

RESEARCH ARTICLE

Clinicopathological Profile of Thyroid Carcinomas: A 10-Year Experience in a Tertiary Care Institute

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Abstract

Objective: Thyroid gland is an important endocrine gland and thyroid cancers (TC) are the most noteworthy disease of the thyroid gland. Although thyroid surgery is performed for most particularly for malignancy, thyroidectomies still maintain a large part of surgical operations. We aimed to investigate the incidence and subtypes of the thyroid cancers in present study, with our 10 years' experience of thyroid surgery.

Methods: Data of patients who underwent thyroidectomy were retrospectively analyzed. The patients who underwent bilateral total thyroidectomy were included to the study. Patients' age, gender and histopathological results were recorded. According to the histopathological reports we divided the patients into two groups either as benign or malignant.

Results: A total of 3632 patients were included in the study. 2999 (82.6%) patients were in benign group and 633(17.4%) patients were in malignant group. The subtypes of malignant tumors were papillary carcinoma in 591 (93.4%), medullary carcinoma in 16 (2.5%), follicular carcinoma in 14 (2.2%), oncocytic (hurtle cell) carcinoma in 7 (1.1%) and undifferentiated (anaplastic) in 5(0.8%) of the cases.

Conclusion: Incidental thyroid cancers are not a rare entity after pathological examination of thyroid specimen after surgery. Therefore, we suggest careful evaluation and bilateral lobectomy in surgical treatment of thyroid conditions

Key words: Thyroid, Benign, Malignant, Multicentricity

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Introduction

Thyroid gland is an important endocrine gland associated with plenty of diseases which are classified as congenital, genetic and sporadic. Surgery is indicated when cosmetic problems, compression symptoms and malignancy is the case. Although thyroid surgery is performed as the most particularly for malignancy, thyroidectomies for other reasons still maintain a large part of surgical interventions of the thyroid gland. However, there might be establishment of diagnosis of malignancy or a suspicion for malignancy before the surgery, incidental cancers should also be encountered by physicians. Thyroid cancers (TC) are the most

important diseases of the thyroid gland. It is the most prevailing malignant tumor of the endocrine system (Hu et al., 2018). It constitutes approximately 1% of all human malignancies and is the main cause of mortality among endocrine tumor-related deaths (Are & Shaha, 2006) In 2010, Jemal et al. reported 44700 new cases of thyroid cancers per year, worldwide, and 1700 deaths annually due to thyroid cancer (Jemal, Siegel, Xu, & Ward, 2010) Annual increase of 5.3% in TC incidence was reported by Magreni et al. in 2015 (Magreni, Bann, Schubart, & Goldenberg, 2015). Despite vast majority of thyroid cancers have low mortality and morbidity, aggressive cancer types of thyroid gland should not be ignored.

We aimed to investigate the incidence and subtypes of the thyroid cancers in this study, with our 10 years experience of thyroid surgery.

Methods

We retrospectively analyzed the data of patients who underwent thyroidectomy between January 2008 and December 2017 in General Surgery Department of University Hospital. This work has been approved by the directorate of the institution date 02.03.2016/349. We included all subjects undergone thyroid surgery. Clinical and radiological records of all patients, especially thyroid sonography, laboratory tests and fine needle aspiration cytology (FNAC) results were recorded and evaluated. The patients who underwent bilateral total thyroidectomy were included the study. The patients with lobectomy were excluded. Patients' age, gender and histopathological results were recorded from the institutional database. According to the histopathological reports we divided the patients into two groups either as benign or malignant. The subtypes of malignant group were classified as papillary carcinoma, follicular carcinoma, medullary carcinoma, oncocytic (hurtle cell) carcinoma and undifferentiated (anaplastic) carcinoma. Malignant group was also investigated for tumor size and presence of multicentricity.

Statistical Analyses

The demographic parameters and pathological results of all patients were recorded and statistically analyzed by SPSS software (SPSS 15.0 for Windows, IBM Inc, Chicago, IL, USA). Comparison of the non-homogenously distributed quantitative variables in study groups were compared by Mann-Whitney U Test and expressed as median (IQR) and qualitative variables were conducted by Chi-Square test and expressed as n (%). A p value less than 0.05 was considered as statistically significant.

Results

A total of 3632 patients included to the study. 2999 (82.6%) patients' histopathological results were benign and the average age of this group was 47.1 ± 12.5 years. 633 (17.4%) patients' histopathological results were malignant with an average age of 47 ± 12.6 years. The age was not statistically significant between benign and malignant groups ($p=0.711$). Benign group consisted of 2399 (80%) female and 600 (20%) male while malignant group consisted of 509 (80.4%) females and 124 (19.6%) males. As shown in Table 1, gender was not statistically different between benign and malignant groups ($p=0.811$).

Table 1. Demographic results

	Benign (n=2999)	Malignant (n=633)	P
Mean age (years)	47.1 ± 12.5	47 ± 12.6	0.711
Gender	Female (n, %)	509 (80.4%)	0.811
	Male (n, %)	124 (19.6%)	

Median tumor diameter in malignant group was 15.75 mm (1-90 mm). The tumor diameter was smaller than 10 mm in 319 (50.3%) and bigger than 10mm in 314 (49.7%) of the cases in the malignant group. The subtypes of malignant tumors were as follows: papillary carcinoma in 591 (93.4%), medullary carcinoma in 16 (2.5%), follicular carcinoma in 14 (2.2%), oncocytic (hurtle cell) carcinoma in 7 (1.1%) and was undifferentiated (anaplastic) in 5 (0.8%) of the cases.

The tumor was multicentric in 195 (30.8%) and unicentric in 438 (69.2%) cases in malignant group. Multicentricity rates of subtypes were 31.1% (n=184) in papillary, 31.2% (n=5) in medullary, 14.3% (n=2) in follicular, 14.3% (n=2) in oncocytic (hurtle cell) and 60% (n=3) in undifferentiated (anaplastic) carcinomas. The relationship between multicentricity and malignant subtypes was not statistically significant ($p=0.317$).

Patients' histopathological results younger than 50 years of age were consisted of 1718 (82.6%) benign and 361 (17.4%) malignant. For the patients over 50 years of age, 1281 (82.5%) were benign and 272 (17.5%) were malignant tumors. As shown in table 2, malignancy rates of the subgroups according to the age (over or under 50 years) were not statistically different ($p=0.906$).

Table 2. Histopathological Results

Malignant	n	%	p	
Age (years)	<50	361	17.4	0.90
	>50	272	17.5	
Tumor diameter (mm)	<10	319	50.3	0.81
	>10	314	49.7	
Tumor subtype and multicentricity	papillary	591/	93.4	0.31
		184	/29.1	
	medullary	16/5	2.5/0.8	
	follicular	14/2	2.2/0.3	
	oncocytic	7/1	1.1/0.2	
anaplastic	5/3	0.8/0.5		

Discussion

Although the majority of the pathology results after thyroid surgery are benign conditions, the rate of malignancies is increasing day by day. The higher number of incidental malignant pathologies contribute to these increased rates. Rather than compression symptoms and cosmetic problems, main indications of thyroid surgery in recent years are established malignancy and malignancy suspicion. One of the promising results of thyroid surgery is that the prognosis of thyroid malignancies is better than other organ malignancies.

Thyroid surgery is the mostly performed in women. In the literature, the ratio of women and men varies between 3.4-7.6% (Akgun et al., 2007; Benek et al., 2015). In our study this ratio was 4.1. The mean age of patients who underwent thyroid surgery ranged from 43 to 51 years in the literature (Benek et al., 2015; Lefevre et al., 2007). In our study, the mean age was found to be 47 years. Although thyroid surgery is performed initially due to a benign disease, in histopathological examination 3-16.6% of incidental cancer is detected (Efremidou, Papageorgiou, Liratzopoulos, & Manolas, 2009; Erbil et al., 2006; Prades et al., 2002). In our study, the rate of cancer in the whole series was found to be 17.4%.

Thyroid cancers are generally classified into two categories as differentiated and undifferentiated. The most common subtypes are papillary cancers. Prognosis of papillary cancer is better than other subtypes. In the differentiated thyroid cancer series of 1005 cases by Nickel B et al., the most common subtype was papillary cancer with a rate of 88.6% (Nickel et al., 2019). The most common pathologic diagnosis in thyroid surgery performed by Ohtsuru et al. was papillary cancer with a rate of 98% (Ohtsuru et al., 2019). Similar to the literature knowledge, in our series of 633 thyroid cancers, the most common pathologic diagnosis was papillary cancer (93.4%). Today, due to the development and availability of

diagnostic methods, thyroid cancer is diagnosed at micro (<10mm) levels and even may be followed up without surgery. Papillary thyroid microcarcinoma (PTMC), accounts for 39% of the cases of thyroid cancer in the USA and 43.1% of the cases in Korea (Davies & Welch, 2014; Lee & Shin, 2014). In our study, we found the microcarcinoma ratio as high as 50.3%. This is due to the advanced imaging and laboratory facilities of our institution as a tertiary referral hospital.

One of the most important problems in thyroid cancer is the multifocality of the tumors. Multicentricity of Papillary thyroid cancer is a well-described feature of this tumor, with estimated frequency range from 22% to 49% (Grigsby, Gal-or, Michalski, & Doherty, 2002). In our study, multicentricity rate was 30.2% in all patients diagnosed with thyroid cancer, and the rate of multicentricity in the papillary cancer was 31.2%.

Retrospective design is a limitation of our study, however, important results of the present study suggesting literature knowledge may add significant contribution to the current medical literature.

Conclusion

Incidental thyroid cancers are not a rare entity after pathological examination of thyroid specimen after surgery. Therefore, we suggest careful evaluation and bilateral lobectomy in surgical treatment of thyroid conditions.

Ethics Committee Approval: Ethics committee approval was received for this study from Clinical Research Ethics Committee of Haseki Education and Research Hospital. (Date: 02.03.2016, Decision Number:349).

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