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Pathology

Histopathological Spectrum of Thyroid Lesions in a Tertiary Care Hospital

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Abstract | **Original Research Article**

Background: Thyroid gland has been subject of intense research and considerable attention due to the vast array of developmental, inflammatory, hyperplastic, immunologic and neoplastic disorders which affect the gland. Disorders of thyroid comprise a group of commonly encountered endocrinological disease. ***Objective:*** To study the hisopathological spectrum of thyroid lesions and their relationship with age and sex over a 2 year period. ***Material and methods:*** All thyroidectomy specimens (n=59) received in histopathology section of the Department of Histopathology, Krishna Institute of Medical Sciences, Karad from June 2016 to May 2018 were included. ***Results:*** In this study, a total of 59 thyroidectomy specimens were studied. There was a clear female preponderance noted with a ratio of female to male as 4.9:1 and maximum number of cases were in 4th decade (18/59,30.51%) of age. Hemithyroidectomy was the most commonly performed surgery i.e. in 32/59 cases (54.24%).Non-neoplastic lesions constituted 33/59 cases (55.93%) and Neoplastic lesions constituted 26/59 (44.07%).The most common non-neoplastic lesion was Nodular Colloid Goiter (28/59 cases, 47.46 %)., Maximum number of cases of Nodular colloid Goiter were observed in the age group of 41- 50 yrs and had female preponderance of 3:1. Among benign neoplasms, the common was Follicular adenoma accounting for 13/14 cases (92.86%).Among Malignant neoplasms (n=12), the most common was papillary carcinoma accounting for 05/12 cases (41.67 %). ***Conclusion:*** Results from this study showed that variety of thyroid lesions are observed in thyroidectomy specimens. Most common lesion observed was nodular colloid goiter followed by follicular adenoma. Papillary carcinoma was the most frequent thyroid malignancy seen. Thyroid lesions are more common in females. The ultimate answer often rests with histopathological examination of thyroidectomies, which forms the mainstay for a definitive diagnosis.

Keywords: Thyroidectomies, Non-neoplastic, Neoplastic, thyroid lesions, Nodular colloid goiter.

INTRODUCTION

Disorders of thyroid comprise a group of commonly encountered endocrinological disease. It is most prevalent in the mountainous areas but also occurs in non-mountainous areas remote from sea. The incidence and prevalence of these thyroid diseases in the given community are variable depending on various factors [1].

Interdisciplinary cooperation amongst endocrinologists, surgeons, radiologists, cytopathologists, and surgical pathologists is required to find solutions [2]. The trend towards individualized treatment has increased the importance of histopathological findings. Histopathological examination plays a major role in making a correct and accurate diagnosis of various lesions of thyroid, which has profound impact on the further management of the patient [3]. So, the present study was undertaken to study the spectrum of thyroid lesions in thyroidectomy specimens and their relationship with age and sex in the department of pathology, Krishna Institute of Medical Sciences, Karad.

Objectives

To study the hisopathological spectrum of thyroid lesions and their relationship with age and sex over a 2 year period

MATERIALS AND METHODS

The present study is a two year cross sectional study, carried out in the Department of Pathology in Krishna Institute of Medical Sciences, Karad (India). This includes all thyroidectomy specimens received in histopathology section of the Department of Pathology from June 2016 to May 2018. A detailed clinical history of symptoms and signs were taken and noted. Review of the reports of ultrasonography, thyroid function test

and fine needle aspiration was done. The thyroid lesions were classified on histological grounds into: Non-neoplatic lesions i.e, Nodular Colloid Goiter (including colloid and adenomatous goiter), Hashimoto's thyroiditis and lymphocytic thyroiditis; Neoplastic lesions were classified according WHO classification 2004.

RESULTS

During the study period of two years (June 2016 to May2018), total of 59 thyroidectomy specimens were received in the histopathology section of Department of Pathology in tertiary care hospital. Of these, Hemithyroidectomy specimens were maximum and accounted for 32 out of 59 cases (54.24%).

Table-1: Age and sex wise distribution of total cases studied

Age group (years)	Sex(n=59)		Percentage of male patients (%)	Percentage of female patients (%)
	M	F		
11-20	0	1	0.0	1.69
21-30	0	7	0.0	11.86
31-40	3	15	5.08	25.42
41-50	3	12	5.08	20.34
51-60	3	6	5.08	10.17
61-70	1	7	1.69	11.86
71-80	0	1	0.0	1.69
Total	10	49	16.95	83.05

Maximum number of patients (18/59, 30. 51%) belonged to the age group of 31-40 years followed by 41-50 years (15/59, 25. 43%).Mean age of the cases in this study was 46 years. The oldest patient was 74 years, and the youngest was 19 years of age. There was female preponderance noted in the present study with ratio of F: M as (4.9): (1).Out of total 59 thyroidectomy cases, 49 (83.05%) were female and 10 (16.95%) were male.

Table-2: Distribution of non-neoplastic and neoplastic lesions

Category	No. of Cases	Percentage (%)
Non-Neoplastic	33	55.93
Neoplastic-Benign	14	23.73
Neoplastic-Malignant	12	20.34
TOTAL	59	100

Cases that showed Non-neoplastic lesions constituted 33/59 cases (55.93%) and Neoplastic lesions constituted 26/59(44.10%) cases. Benign neoplasms accounted for14/59cases (23.73%) of all cases studied. Malignant lesions accounted for12/59 cases (20.34%).

Table-3: Spectrum of histopathological diagnosis given in all the thyroidectomy specimens studied

Histopathology diagnosis	Number of cases	Percentage (%)
Nodular Colloid Goiter	28	47.46
Lymphocytic Thyroiditis	01	1.69
Hashimoto's Thyroiditis	04	6.78
Follicular Adenoma	13	22.05
Hurthle Cell Adenoma	01	1.69
Papillary Carcinoma	05	8.47
Follicular Carcinoma	04	6.78
Medullary Carcinoma	01	1.69
Non-Hodgkin's Lymphoma	02	3.39
Total	59	100

Nodular Colloid Goiter was the most common (28/59, 47.46%) histopathological diagnosis followed by Follicular Adenoma (13/59, 22.05%).There were 12 /59 (20.34%) patients of malignant neoplasms of thyroid.

Table-4: Distribution of cases according to Histopathological diagnosis and age & sex – Non-neoplastic lesions

Agegroups in years	11-20		21-30		31-40		41-50		51-60		61-70		71-80		Total		Total Cases
Histologic Type	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Nodular Goiter	0	0	0	2	2	5	2	6	1	5	0	5	0	0	5	23	28
Hashimoto's thyroiditis	0	0	0	0	1	2	0	1	0	0	0	0	0	0	1	03	04
Lymphocytic thyroiditis	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	01	01

Table-5: Distribution of cases according to Histopathological diagnosis and age &sex- Neoplastic lesions (Benign)

Ageinyears	11-20		21-30		31-40		41-50		51-60		61-70		71-80		Total		Total Cases
Histologictype	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Follicular Adenoma	0	1	0	4	0	5	1	2	0	0	0	0	0	0	1	12	13
Hurthle cell adenoma	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1

Table-6: Distribution of cases according to Histopathological diagnosis and age & sex- Neoplastic lesions- (Malignant)

Age in years	11-20		21-30		31-40		41-50		51-60		61-70		71-80		Total		Total cases
Histologictype	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Papillary Ca.	0	0	0	0	0	2	0	1	2	0	0	0	0	0	2	3	5
Follicular Ca.	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	4	4
Medullary Ca.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1
Non-Hodgkin's Lymphoma	0	0	0	0	0	0	0	1	0	0	0		0	1	0	2	2

DISCUSSION

This study was conducted in the Department of Pathology in Krishna institute of medical sciences, karad from June 2016 to May 2018. During the study period 59 thyroidectomy specimens were studied.

In the present study, peak age of presentation was 31-40 years which was concordant with studies done by Golder *et al*. [4], Solomon *et al*. [5], Monika M *et al*. [6] and Halbhavi SN *et al*. [7]. In our study, the youngest patient was 19 years old and the eldest patient was 74 years old.In the present study, female to male ratio was 4.9:1 which was similar to the studies done by Gole *et al*. [8], Solomon *et al*. [5] and Monika M *et al*. [6].

Table-7: Comparison of histomorphologic types and age wise distribution of cases with other studies – Non-Neoplastic Lesions

Study / Histopathology Diagnosis	Tsegaye *et al*.[1]	Sherine *et al*. [9]	Magdalene *et al*. [10]	Present study (2018)
Nodular Colloid Goiter	30-39 yrs	31-50 yrs	41-50 yrs	41-50 yrs
Hashimoto's Thyroiditis	30-39 yrs	31-50 yrs	41-50 yrs	31-40 yrs
Lymphocytic Thyroiditis	30-39 yrs	31-50 yrs	21-55 yrs	31-40 yrs

In this study, maximum number of cases of Nodular colloid Goiter was observed in the age group of 41- 50 yrs and had female preponderance of 3:1. This was in concordance with the studies done by Tsegaye *et al*. [1], Sherine *et al*. [9] and Magdalene *et al*. [10].

Table-8: Comparison of histomorphologic types and age distribution of Benign-Neoplasms in this study with other studies

Study Histopathology Diagnosis	Darwish *et al*. [11]	Solomon *et al.* [5]	Monika M *et al*. [6]	Present Study (2018)
Follicular adenoma	20-49 yrs	30-39 yrs	21-50 yrs	31-40 yrs
Hurthle cell adenoma	20-49 yrs	30-39 yrs	21-50 yrs	21-30 yrs

Maximum number of cases of follicular adenoma were seen in the age group 31- 40 years in the present study. Out of 13 cases of Follicular Adenoma, 12 were females and only one was a male. In this study there was female preponderance in Follicular Adenoma which was also reported by Darwish *et al*. [11], Solomon *et al.* [5] and Monika M *et al*. [5].There was a single case reported of Hurthle cell adenoma in this study and patient was a 27 years old female. Similar finding was observed in the study done by Monika M *et al*. [4].

Malignant Neoplasms of thyroid

Comparison of: Histomorphologic types and age-gender wise distribution of Malignant Neoplasms in the present study with those of other studies**.**

Papillary Carcinoma

Papillary carcinoma was the most common malignant neoplasm noted in this study, comprising of 5/12 cases (41.67 %) of thyroid malignancies. Similar findings were observed in the studies done by Khadilkar UN *et al*. [12] {61.9%}, Solomon *et al.* [5] {53%}, and Padmavathi *et al.* [13] {58%}.In the present study, the youngest patient having papillary carcinoma was 34 years old female. Among 5 cases of Papillary carcinoma, 3 cases (all were female) in the age group <50 yrs and other 2 cases (both male) were seen in > 50 yrs. Hence, in this study, females presented with papillary thyroid carcinoma at relatively younger age compared to the male gender. Similar findings were also noted by Tsegaye *et al*. [1]. In the present study, female to male ratio was 1.5:1, indicating a slight female preponderance. These findings were also reported by De lellis MA *et al*. [14] and Monika *et al*. [6]. But De Lellis MA *et al.* showed a slightly higher female to male ratio (4.5:1).

Follicular Carcinoma

In the present study, all four cases (100%) of follicular carcinoma were seen in female patients. All the patients of follicular carcinoma in this study belonged to 40-60 yrs age group which was similar to studies done by De lellis MA *et al.* [14], Solomon *et al.* [5] and Parameswaran R *et al*. [15].

Non- Hodgkin's Lymphoma

In the present study, Non-Hodgkin's lymphoma was reported in 2 cases, both were female patients, one was aged 43 yrs and the other 74 yrs. This female preponderance was also reported by Stein SA *et al*. [16]. Though Non-Hodgkin's Lymphoma of thyroid occurs commonly in the older age group. In the present study, there was one case of Non-Hodgkin's Lymphoma thyroid presenting in the 4th decade.

Medullary Carcinoma

Age of patient of medullary carcinoma was 65 years and was a male patient. However, in the studies of De Lellis *et al*. [14] and Monika M *et al*. [6], the mean age of presentation was 50 years.

CONCLUSION

Results from this study showed that variety of thyroid lesions are observed in thyroidectomy specimens. Most common lesion observed was nodular colloid goiter followed by follicular adenoma. Papillary carcinoma was the most frequent thyroid malignancy seen. Thyroid lesions are more common in females. The ultimate answer often rests with histopathological examination of thyroidectomies, which forms the mainstay for a definitive diagnosis.

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