

HISTOPATHOLOGICAL PATTERN OF ENLARGED THYROID GLAND

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ABSTRACT

Background: Enlarged thyroid is one of the commonest clinical problems usually denoted as goiter. The objective of this study is to see the histopathological pattern of enlarged thyroid lesion in patients undergoing thyroid surgery.

Material & Methods: This descriptive study conducted in Bannu Medical College, Pakistan from January, 2013 to December, 2014. A total of 105 thyroid biopsies were included in this study. The inclusion criteria were all thyroid biopsies of any age and sex while exclusion criteria was autolysed and insufficient thyroid biopsies. All biopsies specimen were fixed in formalin and processed for block and slides preparation, reported by histopathologist and data entered in a designed proforma.

Results: A total of 105 thyroid biopsies were examined. Amongst these 87(82.85%) cases were non neoplastic and 18(17.14%) cases were neoplastic. The age range was from 20-75 years, male patients were 45 in number and females were 60 in number, male female ratio was 1:1.3. In non-neoplastic lesion age range was 20-48 years where is in neoplastic lesion age range was 40-75 years. Adenomatous goiter was the commonest non neoplastic lesion, follicular adenoma was the commonest benign neoplastic lesion where is papillary carcinoma was the commonest malignant lesion.

Conclusion: This study shows that non neoplastic lesions are more common in thyroid biopsy specimens as compared to neoplastic ones. Adenomatous goiter is the commonest among these. Among the neoplastic lesions follicular adenoma was the commonest benign and papillary carcinoma the commonest malignant lesion.

KEY WORDS: Thyroid biopsy; Adenomatous goiter; Follicular adenoma; Papillary carcinoma.

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INTRODUCTION

Thyroid gland is composed of two lobes connected by isthmus, located below and anterior to the larynx. This gland develops embryologically from pharyngeal epithelium that descend from the base of tongue to normal position of in the neck.¹ Clinical recognition of thyroid diseases are important as most of the diseases are amenable to cure by either medical or surgical management. Enlarged thyroid is one of the common problems in clinical practice

with majority of non-neoplastic in nature. They are endemic in mountainous areas where the soil, food and water supply is deficient in iodine.^{2,3}

Worldwide the most common cause of enlarge thyroid is iodine deficiency usually seen in countries that do not use iodized salt. Selenium deficiency is also considered a contributing factor.⁴ In countries that use iodized salt, Hashimoto's thyroiditis is the most common cause of enlarged thyroid. Goitre can also result from cyanide poisoning, this is particularly common in tropical countries where people eat the cyanide-rich cassava root as the staple food.^{5,6}

In Pakistan iodine deficiency goiter has been reported from the northern areas of the country. Long standing goiter (more than 5 years) is regarded as one of the strongest risk factor for the development

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of thyroid malignancy. Thyroid malignancy is a relatively rare malignancy representing only about 1.5% of all malignancies, but at the same time is the commonest endocrine cancer accounting for 92% of all endocrine malignancies. Follicular adenoma is the common benign tumor of thyroid where is papillary carcinoma is the most common thyroid cancer followed by follicular, medullary, anaplastic carcinoma and lymphoma.⁷⁻⁹ Thyroid neoplasm are both benign and malignant. It can be a benign adenoma or malignant neoplasm such as papillary, follicular, medullary, poorly differentiated carcinoma and anaplastic carcinoma. Most patients are 25 to 65 years of age when first diagnosed; women are more affected than men. The estimated number of new cases of thyroid cancer in United States in 2010 is 44670 compared to only 1690 deaths. Of all thyroid nodules discovered, only about 5% are cancerous, and under 3% of those result in fatalities.^{10,11}

The diagnosis of thyroid neoplasm is by physical examination of the neck area followed by routine laboratory investigation and thyroid function tests, ultrasound examination, nuclear scan, fine needle aspiration and biopsy. The results from these tests are then read by an endocrinologist in collaboration with physician and surgeon. Thyroid nodules are the major presentation of thyroid neoplasms, and are diagnosed by fine needle aspiration frequently or by surgical removal and subsequent histological examination.^{12,13}

Thyroid nodules are of great concern when found in those under the age of 20. The presentation of benign nodules at this age is less likely, and thus the potential for malignancy is far greater.¹⁴⁻¹⁶ The objective of this study was to see the histopathological pattern of thyroid lesions in thyroid biopsy specimen.

MATERIAL AND METHODS

This study was conducted in Surgery Department, Khalifa Gul Nawaz Teaching Hospital, Bannu in collaboration with Pathology Department of Bannu Medical College, Bannu, Pakistan. The duration of this study was two years, from January, 2013 to December, 2014.

Specimens were obtained from all thyroid lesions. A total of 105 cases were selected. Inclusion criteria was all lesions of thyroid irrespective of age. Exclusion criteria was autolysed and insufficient specimens. All the specimens were received in 10% buffered formalin, labeled, representative sections taken and processed in ethanol, xylene and paraffin wax, block prepared, freezed microtome sections

5 micron thick taken, slides prepared, stained with hematoxylin and eosin, mounted with DPX, labeled and reported by histopathologist.

RESULTS

During the two years study period 105 cases of thyroid biopsies were studied. The age range was 20-65 years with mean age of 37.92 ± 9.51 years. Male thyroid biopsies were 45 and female 60 with male to female ratio of 1:1.3. Amongst these specimen 87 (82.85%) cases were non-neoplastic and 18 (17.14%) cases were neoplastic. (Table 1) In non-neoplastic lesion the age range was 20-48 years where is in neoplastic lesion age range was 40-75 years. Adenomatous goiter 82 (78.11%) was the commonest non-neoplastic lesion, follicular adenoma 10 (9.52%) was the commonest benign neoplastic lesion whereas papillary carcinoma 4 (3.81%) was the commonest malignant lesion. (Table 2)

Table 1: Distribution of non-neoplastic and neoplastic thyroid lesions (n=105).

Thyroid lesion	Frequency	Relative frequency
Non neoplastic	87	82.85%
Neoplastic	18	17.15%
Total	105	100%

Table 2: Frequency of histopathological lesions of enlarged thyroid lesions (n=105).

S. No.	Thyroid lesion	Frequency	Relative frequency
1.	Adenomatous goiter	82	78.11%
2.	Benign cyst	2	1.91%
3.	Hashimoto's thyroiditis	1	0.95%
4.	Reidel's thyroiditis	1	0.95%
5.	Granulomatous thyroiditis	1	0.95%
6.	Follicular adenoma	10	9.52%
7.	Papillary carcinoma	4	3.81%
8.	Follicular carcinoma	1	0.95%
9.	Poorly differentiated carcinoma	1	0.95%
10.	Anaplastic carcinoma	1	0.95%
11.	Medullary carcinoma	1	0.95%
	Total	105	100%

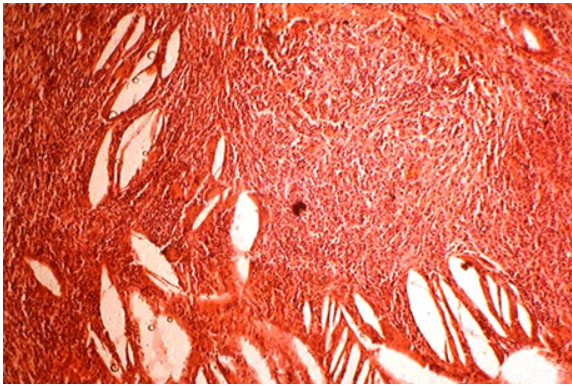


Figure 1: Granulomatous thyroiditis.

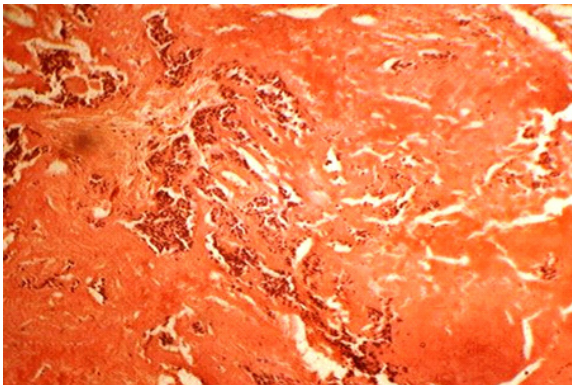


Figure 2: Medullary carcinoma thyroid.

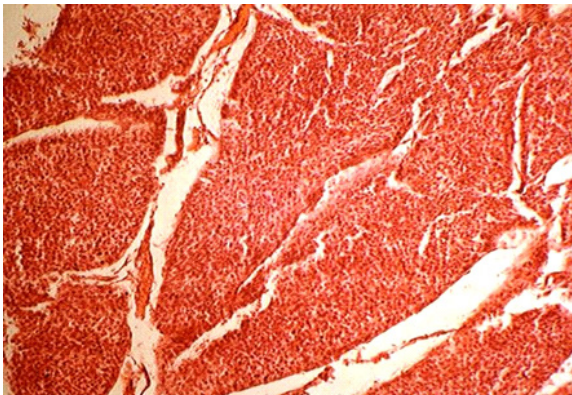


Figure 3: Poorly differentiated carcinoma thyroid.

DISCUSSION

According to WHO seven percent of world population predominantly from developing countries is suffering from enlarged thyroid. In Pakistan it is particularly prevalent in Northern Areas of the country which are iodine deficient areas. Thyroid diseases have historically been known primarily to affect female sex.¹⁶ Both the neoplastic and non neoplastic diseases of thyroid are common all over the world with variable frequency. In the developing countries enlarged thyroid is one of the common surgical problems affecting approximately one third of adult population. Thyroidectomies are one

of the common surgical procedures in surgical wards.^{3,16}

A number of studies are available on thyroid diseases from all over the world. In this study 105 cases the age range of the patients was from 20-65 years with mean age of 37.92+9.51. In other studies conducted by Albasri et al¹⁰, Fahim et al¹², Chukudebelu et al²⁰ and Hussain et al⁴ the age range was 14-95 mean 39.7 years, 10-70 years mean 32, 13-80 years mean 42.6 and 12-70 years respectively.

In this study female to male ratio was 1.3: 1 where is in study conducted by Albasri et al¹⁰, Fahim et al¹², Mirzakarimov et al¹³, Chukudebelu et al²⁰ and Rehman et al¹⁷ that female to male ratio was 3.7:1, 2.4:1, 7.3:1, 3.3:1, 4.5:1, 5.2:1 respectively.

In this study non neoplastic lesions were 82.15% and neoplastic lesions in 17.15% cases. Other studies conducted by Sushel et al⁸ show 89% of non neoplastic lesions and 11% of neoplastic lesions, albasri et al¹⁰ show 72.3% non neoplastic lesion and 27.7% neoplastic lesions. In a study conducted by Bukhari et al¹⁶ non neoplastic lesions were found in 74% whereas neoplastic lesions in 24% cases, all these studies show near close comparison with this study.

The commonest non neoplastic lesion in this study was adenomatous goiter which is nearly same to the other studies conducted by Mirzakarimov et al¹³ and Rehman et al¹⁷ 71.96% and 92.05% respectively, whereas Sushel et al⁸ and Misiakos et al¹⁴ show a relatively lower incidence i.e. 60% and 54.9% respectively. Adenomatous goiter was followed by 1.91% cases of benign colloid cyst in this study, whereas Khadilkar et al¹⁵, Rehman et al¹⁷ and Mirzakarimov et al¹³ show a higher incidence i.e. 3.0%, 3.7% and 8.1% as compared to present study. Hashimoto's thyroiditis, Reidel's thyroiditis and granulomatous thyroiditis were each 0.90%, which is almost same to the other studies.

The common benign neoplastic lesion in this study amongst the total lesions was follicular adenoma (9.52%) cases, the same was present in a study conducted by Khadilkar et al¹⁵ as 13%. A study conducted by Albasri et al¹⁰ showed 8.6% as benign neoplastic lesions which is similar to our study, whereas Bukhari et al¹⁶ showed 40% and Sushel et al⁸ 27.1% as benign lesions which was higher than the present study.

In this study papillary carcinoma was the commonest neoplastic lesion comprising 22.22%, whereas in the study conducted by Khadilkar et al¹⁵

it was shown to be 13% and Albasri et al¹⁰ as 22.3%. Sushel et al⁸ showed papillary carcinoma as 37.85% of thyroid neoplastic lesions and 7.85% amongst all thyroid lesions. All the other rare malignant lesions including follicular carcinoma, poorly differentiated carcinoma, medullary carcinoma and anaplastic carcinoma were each one (0.95%) case. The same is the case in other studies like Sushel et al⁸ where these comprise 2.1% of all the cases.

CONCLUSION

This study shows that non neoplastic lesions are more common in thyroid biopsy specimens as compared to neoplastic ones. Adenomatous goiter is the commonest among these. Among the neoplastic lesions follicular adenoma was the commonest benign and papillary carcinoma the commonest malignant lesion.

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CONFLICT OF INTEREST

Authors declare no conflict of interest.

GRANT SUPPORT AND FINANCIAL DISCLOSURE

None declared.