group (29.09%). The young age group (≤ 20 years) and the elderly age group above 60 years constituted 9.09% and 7.27% of cases respectively. In this study one patient of 35 years age was diagnosed as having Well-differentiated tumor of uncertain malignant potential (WDT-UMP) as there were suspicious nuclear features seen, with no capsular invasion. Malignant thyroid lesions accounted for 72.55% (n=148) of all neoplastic lesions. The age of the studied malignant

thyroid neoplastic cases ranged from 9 years to 74 years with relative peak age of incidence in the age group of 20-29 years followed by 2nd highest peak in 30-39 years age group. The female-male ratio for malignant thyroid lesion was 3.5:1 (Table 2). Papillary carcinoma was the commonest malignant tumor in this study seen in 85.14% (n=126) of all malignant lesions. Of these cases, 24 (19.04%) were males and 102 (80.95%) were females with a female: male ratio 4.25:1. Most of the patients (n=38; 30.16%) were between 20-29 years of age. 14 cases of follicular carcinoma and 08 cases of medullary carcinoma were encountered in this study, comprising of 09.45% and 05.40% of all malignant neoplasms respectively. No case of anaplastic carcinoma were seen in our study.

DISCUSSION

This study was conducted in the department of Pathology, Government Medical College Srinagar. For this study, 282 thyroid specimens were studied by detailed history and histopathological examinations.

Both the neoplastic and non-neoplastic diseases of thyroid are common all over the world, with a varying frequency and incidences depending upon iodine deficiency status.² In India about 42 million people suffer from thyroid diseases.⁶ Diseases of the thyroid are of great importance as most can be controlled by medical or surgical management.⁷ Thyroidectomy, presently, has become a routine procedure as a result of safe anesthesia, antiseptics, fine surgical instruments, developments of new techniques and is offering the chances of cure to many patients.⁸

In our study thyroidectomy specimens constituted 1.21% of all the surgical pathology specimens received in our department. Abdulla et al (2006) also found that thyroid specimens constituted 1.5% of all histopathology specimens in their study.⁹ Historically thyroid diseases have been found to have a female preponderance owing to the presence of estrogen receptors in the thyroid tissue.¹⁰ There were 78.92% female cases and 21.08% male cases in our study with a female: male ratio of 3.75:1. Similar results have been found in the studies conducted by Ashwini et al (2014), Gupta A et al (2016), Salama et al. (2009), Fahim et al(2012) and Mandal S, et al.¹¹⁻¹⁵

In our study the age of patients ranged from 9-65 years in benign neoplasms with a mean age of 38.11 years and 9-74 years in malignant neoplasms with mean of 40.2 years. Similar results were found by a study conducted by Darwish et al. (2006), where the age range was 21-82 years in malignant lesions and 20-69 in adenomas.⁹ In the study conducted by Singh P et al. (2000), of 108 cases age range was 12-80 years, mean age was 47 years.¹⁶ Similar results were found by Fahim et al. (2012) and Veyseller et al. (2009).^{14,17} The peak age of incidence in our study was 40-49 years age group for benign neoplasms and 20-29 years age group for malignant neoplasms which is in accordance with the study of Gupta A et al (2016) who found 21-40 years age group as the peak age for thyroid diseases.¹² Islam et al. (2009), showed the majority of the patients were within 21-

40 years of age.¹⁸

In our study, malignant lesions predominated over benign adenomas within the neoplastic category. Our findings in this regard are similar to the study of Abdulkader et al. (2014) who reported 81 neoplastic cases, among which 88.8% were malignant.¹⁹ Papillary carcinoma was the most common malignant thyroid lesion and constituted 85.14% of the malignant lesions in our study. This observation was in accordance with the study of Chukudebelu et al. (2012), Abdulkader et al. (2014) and Gupta A et al (2016).^{12,19,20} Our results are consistent with the international remote and recent data regarding the pattern and frequency of neoplastic diseases of thyroid, including the predominance of papillary carcinoma. Our finding regarding increased trend of papillary carcinoma diagnosis among malignant thyroid tumors is also consistent with that of Yang et al. (2013), Yildiz et al. (2014) and Amphlett et al. (2013).²¹⁻²³

Follicular adenoma was the commonest benign thyroid neoplasms in our study accounting for 78.18% of benign neoplasms which is in accordance with Ariyibi et al. (2013) who found 89.5% cases to be follicular adenomas.²⁴

CONCLUSION

Thus in conclusion, females accounted for 78.92% of patients with neoplastic thyroid lesions and the incidence peaked at a younger age. Papillary carcinoma was the most frequent thyroid cancer accounting for 85.14% of thyroid cancers and follicular adenoma was the common benign tumor. There appears to be a slightly increased trend of papillary carcinoma diagnosis. The main indication of surgery was a suspicious thyroid nodule.

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