Section: Pathology

Original Research Article

THE STUDY OF HISTOMORPHOLOGICAL SPECTRUM OF THYROIDECTOMY SPECIMENS AT A TERTIARY CARE CENTRE

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Abstract

Background: Thyroid gland lesions are common and have a wide spectrum of entities and are the most common endocrine disorders encountered globally. The lesions range from functional to immune mediated to neoplastic. Histopathological study of the thyroidectomy specimens gives definite diagnosis of underlying disease process and helps in the proper management of the patients. The objective is to study the spectrum of thyroid lesions in thyroidectomy specimens. **Materials and Methods:** The present study is a hospital based retrospective study from January 2020 to June (December) 2022 conducted in the Department of Pathology, Koppal Institute of Medical Sciences, Koppal, Karnataka. The 10% formalin fixed thyroidectomy specimens were processed and slides stained with H&E stain were reviewed and analysed. The thyroid diseases are classified into congenital, non-neoplastic and neoplastic lesions which are further sub classified as benign and malignant lesions as per WHO 2022 classification of thyroid tumours. **Result:** A total of 48 cases were studied during the study period. Only one case of thyroglossal cyst was noted in congenital lesions. Overall, multinodular goiter was the most common lesion. Among non-neoplastic lesions multinodular goiter was most common seen in 18 cases (37.50%) and most common neoplastic lesion was papillary carcinoma of thyroid seen in 06 cases (12.50%). **Conclusion:** The thyroid gland can be affected with various disorders. Histopathological examination of thyroidectomy specimens helps in prompt diagnosis, proper management of patients and also helps in predicting prognosis in individual cases.

INTRODUCTION

Thyroid gland plays a very important role in the physiological functioning of the body through secretion of its hormones. Thyroid disorders are the most common endocrine disorders. The general population has an enormous burden of thyroid diseases. Among all the endocrine disorders, thyroid disorders are the most common in India.[1] In India, about 42 million people are affected by thyroid diseases.[2] Thyroid nodule is an abnormal growth of thyroid cells forming a lump within the thyroid gland. Causes for thyroid nodule are multifactorial: dietary iodine deficiency, hilly areas, goitrogens and radiation exposure.[3]

Thyroid lesions are more common in women compared to men.[4] The lesions range from functional to immune mediated to neoplastic. Benign lesions are more common than neoplastic.[5] Along with the clinical history and clinical examination, a set of investigations are needed for better management of the patient which includes biochemical assessment, ultrasonography, fine needle aspiration, radionuclide scanning and finally histopathological examination which is the gold standard method for correct diagnosis of the underlying lesion.[6] This study is done to identify the histopathological spectrum of thyroid gland lesions along with its relation to age, sex and frequency.

Aims and Objectives

To study the spectrum of thyroid lesions in thyroidectomy specimens.

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MATERIALS AND METHODS

The present study is a hospital based retrospective study from January 2020 to December 2022 conducted in the Department of Pathology, Koppal Institute of Medical Sciences, Koppal, Karnataka. The 10% formalin fixed thyroidectomy specimens were processed and slides stained with H&E stain were reviewed and analysed. The thyroid diseases were classified into congenital, non- neoplastic and neoplastic lesions which were further sub classified as benign and malignant lesions as per WHO classification of thyroid tumors.

Inclusion Criteria

All thyroidectomy specimens (i.e lobectomy, subtotal thyroidectomy, near total thyroidectomy or total thyroidectomy) are included in this study.

Exclusion Criteria

- Inadequate and poorly preserved thyroidectomy specimens.
- Improperly fixed specimens.

Statistical Analysis

Data was analyzed using Microsoft Excel and Statistical package for social sciences (SPSS) software.

RESULTS

A total of 48 cases were studied between the age group of 11-80 years. Youngest was 15 years male with thyroglossal cyst and oldest was 75 years old male with colloid goitre. Majority of cases are in the age group of 31-40 years with 23 cases (47.92%) and least in the age groups of 11-20 years and 71-80 years with 01 case (2.08%) each. Females showed preponderance with 41 cases and in males 7 cases were noted. Female: Male = 5.8: 1.

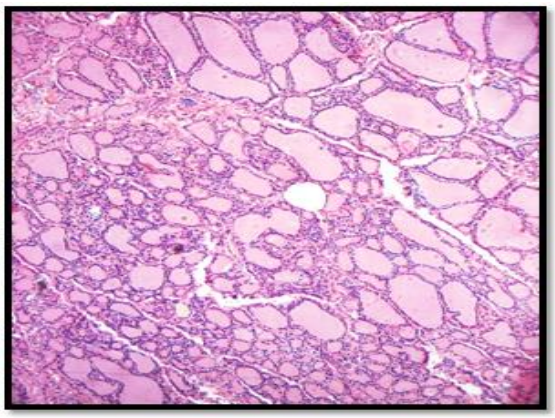

Figure 1: H&E,10X. Varying sized thyroid follicles filled with colloid – Colloid goitre

Out of 48 cases, 34 cases (70.83%) were non neoplastic and 14 cases (29.17%) were neoplastic. Among non-neoplastic lesions most common lesion was multinodular goiter of 18 cases (37.50%) followed by colloid goiter of 13 cases (27.09%). One each case (2.08%) of thyroglossal cyst, lymphocytic thyroiditis and Hashimoto's thyroiditis were also noted. Out of 18 cases (37.50%) of multinodular goiter, 3 cases showed cystic change.

Neoplastic lesions were classified as benign and malignant, a total of 14 cases. Among malignant lesions papillary carcinoma of thyroid was seen in 06 cases (12.50 %) followed by follicular carcinoma of thyroid (2 cases, 4.17%) and medullary carcinoma of thyroid (1 case, 2.08%). Out of 6 cases (12.50 %) of papillary carcinoma of thyroid, 4 cases showed classic variant and in 2 cases follicular variant was noted.

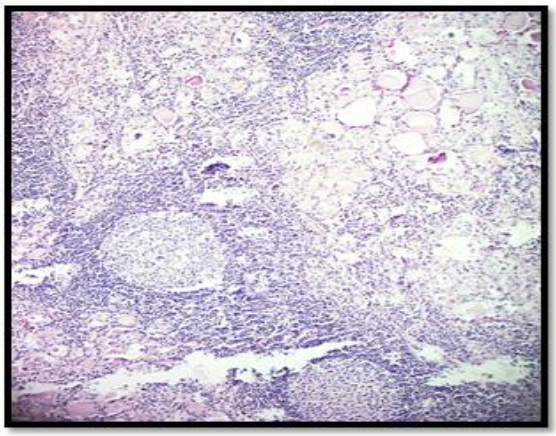

Fig-2. H&E,10X. Thyroid follicles along with lymphocytic infiltration and lymphoid follicles – Hashimoto's thyroiditis

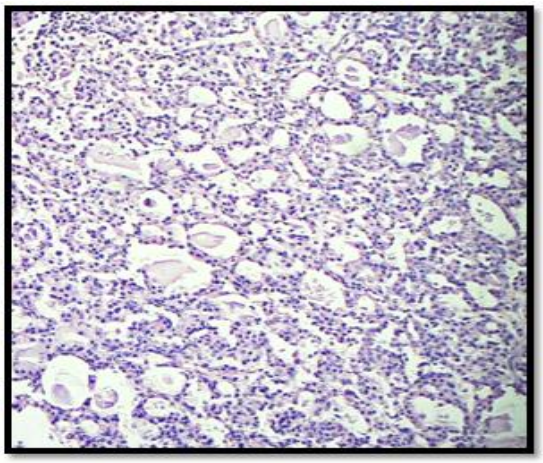

Fig-3.H&E,10X. Mixed micro and normofollicular pattern –Follicular adenoma

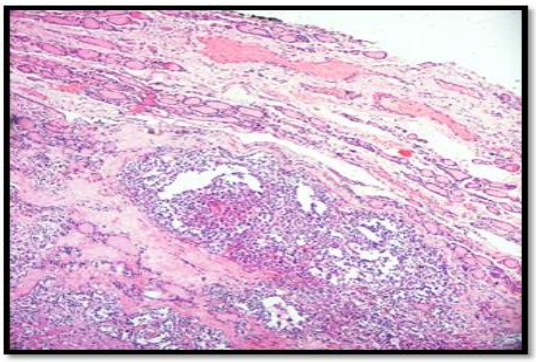

Fig-4.H&E,10X. Thyroid follicles, amyloid, tumour cells with finely stippled chromatin – Medullary carcinoma of thyroid

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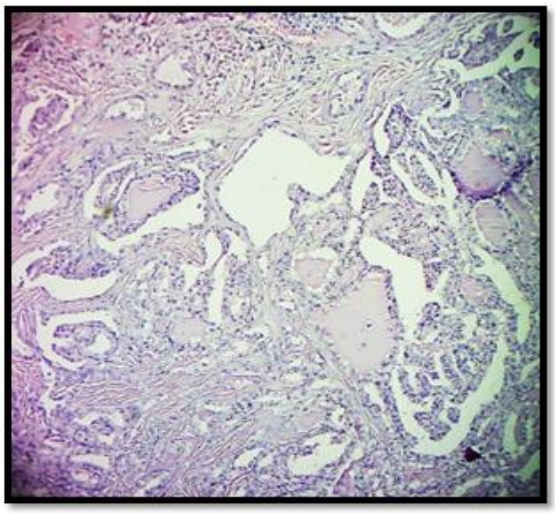

Fig-5: H&E, 10X. Thyroid follicles and papillary structures – Papillary carcinoma of thyroid

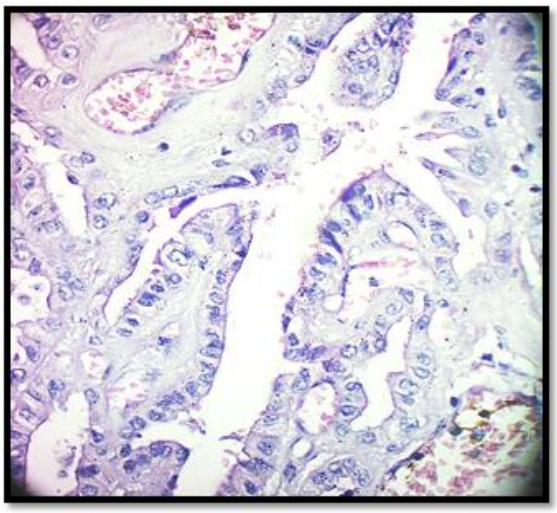

Fig-6.H&E,10X. Papillae showing nuclear grooves and Orphan Annie nuclei - Papillary carcinoma of thyroid

Table 1: Distribution of cases according to age.

Age group	No. Of cases	Percentage (%)
11- 20 years	01	2.08
21-30 years	09	18.76
31-40 years	**23**	**47.92**
41-50 years	07	16.67
51-60 years	04	8.33
61-70 years	02	4.16
71-80 years	01	2.08
Total	48	100

Table 2: Distribution of cases according to lesions.

Sl. No	Type of lesions	No of cases	Percentage (%)
I	Non-neoplastic lesions = 34 cases (70.83%)		
a	Thyroglossal cyst	01	2.08
b	Colloid goitre	13	27.09
c	**Multinodular goitre**	**18**	**37.50**
d	Lymphocytic thyroiditis	01	2.08
e	Hashimoto's thyroiditis	01	2.08
II	Neoplastic lesions = 14 cases (29.17%)		
Benign	**Follicular adenoma**	**05**	**10.42**
Malignant	Follicular carcinoma of thyroid	02	4.17
	Papillary carcinoma of thyroid	**06**	**12.50**
	Medullary carcinoma of thyroid	01	2.08
Total		48	100

Table 3: Distribution of non-neoplastic lesions (34 cases) according to age.

Type of lesion	11-20 years, n (%)	21-30 years, n (%)	31-40 years, n (%)	41-50 years, n (%)	51-60 years, n (%)	61-70 years, n (%)	71-80 years, n (%)	Total, n (%)
Thyroglossal cyst	01(2.08)	00	00	00	00	00	00	01(2.08)
Colloid goitre	00	05(10.42)	05(10.42)	01(2.08)	00	01(2.08)	01(2.08)	13(27.09)
Multinodular goitre	00	02(4.17)	10(20.83)	03(6.25)	02(4.17)	01(2.08)	00	18(37.50)
Lymphocytic thyroiditis	00	00	00	01(2.08)	00	00	00	01(2.08)
Hashimoto's thyroiditis	00	00	00	00	01(2.08)	00	00	01(2.08)
Total	01(2.08)	07(14.58)	15(31.25)	05(10.42)	03(6.25)	02(4.17)	01(2.08)	34(70.83)

Table 4: Distribution of neoplastic lesions (14 cases) according to age.

Type of lesion	11-20 years, n (%)	21-30 years, n (%)	31-40 years, n (%)	41-50 years, n (%)	51-60 years, n (%)	61-70 years, n (%)	71-80 years, n (%)	Total, n (%)
Follicular adenoma	00	02(4.17)	03(6.25)	00	00	00	00	05(10.42)
Follicular carcinoma of thyroid	00	00	01(2.08)	01(2.08)	00	00	00	02(4.17)

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Papillary carcinoma of thyroid	00	00	05(10.42)	01(2.08)	00	00	00	06(12.50)
Medullary carcinoma of thyroid	00	00	00	00	01(2.08)	00	00	01(2.08)
Total	00	02(4.17)	09(18.75)	02(4.17)	01(2.08)	00	00	14(29.17)

DISCUSSION

In our study the most common age group is 31-40 years which is similar to the study conducted by Kanu N et.al,[7] (34%) and Fahim et.al (42.5%).[8]

Female: Male ratio in our study is 5.8:1 which is comparable to the study done by Padmom L et.al (6:1) and Nzegwu MA et.al (6.4:1).[9,10]

In our study non-neoplastic lesions (70.83%) outnumbered neoplastic lesions (29.17%) which is similar to the study conducted by Jagadele K et.al,[11] where non-neoplastic lesions were 71.4% and neoplastic lesions 28.6% respectively.

In the present study the most common lesion is multinodular goiter (37.50%) which is similar to the study conducted by Fatima et.al (42.5%).[12]

Most common non-neoplastic lesion in our study is multinodular goiter (37.50%) which is similar to the study conducted by Fatima et.al (42.5%).[12]

The only benign neoplastic lesion in our study is follicular adenoma (10.42%) which is comparable to the study by Imtiaz AQ et.al (6.2%).[13]

Most common malignant lesion was papillary carcinoma of thyroid (12.5%) in our study which is comparable to the study conducted by Ramesh et.al (15%).[14]

In our study one case of medullary carcinoma of thyroid (2.08%) is noted which is similar to the study by Inder Raj Itagi et.al (2.7%).[15]

CONCLUSION

The thyroid gland can be affected with various disorders. Histopathological examination of thyroidectomy specimens helps in prompt diagnosis, proper management of patients and also helps in predicting prognosis in individual cases.

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