One-Year Histopathological Audit of Thyroid Lesions at Tertiary Care Hospital of Peshawar

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ABSTRACT

Objective

To know the number of various thyroid lesions both neoplastic and non-neoplastic in a tertiary care hospital of Peshawar.

Methodology

It was a retrospective record-based study conducted at Lady reading Hospital (LRH) Peshawar Khyber Pakhtunkhwa. Histopathological reports of all the thyroidectomy specimens received from 1st January 2019 to 31st December 2019 in the Department of Pathology were included in this study. Data regarding patient's age, sex, type of thyroidectomy and histopathological diagnosis was collected from the record of the laboratory, recorded into Microsoft excel and analyzed by statistical methods.

Results

This study included a total of 120 thyroidectomy. The highest frequency of lesions was seen in the fourth and fifth decades (32.74%) with a female predominance (88.38%). Non neoplastic lesions were 106 (88.7%) while neoplastic lesions were 14 (11.7%). Nodular colloid goiter was the commonest non neoplastic lesion while papillary thyroid carcinoma was the most common neoplastic lesion. Follicular adenoma was the most common benign lesion.

Conclusion

Histopathological audit, of various thyroid lesions is important both for surgeons and pathologists to make them aware about the common and uncommon thyroid lesions in the setup. Moreover, it can also be used for preventive strategies for various thyroid diseases.

Key words

Thyroidectomy, thyroid lesions, neoplastic, thyroiditis, papillary carcinoma.

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INTRODUCTION

Thyroid gland plays an important role in maintaining homeostasis of the body and responds readily to various stimuli like pregnancy, puberty, stress, and various pathological factors like infections etc. in the form of generalized or focal swelling. Among all the disorders of thyroid gland, non-neoplastic lesions are more common as compared to neoplastic ones.[1,2] Thyroid disorders constitute the second most common category of endocrine disorders after diabetes mellitus.[3,4] Globally, Asia has the greater incidence of endocrine disorders.

In Pakistan generally and Khyber Pakhtunkhwa specifically, thyroid lesions are more common in females than males.[5] These diseases manifest in the form of hormonal alterations in the body or enlargement of the thyroid gland or both simultaneously.[4] Iodine plays an important role in the physiology of thyroid gland. Its deficiency in various areas especially in the hilly ones causes high incidence of thyroid diseases.[3,6]

In clinical practice, commonly found lesions in thyroid gland are palpable nodules.

Various imaging techniques have helped the clinicians in the diagnosis of various thyroid lesions. An example of simple ultrasonography can be given which can detect a very small impalpable and asymptomatic nodule called incidentaloma in thyroid gland.[7] As most of these diseases are amenable to surgical or medical treatment, therefore it is important to diagnose them as early as possible before the complications arise.[2] Prevalence of palpable nodules of thyroid is about 6% in females and 2% in males. Moreover, it is high in elder people and in people of those areas where there is iodine deficiency.

Overall prevalence of thyroid nodules in general population is 20%-70% due to great majority of small and impalpable nodules or incidentalomas. Thyroid nodularity both palpable and impalpable may be due to Hashimoto's thyroiditis, colloid nodules, cysts or neoplasias both benign and malignant and present clinically with pain, hypothyroidism, hyperthyroidism or with symptoms of compression.[8] Among the neoplastic nodules most are benign while less than 5% are malignant. Some of the

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important non neoplastic nodules are cysts, colloid nodules, granulomatous thyroiditis, and congenital anomalies. Among the neoplastic lesions important benign nodules are adenomas and hyperplastic nodules while common malignant nodules are papillary carcinoma, follicular carcinoma and medullary carcinoma.[9]

To evaluate and to screen these thyroid nodules before therapy, ultrasonography; radio nuclide scan, thyroid function tests and fine needle aspiration cytology (FNAC) are performed. Among these screening tests FNAC is the most economic, easy to perform, quick and accurate one.[10] Due to these mentioned facts and increasing incidence of thyroid carcinoma, each institute is required to have its own data of thyroid lesions.[4]

Aim of this study is to know the frequency of different thyroid lesions, whether neoplastic or non-neoplastic, in a tertiary care hospital of Peshawar.

METHODOLOGY

It was a record based retrospective study conducted at the Department of Pathology Lady Reading Hospital Peshawar from 1st January 2019 to 31st December 2019. All the specimens of thyroid gland resected by any type of surgical thyroidectomy and received in the pathology department during the study period as per record were included in the study. There were 120 thyroidectomy specimens received during this time. Information about sex, age and histopathological diagnosis was obtained from the record of the laboratory. No ethical issue was involved in the study at hand.

Record of all the examined and reported thyroid specimens, during the study period was retrieved from the data of the laboratory of LRH. Based on histopathological diagnoses, thyroid diseases were classified into non neoplastic and neoplastic lesions. Non neoplastic lesions included colloid nodular goiter, Hashimoto's thyroiditis, nodular hyperplasia, lymphocytic thyroiditis and thyroglossal cysts while the neoplastic lesions included follicular and hurthle cell adenomas, follicular carcinoma, papillary carcinoma, lymphoma, and poorly differentiated carcinoma. The data was analyzed for descriptive statistics by using Microsoft Excel to determine percentages, frequencies for gender and mean and range for age. After analysis data was presented in frequency tables.

RESULTS

A total of 120 thyroidectomy specimens were received in the Pathology department of Lady reading Hospital Peshawar during the study period of one year. Out of these 120 cases there were 92 (76.67%) females and 28 (23.33%) males making female to male ratio of 3.29: 1.

Females presented with thyroid lesions 05 years earlier than males (Table-I). After analysis of the collected data there were 106 non neoplastic lesions which accounted for 88.3% of cases. In neoplastic category, there were only 14 cases which constituted 11.7% of all cases. (Figure I). Among the non-neoplastic lesions nodular colloid goiter was the commonest lesion with a total of 71 (67 %) cases out of 106 cases. It was followed by Hashimoto thyroiditis diagnosed in 18 (16.98 %) cases and lymphocytic thyroiditis in 13 (12.26 %) cases. There were 2 (1.89%) cases of nodular hyperplasia and thyroglossal cyst each. Maximum lesions i.e., 43 (40.57%) non neoplastic lesions were detected in the fourth and fifth decades of life. Age of patients ranged from 15 to 75 years with a mean age of 39 years (Table-II).

Out of 14 neoplastic lesions, malignant lesions outnumbered the benign ones. Papillary carcinoma was diagnosed in 5 (35.71 %) cases and was the commonest malignant lesion. It was followed by follicular carcinoma which was diagnosed in 2 (14.29%) cases. Lymphoma, micro papillary carcinoma, and undifferentiated carcinoma consisted of 01 (7.14%) case each. Among the benign neoplasms, follicular adenoma was diagnosed in 03 (21. 43%) thyroidectomy specimens while Hurthle cell adenoma was found only in 01 (7.14 %) specimen. Females had high (71.43%) incidence of neoplasms as compared to that (28.57%) in males (table-III). More than 80% neoplasms of thyroid like non-neoplastic lesions were found in patients in their 4th and 5th decades of life.

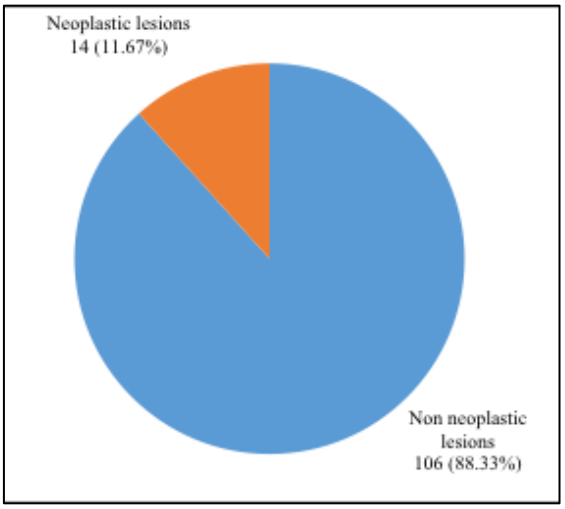

Figure I: Incidence and percentage of neoplastic and non-neoplastic lesions of thyroid (n=120).

Age group (In Years)	Nodular colloid goiter	Hashimoto's Thyroidoitis	Lymphocytic thyroiditis	Nodular hyperplasia	Thyroglossal cyst	Total (%age)
0-10	0	0	0	0	0	0 (0%)
11-20	11	2	1	0	2	16 (15.09%)
21-30	14	2	0	1	0	17 (16.04%)
31-40	17	4	1	0	0	22 (20.75%)
41-50	13	5	3	0	0	21 (19.81%)
51-60	8	3	2	1	0	14 (13.21%)
61-70	6	2	3	0	0	11 (10.38%)
71-80	2	0	3	0	0	5 (4.72%)
Total (%age)	71 (67%)	18 (16.98 %)	13 (12.26 %)	2 (1.89 %)	2(1.89%)	106 (100%)

Table-I. Age wise distribution of non-neoplastic thyroid lesions (n=106).

Thyroid neoplasm	Females	Males	Total (%age)
Papillary carcinoma	4	1	5 (35.71%)
Follicular carcinoma	1	1	2 (14.29%)
Micro papillary carcinoma	1	0	1 (7.14%)
Lymphoma	0	1	1 (7.14%)
Poorly differentiated carcino0ma	1	0	1 (7.14%)
Follicular adenoma	2	1	3 (21.43%)
Hurthle cell adenoma	1	0	1 (7.14%)
Total	10 (71.43%)	4 (28.57%)	14 (100%)

Table - II: Gender wise incidence of various thyroid neoplasms (n=14).

DISCUSSION

Thyroid diseases vary according to geographic area, age and sex.[11] Similarly, Iodine deficiency also plays a major role in thyroid lesions throughout the world. Globally both the non-neoplastic and neoplastic lesions of thyroid are common with different frequencies and incidences depending upon iodine deficiency. Thyroid lesions usually present with swelling of thyroid. Historically thyroid lesions are found more in females than males. Similar was the result in our study where 92 (76.67%) females and 28 (23.33%) males were recorded. Out of 120 thyroidectomy specimens received in the study period, 106 (88.3%) were non-neoplastic and 14 (11.7%) were neoplastic lesions which exactly correlated with the results of the study conducted by *Sreedevi et al.*[1]

Thyroid lesions in our study were recorded mostly in the 4th and 5th decades of life which tally with the results of studies conducted by Shrestha D et al and Mandel N et al where thyroid lesions were shown to be more in 4th and 5th decades of life respectively.[13,14] Studies carried out by *Ramesh et. al,* and *Jagadale et. al,* found thyroid lesions to be common in 3rd to 5th and 4th to 6th decades respectively.[15, 16] This difference may be due to small sample size of our study. Nodular colloid goiter was the predominant non neoplastic thyroid lesion in our study and was common in the 4th decade of life. It constituted 71 (59%) of all 120 lesions similar to the result of a study by *Sreedevi et al*[1], where this lesion constituted 56.93% of all cases. Hashimoto's thyroiditis constituted 18 cases (15%) while Lymphocytic thyroiditis constituted 13 (10.83%) cases, and both were common in 5th decade. Hashimoto's thyroiditis is an auto immune disease characterized by parenchymal atrophy and diffuse lymphocytic infiltrate. Nodular hyperplasia and thyroglossal cyst were the least common non neoplastic lesions each comprising 2 (1.67%) cases out of the total 120 thyroid lesions.

Among neoplastic lesions the incidence of benign lesions was lower in comparison to malignant lesions in our study. There were 4 (28.57%) benign lesions and 10 (71.43%) malignant lesions out of total 14 neoplastic lesions which correlate to the results reported by Patil et al[17]. *Ramesh et al* recorded the opposite results in their study i.e. out of 63 neoplastic lesions there were 69.8% benign tumors compared to 30.2% malignant lesions.[15] This difference may be due to variation in diet and geographic localities of the studies. Gender wise, neoplastic lesions were more in females as compared to males with a ratio of 2.5: 1 in our study which correlated well with the results of the study by Jones M K[18]. Among the malignant lesions papillary carcinoma was the commonest malignancy accounting for 5(35.71%) cases out of total 14 neoplastic lesions. Similar results were reported by *Kunjumon et al*[19], *Bharathidasan et al*[20] and *Modi et al.*[19-21] All of them reported papillary carcinoma to be the most common malignant lesion. Follicular carcinoma accounted for 2(14.28 %) cases in our study. Other malignant lesions in our study were micro papillary carcinoma, lymphoma, and poorly differentiated carcinoma each comprising 01 (7.14%) case. Benign lesions recorded in our study were follicular and hurthle cell adenomas. Follicular adenoma was the common benign lesion comprising 3 (21.43%) cases while hurthle cell adenoma was found only in 01 (7.14%) case out of total 14 neoplastic cases. These findings are correlated well with those recorded by *Modi et al* [21] in their study.

The study in hand gives valuable demographic and epidemiologic information regarding various thyroid lesions, encountered in a tertiary care hospital of Peshawar Khyber Pakhtunkhwa over a period of one year. Still its results cannot be applied to whole region or country due to its small size and non-handling of all biopsy specimens at this laboratory.

CONCLUSION

Histopathological audit of various thyroid lesions is important both for surgeons and pathologists to make them aware about the common and uncommon thyroid lesions in the setup. Moreover, it can also be used for preventive strategies for various thyroid diseases.

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