



Original Research Article

Histopathological study of thyroidectomy specimens

Vidya Vasudev^{1,*}, Sushma M¹, Bharathi M¹¹Dept. of Pathology, Mysore Medical College & Research Institute, Mysore, Karnataka, India

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ABSTRACT

Introduction: Diseases of thyroid gland are common and have wide spectrum of entities ranging from functional, immune mediated to neoplastic lesions. The aim of this study is to describe the different pattern of lesions in thyroidectomy specimens.

Objectives: To study occurrence of various lesions of thyroidectomy specimens.

Materials and Methods: This study was done in Dept. of pathology, Mysore Medical College over a period of 2 years from Feb 2017 to Feb 2019. The thyroid diseases were classified on histological grounds into congenital, non- neoplastic and neoplastic lesions that were further sub classified as benign and malignant as per WHO histological classification of thyroid tumors.

Results: A total of 104 thyroidectomy specimens were received during this study period. 91 cases (87.5%) were females and 13 cases (12.5%) were males with F: M ratio of 7:1. Non neoplastic lesions accounted for 72% and includes colloid goiter, multinodular goiter, nodular hyperplasia, hashimoto's thyroiditis, thyroglossal cyst and lymphocytic thyroiditis. Neoplastic lesions accounted for 30% and consists of follicular adenoma as benign neoplasm, 17 malignant cases, 13 cases were of papillary thyroid carcinoma classic type, two cases of follicular carcinoma, one case of well differentiated follicular carcinoma of undetermined malignant potential and one case of non invasive follicular tumor with papillary like nuclear features.

Conclusion: Thyroid lesions predominantly affects females. Most commonly seen during 3rd decade of life. Colloid goiter is the commonest non-neoplastic followed by multinodular goiter. Follicular adenoma was the most common benign neoplasm, papillary carcinoma of thyroid was the common thyroid malignancy seen.

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1. Introduction

The lesions of thyroid are very common worldwide and are commonly encountered in clinical practice.¹ Lesions of the thyroid may be developmental, inflammatory, hyperplastic or neoplastic. Enlargement of thyroid gland is relatively common and is known to affect 15% of population.² Enlargement can be diffuse, multinodular or solitary nodule. Surgery is usually done for the patients with solitary nodule because of suspicion of malignancy although malignancy is found only in 6-14% of solitary nodules.³⁻⁵ Pathological lesions of thyroid gland are of importance because they

affect function of other organs and are amenable to treatment which can be medical or surgical. Surgical excision and histopathological evaluation is very essential to establish a diagnosis. Most of thyroid nodules are benign and malignancy occur in approximately 5-20% of cases. Autopsy studies have shown that nodules in thyroid are very common and has been found in 50% of cases. Most of the thyroid nodules are benign and malignancy occur in 5% of cases.⁶ Carcinoma of thyroid is relatively a rare tumor and incidence of carcinoma in multinodular goiter varies from 4% to 17%.⁷ Increasing incidental thyroid cancer incidence has been attributed to improved imaging methods like radionuclide scanning and ultrasonography and successful surgical intervention. Hence present study

* Corresponding author.

E-mail address: vidyammcri@gmail.com (V. Vasudev).

was done to assess the histopathological diagnosis of 104 thyroidectomy specimens and evaluation of their frequency in relation to age and sex of the patient.

2. Materials and Methods

This was a retrospective study done for a period of 2 years from Feb 2017- Feb 2019. Total 104 thyroidectomy specimens were received which were fixed in formalin. Specimens were from lobectomy, hemithyroidectomy, near total thyroidectomy to total thyroidectomy. And these specimens were processed to make paraffin embedded tissue blocks and sectioned. All sections were stained with Haemotoxylin and Eosin. Slides were analysed taking into account of clinical, gross and microscopic details.

3. Results

Total 104 thyroidectomy specimens were studied. Female preponderance was noted, 91 cases were females (87.5%), 13 cases(12.5%) were men (Figure 1). Commonest age group affected was 20-30 years (Table 1).

On gross examination, majority of the specimens were total thyroidectomies. 75% were diffusely enlarged, 20% had multinodular enlargement and 5% had solitary nodule.

On histomorphological grounds, 73 cases (72%) were non-neoplastic, 14 cases (13.4%) were benign and 17 cases(16.3%) were malignant.

Analysis of non-neoplastic lesions showed 34 cases (32.6%) of colloid goiter, 29 cases (27.8%) multinodular goiter, 5 cases (4.8%) of hashimoto's thyroiditis, 3 cases (2.8%) of thyroglossal cyst, one case (0.96%) of lymphocytic thyroiditis and one case (0.96%) of nodular hyperplasia (Figure 2).

Among benign lesions, follicular adenoma accounted for 14cases (13.4%). Out of 17 malignant cases (16.3%) – 13 cases (12.5%) of PCT, 2 cases (1.9%) of follicular carcinoma with minimal invasion, 1 case (0.96%) of well-differentiated follicular tumor of undetermined malignant potential(WDFT-UMP) and 1 case (0.96%) of Non-invasive follicular thyroid carcinoma with papillary like features (NIFTP) (Figure 3)(Table 3) were noted. Among 13 cases of PCT, 11 Cases were classic type PCT, 1 case was follicular variant of PCT and 1 case was encapsulated follicular variant of PCT. One case of papillary carcinoma showed multicentricity and Hashimoto's thyroiditis in surrounding thyroid tissue. One case of follicular carcinoma showed foci of medullary carcinoma.

4. Discussion

In the present study commonest age group presented with thyroid disorder was between 2nd and 3rd decade of life. While study carried by Fatima A. et al⁸ found age incidence to be common in 3rd and 4th decade. Ramesh et al⁹ found common age group from 3rd to 5th decade and Jagadale K.

Table 1: Showing age and sex distribution of thyroid lesions

Age groups (yrs)	No of patients	Males	Females
11-20	07(7%)	01	06
21-30	29(27%)	02	27
31-40	27(26%)	03	24
41-50	24(23%)	05	19
51-60	11(11%)	02	09
61-70	6(6%)	–	6
Total	104(100%)	13(12.5%)	91(87.5%)

et al¹⁰ found thyroid lesions common at 4th to 6th decade.

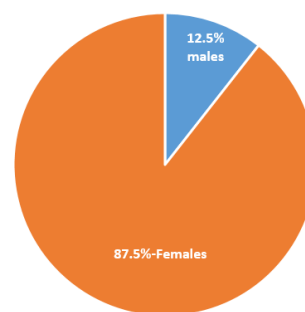


Fig. 1: Shows gender distribution of thyroid lesions

Table 2: Histomorphological distribution of non-neoplastic thyroid lesions

Non neoplastic	No. of cases	Males	Females
CG	34(32.6%)	05	29
MNG	29(27.8%)	03	25
Hashimoto's thyroiditis	05(4.8%)	00	05
Thyroglossal cyst	03(2.8%)	01	02
Lymphocytic thyroiditis	01(0.96%)	00	01
Nodular hyperplasia	01(0.96%)	00	01
Total	73(72%)		

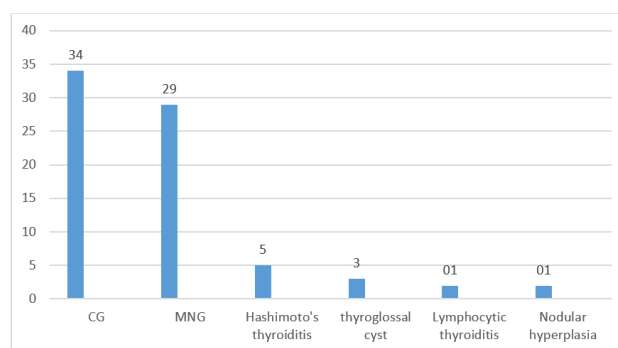


Fig. 2: Showing distribution of non-neoplastic lesions

Table 4: Age, Sex and histological categories of all thyroid lesions

	<10		11-20		21-30		31-40		41-50		51-60		61-70		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
MNG						7		5	4	5	2	4			29
Colloid goiter			1	1		4		12	4	10	1			11	34
Hashimoto's thyroiditis						2		1				1		1	05
Lymphocytic thyroiditis						1									01
Nodular hyperplasia										1					01
Thyroglossal cyst			1	2											03
Follicular adenoma					1	3		3	2	3		2		1	14
PTC				1	2	4		3		2				1	13
Follicular carcinoma						1				1					02
NIFTP						1									01
WDFT -UMP						1									01
Total															104

Table 3: Histomorphological distribution of neoplastic thyroid lesions

Neoplastic	No. of cases	Males	Females
Follicular adenoma	14(13.4%)	03	11
PCT	13(12.5%)	02	11
Follicular carcinoma	02(1.92%)	00	02
WDFT -UMP	01(0.96%)	00	01
NIFTP	01(0.96%)	00	01
Total	31(29.8%)	05	26

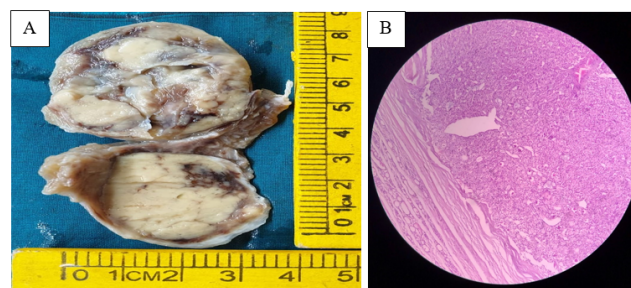


Fig. 4: a): Gross -single grey white capsulated nodule; b): Microscopic examination showed microfollicles with fibrous capsule

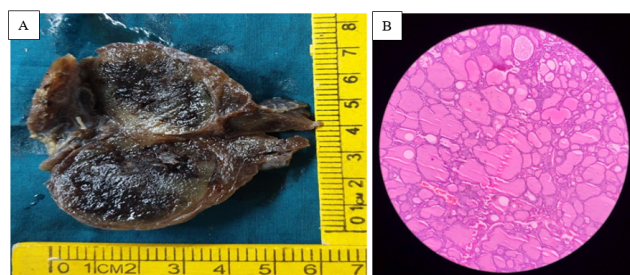


Fig. 3: Colloid goiter a): Gross- grey brown capsulated nodule; b): Thyroid follicles of varying sizes filled with colloid

Analysis of sex showed female predominance of 87.5% similar to Fatima et al at 89.2% and 90% in Ramesh et al⁹ and Jagadale et al.¹⁰ Non-neoplastic lesions in present study were 72% and neoplastic were 29% which correlated with Jagadale et al 71.4% of non neoplastic lesions. However, Ramesh V.C. et al⁹ found 47.5% and Fatima et al⁸ found 83.3% of non neoplastic lesions respectively (Table 5).

Comparing the non-neoplastic lesions colloid goiter (32.6%) and multinodular goiter (27.8%), Hashimoto's thyroiditis (8%) were the common lesions.

Our present study correlated well with Jagadale K et al¹⁰ with colloid goiter 21.4%, MNG 28.6% and Hashimotos thyroiditis 8.57%. Comparison with other studies for non neoplastic lesions is shown in Table 6.

Analysis of neoplastic lesion showed follicular adenoma 14 cases (13.4%), followed by papillary thyroid carcinoma 13(12.5%), Follicular carcinoma 2cases (1.9%), WDFT-UMP 1case (0.9%), NIFTP 1case (0.9%) Analysis of neoplastic lesions show predominance in females (Figure 3). Comparison with other studies is shown in the Table 7.

Out of 29 cases of Multinodular goiter in our study, 2 cases showed incidental papillary carcinoma. Similarly, Jain et al found 3 cases of papillary microcarcinoma out of 35 cases operated for multinodular goiter.^{11,12} Kumar

Table 5: Comparison of non-neoplastic lesions and neoplastic lesions of thyroid

Thyroid lesions	Ramesh VL (n=120)	Jagadale K (n=70)	Fatima et al (n=120)	Present study
Non neoplastic	47.5%	71.4%	83.33%	72%
Neoplastic	52.5%	28.6%	16.67%	28%

Table 6: Comparison of non-neoplastic lesions of thyroid

Non neoplastic	Ramesh V L (n=120) 2014	Jagadale K (n=70) 2016	Fatima et al (n=120) 2016	Present study (n=104)2019
Colloid goiter	5.83%	21.4%	29.1%	32.6%
Multinodular goiter	29.16%	28.6%	42.5%	27.8%
Hashimotos thyroiditis	9.16%	8.57%	9.1%	8%

Table 7: Comparison of neoplastic lesions of thyroid

Neoplastic lesion	Ramesh V L (n=120) 2014	Jagadale K (n=70) 2016	Fatima et al (n=120) 2016	Present study (n=104) 2019
Follicular adenoma	36%	7.2%	12.5%	13.4%
Papillary carcinoma	15%	8.7%	2.5%	12.5%

et al found malignant foci in 21 cases (8.1%) among 258 clinically diagnosed nodular goiter in which papillary carcinoma was the most common type of malignancy.¹² Hence thorough screening of all thyroidectomy specimens to rule out occult carcinoma as the risk of carcinoma in MNG is significant.

5. Conclusion

The present study was concluded with the following observations

1. Neoplastic and non neoplastic lesions were common in females 87.5%.
2. Common age group affected 2nd to 3rd decade.
3. Commonest non neoplastic lesion was Colloid goiter (32.6%) followed by multinodular goiter (27.8%).
4. Commonest benign neoplasm was follicular adenoma (13.4%).
5. Commonest malignant neoplasm was papillary carcinoma (12.5%).
6. The present study highlights the importance of histopathological typing of thyroid lesions for their better management.
7. All thyroidectomy specimens should be thoroughly grossed to rule out occult malignancy as the risk of carcinoma in Multinodular goiter is significant.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Tsegaye B, Ergete W. Histopathologic pattern of thyroid disease. *East Afr Med J.* 2004;80(10):525–8.
2. Kochupillai N. Clinical endocrinology in India. *Curr Sci.* 2000;79:1061–8.
3. Anderson JB, Nebb AJ. Fine needle aspiration biopsy and diagnosis of thyroid cancer. *Br J Surg.* 1987;74:292–6.
4. Werk EE. Cancer in thyroid nodules. A community hospital survey. *Arch Intern Med.* 1984;144(3):474–6.
5. Ashcraft MW, Vanherle AJ. Management of thyroid nodules II. *Head Neck Surg.* 1981;3:299–322.
6. Yeung MJ, Serpell JW. Management of the Solitary Thyroid Nodule. *Oncol.* 2008;13(2):105–12.
7. Koh KBH, Chang KW. Carcinoma in multinodular goitre. *Br J Surg.* 1992;79(3):266–7.
8. Fatima A, Tolnur RA, Patil BV, Dombale VD. Histopathological spectrum of thyroid lesions. *Indian J Pathol Oncol.* 2018;5:298–301.
9. Ramesh VL, Shwetha R. Study of distribution of thyroid lesions in a hospital. *Int J Sci Res.* 2014;(12):2441–3.
10. Jagadale K, Srivastava H, Nimbargi R. Recent trends in distribution of thyroid lesions in tertiary care hospital in India. *Eur J Biomed Pharm Sci.* 2016;3(4):234–9.
11. Rabindranath D, Jain A, Alam K, Maheshwari V, Narula V, Khan A, et al. Papillary microcarcinoma in clinically benign thyroidology. *Thyroid Res Pract.* 2016;13(1):15–8.
12. K PK. The incidence of thyroid malignancy in nodular goiter. A Retrospective analysis in a Medical College Hospital. *J Evol Med Dent Sci.* 2015;4(79):13750–3.

Author biography

Vidya Vasudev Assistant Professor

Sushma M Post Graduate

Bharathi M Professor and HOD

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