JRMI
Journal of Rehman Medical Institute

Volume 6, No. 1
January - March 2020
www.jrmi.pk

ORIGINAL ARTICLE

Histopathological examination of thyroid specimens - a single center study from Peshawar, Khyber Pakhtunkhwa

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Submitted
December 23, 2020
Accepted
January 18, 2020

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Citation: Khan S, Hayat MK, Nasim O, Fahad MS. Histopathological examination of thyroid specimens – a single center study from Peshawar, Khyber Pakhtunkhwa. J Rehman Med Inst. 2020 Jan-Mar;6(1):20-2.

ABSTRACT

Introduction: Thyroid gland enlargement is a surgical problem that affects about a third of the world's adults. Thyroid enlargement is best diagnosed by histopathology of surgical specimen and can also give a clue about different pattern of diseases that include simple goiter, multinodular goiter, thyroiditis, adenoma, and last but not the least, carcinoma.

Objective: To determine presentation of thyroid lesions based on their histopathology in patients presenting to Rehman Medical Institute (RMI), Peshawar from August 2018 to July 2019.

Materials & Methods: This was a descriptive cross-sectional study, inclusive of all thyroid specimens, irrespective of age and gender, received in the Department of Pathology, Rehman Medical Institute (RMI), Peshawar, from August 2018 to July 2019. Data were retrieved and analyzed for descriptive statistics in MS Excel.

Results: A total of 64 samples were collected; 56(87.5%) were non-neoplastic lesions while 08(12.5%) were neoplastic. 40(71%) multi nodular goiters, 11(19.64%) simple nodular goiter, 01(1.7%) case of Hashimoto's thyroiditis, among neoplastic 04(50%) were found to be papillary carcinoma and 02(25%) each were follicular and medullary carcinoma. Female to male ratio was 5:3 or 1.67:1 in neoplastic lesions.

Conclusion: The most common cause of goiter was multinodular goiter. Among the neoplastic lesions, follicular adenoma was the commonest, while papillary carcinoma was the most common malignant lesions.

Keywords: Multinodular goiter, follicular adenoma, Papillary carcinoma, Fine needle aspiration cytology.

The authors declared no conflict of interest. All authors contributed substantially to the planning of research, data collection, data analysis, and write-up of the article, and agreed to be accountable for all aspects of the work.

INTRODUCTION

Thyroid nodules are a common clinical problem. In contrast, thyroid cancer is rare. However, thyroid cancer is often seen as a lump in the neck or with a thyroid nodule. The physician should be able to distinguish between benign lesions, requiring only medical treatment, and malignant thyroid nodules, which require surgical treatment. In making this difference, several clinical factors must be considered, including patient age, gender, thyroid function status, history of irradiation exposure, family history, and thyroid conditions. None of these items, however, are reliable markers to predict that a particular nodule will have a malignant potential. Although many tests have been performed for thyroid nodule evaluation, scintigraphy, ultrasonography, and CT scan, none has the diagnostic accuracy as of thyroid fine-needle aspiration (FNA) biopsy.

Although the thyroid and nodule are common disorders, its prevalence depends on the apparent level of the method used for screening, and the population being screened. In general, thyroid tumors are more common in the elderly, in women, in iodine deficient regions, and in subjects that have already been exposed to irradiation of the head and neck.

Thyroid nodules that are larger than 1cm can be palpated clinically. The prevalence though on palpation is a mere 4-7%.[1] Hence simple palpation even by experienced doctors, is not a very sensitive tool for diagnoses.

Ultrasound use for diagnosis has become the gold standard. When thyroid gland is examined by ultrasonography, the prevalence of thyroid tumors increases dramatically, estimates range from 10 to 41%.[2] Some studies have also stated incidental findings of thyroid nodules on ultrasonography to be 50-67%.[3]

Although gender is not an independent prognostic factor for thyroid cancer, men usually have a far more advanced disease as compared to women.[4] Previous radiation exposure though has a significant relation, thirty percent (30%) of patients who have previous history of radiation, develop palpable nodules and have a bad clinical outcome.[5]

Although these clinical features may suggest that the nodule may be malignant, but many patients without these symptoms are diagnosed with thyroid cancer on further evaluation. Of all currently available thyroid nodule diagnoses, FNA biopsy has been found to have the highest diagnostic accuracy, approaching 95%.[6] It is a safe and inexpensive process, with little or no complications**.** Most of the cytologic findings of FNA are diagnostic giving it a sensitivity, specificity and accuracy of 91.6%, 100% and 97% respectively, according to a study conducted in 2011.[7]

A positive or malignant cytology suggest the presence of malignancy, either primary or metastatic cancer. Among all thyroid carcinoma, papillary carcinoma is most common thyroid malignancy.[8] Neoplasm of follicular or Hurtle cell cannot differentiated into benign or malignant subtypes on the basis of cytologic findings only.[9] The outcome of a biopsy also depends upon the experience of the person taking the aspiration, as well as the nature of lesions, for example if specimen contain too much blood or cystic fluid and few or no thyroid cells the outcome can be non-diagnostic or unsatisfactory.[10]

This study aimed to determine the presentation of thyroid diseases based on their histopathology in patients undergoing interventional procedures at Rehman Medical Institute (RMI) since a baseline for such diseases is not present. This will help surgeons widen their differentials if an uncommon diagnosis is seen to be presenting more in Peshawar.

MATERIALS & METHODS

A descriptive, cross-sectional study conducted at the Rehman Medical Institute (RMI) histopathology unit. Data were acquired for the duration August 2018 till July 2019. All thyroid specimens sent for histopathology regardless of age were included in the study. These included specimens that were surgically resected or ultrasound guidance-based excision by the interventional radiology department. Any specimens that had deficient data were disregarded. Data retrieved from the histopathology unit was in a Microsoft Excel file. It included age, gender, diagnosis, and specimen type. This data was then analyzed using Microsoft Excel for descriptive statistics and pivot tables were generated.

RESULTS

A total of 64 samples were collected from the patient's thyroid through surgical resection and through ultrasound guided resection by interventional radiology, from August 1st, 2018 till July 31st, 2019. The mean age of the patients was 42.73 ± 14 (SD). Majority 81.25% were female while 18.75% were male. The most common abnormality was multinodular goitre comprising 40 (62.5%), followed by nodular goitre 11 (17.18%) and papillary cancer 04 (6.25%). Patients in the age bracket of 0-20 year had 03 cases (4.68%), 21-40 years had 26 cases (40.6%), 41-60 years had 29 cases (45.3%) and above 60 years had 06 cases (9.37%). In the female the most common thyroid abnormality was multinodular goitre, followed by nodular goitre and papillary carcinoma; comprising of 50%, 15.6% and 4.68% respectively. In the male the most common abnormality detected through FNA was multinodular goitre and medullary carcinoma; comprising of 12.5% and 3.12% respectively. The thyroid abnormalities were most common in the 41-60 age group [29(45.3%)] followed by the 21-40 age group [26(40.6%)] (Table. 1).

Table 1: Male and female age distribution, age brackets and FNAC results (n=64).

FNAC Results	Frequency n (%)	Age Brackets (years) n (%)				Gender	
		0-20	21-40	41-60	60+	Male	Female
Multinodular Goiter	40 (62.5)	.	18 (28.1)	17 (26.6)	5 (7.81)	8(12.5)	32 (50.0)
Nodular Goiter	11 (17.1)	2 (3.13)	3 (4.68)	6 (9.38)	.	1(1.56)	10 (15.6)
Follicular Ca	2 (3.13)	.	1 (1.56)	1 (1.56)	.	.	2 (3.13)
Follicular Adenoma	1 (1.56)	1 (1.56)	.	.	.	.	1 (1.56)
Chronic Thyroiditis	1 (1.56)	.	.	1 (1.56)	.	.	1 (1.56)
Papillary Ca	4 (6.25)	.	3 (4.68)	1 (1.56)	.	1(1.56)	3 (4.68)
Normal	1 (1.56)	.	.	1 (1.56)	.	.	1 (1.56)
Medullary Ca	2 (3.13)	.	.	1 (1.56)	1 (1.56)	2 (3.13)	.
Colloid Cyst	1 (1.56)	.	.	1 (1.56)	.	.	1 (1.56)
Hashimoto Thyroiditis	1 (1.56)	.	1 (1.56)	.	.	.	1 (1.56)

DISCUSSION

The enlargement of the thyroid gland is surgical problem affects about a third of the world's adults.[11] thyroid malignancy is often diagnosed after operation and sending specimen for histopathology. There is general consideration that patients having multinodular goiter are at lower risk of malignancy than nodule alone. However, literature reviews have shown that the rate of malignant tumors in patients with single nodule is not significantly different from those with multinodular goiter.[12] Variations in thyroid carcinoma have been observed in different parts of the world.

The total incidence of non-neoplastic lesions in this study was 87.5% compared 12.5% of neoplastic lesions. Supported by other studies done in Pakistan.[13,14] The most common non-neoplastic conditions in this study were multinodular goiters and nodular goiter 71.4% % and 19.64% respectively. These

results are consistent with studies previously done in which nodular and multinodular goiter were most frequent findings.[15-17]

As far as various forms of inflammatory condition of the thyroid gland are concerned, around 2 % of patients had thyroiditis, as seen in some studies.[16,18]

In this study, Papillary Carcinoma was the most common thyroid malignancy seen in about 50% (4/8) of **s**pecimens; this finding is consistent with several other studies.[19,20]

CONCLUSION

Though statistics of thyroid malignancy among other thyroid nodule are low but the nature and characteristic of thyroid nodule should not be underestimated, and each nodule should be examined and further evaluated through FNAC to rule out malignancy.

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