

Assessment of Histopathology Findings Associated with Thyroidectomies: A Retrospective Study

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ABSTRACT

Introduction: Enlargement of the thyroid gland is referred to as Goitre. This might be diffuse in nature nodular or multi-nodular. Females are more commonly affected by thyroid nodules and tend to be associated with advanced age. Incidental thyroid cancer has been found in preoperative test thyroidectomy specimens from patients with benign thyroid diseases. Hence; we planned the present retrospective study to assess the histopathologic diagnosis of 100 consecutive thyroidectomy specimens and evaluated their frequency in relation to age and sex of the patients.

Material and methods: The present retrospective study included assessment of the histopathologic diagnoses of 100 consecutive thyroidectomy specimens reported in the department of the pathology. Three to four micro-meter thick sections of paraffin embedded specimens of the all the cases that were treated with thyroidectomy were examined. Analysis of the histopathologic diagnosis of a total of 100 specimens was done. Identification of the histopathologic pattern was done and categorization was made into non-neoplastic and neoplastic (benign and malignant) lesions. All the results were analyzed by SPSS software.

Results: Majority of the patients belonged to the age group of 21 to 30 years. 17 and 14 patients belonged to the age group of 31 to 40 years and 41 to 50 years respectively. 12 patients belonged to the age group of 10 to 20 years. Only 2 patients were between 51 to 60 years of age. Colloid goitre was the most commonly encountered pathologic lesion out of all the cases. Under the non-neoplastic category, colloid nodular goitre was the most commonly encountered lesion followed by multinodular goitre. Among the neoplasms, follicular adenoma was the most commonly encountered benign pathologies while papillary carcinoma was the most commonly encountered malignancy.

Conclusion: Non-neoplastic lesions occur with higher frequency than neoplastic lesions in patients undergoing thyroidectomies.

Keywords: Histopathology, Thyroidectomies, Thyroiditis

thyroid nodule. Autopsy studies have shown that nodules are extremely common, having been found in 50% of all thyroids examined. The most common thyroid nodules are benign, and malignancies occur in approximately 5% of cases.²

Females are more commonly affected by thyroid nodules and tend to be associated with advanced age. The etiology of nodule is almost certainly multifactorial; iodine deficiency, radiation exposure, and dietary goitrogenic factors all play an important role the pathogenesis of thyroid nodules. Incidental thyroid cancer has been found in preoperative test thyroidectomy specimens from patients with benign thyroid diseases.³ Thyroid cancers are primarily variants of microcarcinomas. Increasing incidental thyroid cancer incidence may be attributable to successful surgical interventions and improved imaging methods such as radionuclide scanning and ultrasonography.⁴ Hence; we planned the present retrospective study to assess the histopathologic diagnosis of 100 consecutive thyroidectomy specimens and evaluated their frequency in relation to age and sex of the patients.

MATERIAL AND METHODS

The present retrospective study was planned to assess the histopathologic diagnoses of 100 consecutive thyroidectomy specimens reported in the department of the pathology of the medical institute from June 2011 to July 2016. From the archives of the department of the pathology, tissue specimens were issued. Examination of three to four micro-meter thick sections of paraffin embedded specimens of the all the cases that were treated with thyroidectomy was done. Analysis of the histopathologic diagnosis of a total of 100 specimens was done. All the sections were stained with Haematoxylin and Eosin (H and E) and diagnosis was confirmed by experienced and registered pathologists. Categorization of all the cases was done on the basis of age, gender, euplastic and non-neoplastic nature. Identification of the histopathologic pattern was done and categorization was made into non-neoplastic and neoplastic (benign and malignant) lesions. All the results were analyzed by SPSS software. Mean value was

INTRODUCTION

Goitre is referred to as the enlargement of the thyroid gland. This might be diffuse in nature nodular or multi-nodular. Majority of the cases occurring worldwide occur due to the iodine deficiency in the diet. As per the report of the World Health Organization (WHO), in 2007, iodine deficiency was reported to be present in approximately two billion individuals out of which, almost one third were school going children.¹ In routine pathologic practice, thyroid practices are commonly reported. Approximately four to eight percent of the adults are reported to be effected by the palpable

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used for expression of quantitative variables like age and frequencies and percentage was used for the presentation of qualitative variables like histopathology diagnosis.

RESULTS

Majority of the patients belonged to the age group of 21 to 30 years (Figure 1). 17 and 14 patients belonged to the age group of 31 to 40 years and 41 to 50 years respectively. 12 patients belonged to the age group of 10 to 20 years. Only 2 patients were between 51 to 60 years of age. Out of 100 patients, 92 were females and only 4 were males (Figure 2). Colloid goitre was the most commonly encountered pathologic lesion out of all the cases (Table 1). Under the non-neoplastic category, colloid nodular goitre was the most commonly encountered lesion followed by multinodular goitre. Among the neoplasms, follicular adenoma was the most commonly encountered benign pathologies while papillary carcinoma was the most commonly encountered malignancy.

DISCUSSION

A little less than 8 percent of the population on neck palpation and approximately half of the population on ultrasonography have been reported to have thyroid nodules.^{5,6} Significant association of multi-nodular goitre with malignancies is a topic of long standing controversies. In comparison with the solitary nodule goitre lesions, patients with multi-nodular goitre are thought to be at a low risk for malignancy.⁷ Papillary carcinoma is the most common variety of malignancy which has been documented in the literature. Various refinements have been done in management of

solitary nodule using the FNAC technique especially in those cases where it is difficult to differentiate clinically or radiologically, nodule of carcinoma from other benign nodules.^{8,9} There is a varying incidence of thyroid carcinoma amongst various regions of the world. It varies in the range of 0.9% to 13%. The incidence further tends to increase if there is no consideration given to occult cases. With the advent of more sensitive diagnostic tests and increased exposure to ionizing radiation may be the reason behind increase in incidence of thyroid cancer.¹⁰⁻¹² Hence; we planned the present retrospective study to assess the histopathologic diagnosis of 100 consecutive thyroidectomy specimens and evaluated their frequency in relation to age and sex of the patients.

In the present study, we observed that colloid goitre was the overall most commonly encountered pathology while among neoplasm; follicular adenoma was the most commonly observed lesion (Table 1). Qureshi et al identified the histopathological patterns of goiter in thyroidectomy specimens and their frequency in relation to age and gender of the patients. They assessed the retrospective data of 624 thyroidectomy specimens diagnosed over a period of six year reported in the department of pathology of the institution. There were 512 non-neoplastic lesions, which included; 475 multi-nodular goiter (MNG), 16 Hashimoto thyroiditis, 11 colloid goiter, 4 toxic goiter, 2 chronic lymphocytic thyroiditis, 2 (0.3%) tuberculous thyroiditis and 2 (0.3%) miscellaneous. From 112 (18%) neoplastic lesions, 43 (6.9%) were adenomas and 69 were carcinomas. Peak age for thyroid malignancy was 3rd to 4th decades. The histological subtypes of thyroid carcinomas includes,

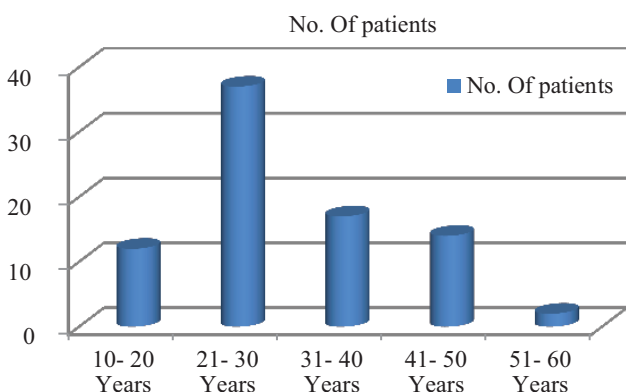


Figure-1: Distribution of the patients according to the various age groups

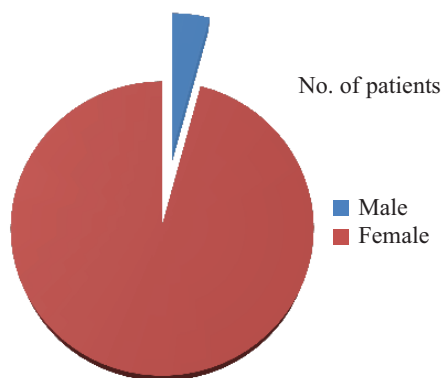


Figure-2: Distribution of the patients according to the gender

Pathology		No. of specimens	
Non-neoplastic	Colloid goitre	30	
	Hoshimoto's Thyroiditis	10	
	Multi-nodular goitre	25	
	Colloidal cyst	2	
	Nodular goitre	7	
Neoplastic	Benign	Follicular adenoma	15
		Hurthle cell Adenoma	2
	Malignant	Micro-papillary carcinoma	1
		Papillary carcinoma	8
Total		100	

Table-1: Distribution of all the cases according to the type of lesion

35 (5.6%) follicular variant of papillary carcinoma (FVPC), 15 (2.5%) well-differentiated tumor of uncertain malignant potential (WDT-UMP), 6 (1%) medullary carcinomas, 6 (1%) papillary carcinomas, 3 (0.5%) anaplastic carcinomas, 2 (0.3%) follicular carcinomas and 2 (0.3%) other carcinomas. Twenty-nine (4.6%) neoplastic lesions were associated with MNG, includes; 2 (3.5%) follicular adenomas, 3 (0.5%) WDT-UMP and 4 (0.6%) FVPC. From the results, the authors concluded that follicular adenoma and FVPC appears to be associated with long standing MNG of iodine deficiency.¹³ Albasri et al conducted a study amongst Saudi patients to determine the histopathological pattern of thyroid lesions and to establish the age and gender variations of these lesions as base line data. They retrospectively analyzed the data from thyroid specimens received at the Department of Pathology and observed that a total of 292 thyroidectomy specimens were received during the study period. The mean age of the patients was 39.7 years. Approximately 72.3% cases were non neoplastic and 27.7% cases were neoplastic. Amongst the non neoplastic lesions, the most common was colloid goitre (58.2%), which included both nodular and diffuse varieties, there were 9.6% cases of nodular hyperplasia, Hashimoto/chronic lymphocytic thyroiditis constitutes about 4.1% cases and Grave's disease was seen in 0.3% cases. Amongst the neoplastic category, there were 7 benign and 74 malignant tumors. The most common benign tumor was follicular adenomas followed by Hurthle cell adenomas. Papillary carcinoma was the common malignant tumor which accounted for 87.8% of all thyroid malignancies and it was followed by lymphoma, follicular carcinoma and medullary carcinoma. From the results, the authors concluded that a slightly increased trend of papillary carcinoma diagnosis, most being diagnosed at an advanced stage.¹⁴ Santos et al highlighted the effects of Iodine Deficiency (ID) in their study by comparing and evaluating the difference in the pattern of thyroid nodular pathology amongst different populations that were geographically distant and heterogeneous, but at the time of data gathering all had iodine deficiency. Evaluation of thyroid histology reported over a 6 year period in BI and a 5 year period in the JHB area. They found a considerable overlap in the frequency of histopathology types and noted highest incidence of anaplastic carcinoma and the ratio between papillary to follicular carcinoma was near to 1, the ration in BI area was 1.4 and in Portugal and Johannesburg (JHB) area was 0.87. With the introduction of affordable iodized salt and awareness amongst public, there are chances of elimination of iodine deficiency. Availability of iodine based sea products may also contribute to elimination of iodine deficiency.¹⁵ Niedziela et al assessed a total of 411 children who were diagnosed with thyroid nodular disease (TND) and the patients were made to qualify for surgery based on their clinical status and radiological examination and hence histopathology data was obtained for only 155 cases i.e. 37.7% of all cases. The median incidence of thyroid carcinoma amongst children was 0.68/100,000. It was detected in 23.9% or 9.0% of all children. The most common was papillary carcinoma

accounting for 70.3% cases followed by follicular (27%) and medullary carcinoma (2.7%). From the study the authors came to conclusion that long-term deficiency of iodine deficiency in the region contributes more significantly in the pathogenesis of malignant transformation than that has been postulated previously.¹⁶

CONCLUSION

In our study, follicular adenoma and papillary carcinoma were the most commonly encountered benign and malignant tumours respectively. Therefore, the authors concluded that non-neoplastic lesions occur with higher frequency than neoplastic lesions in patients undergoing thyroidectomies. However, future studies are recommended.

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