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Thyroid cancer surgery in the elderly: a comparative study of 1176 patients

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ABSTRACT

Background: The aim of this study is to compare the results of patients who were treated with two groups (under 65 years and over 65 years) of thyroid cancer.
Methods: A retrospective review of 1176 patients undergoing thyroid cancer surgery between January 2007 and December 2016 was performed. Patients were grouped as ≥65 (geriatric group) and <65 years (non-geriatric group).
Results: A total of 139 patients (11.8%) were over 65 years of age and 1037 patients (88.2%) were under 65 years of age. There were 104 female (74.8%) and 35 (25.2%) male patients in the geriatric group. In the non-geriatric group, 917 (78%) patients were female and 259 (22%) were male (p = 0.39). FNAB showed a significant increase in malignant potential in the elderly (p = 0.005). In our series, malignant differences between geriatric and non-geriatric groups are less pronounced among thyroid carcinomas other than capsular invasion. Although there was no significant difference in histopathologic examination, malignant cytology was higher in the elderly patients. There was no significant difference between the young and elderly patients in terms of complication.
Conclusions: In this study, papillary Thyroid Ca (PTC) was found to be the most common type of cancer and we could not find any difference in cancer type distribution in geriatric and non-geriatric patients. Total/near total thyroidectomy in experienced hands is safe for elderly patients. There is no difference in terms of complication.

Keywords: Complication, Elderly, Thyroid surgery, Thyroid cancer, Thyroidectomy

INTRODUCTION

Thyroid cancer is the most common malignancy of the endocrine system in the United States.[1] Thyroid cancer is predicted to be the fourth most common cancer in the United States in 2030.[2] Although the increase in prevalence is mostly due to increased use of imaging modalities and due to the higher sensitivity of ultrasonography by some authorities, there are implications for a real increase.[3-5] Due to the proven correlation between thyroid nodules and aging, improved disease detection methods, and longer life expectancy, it is likely to expect an increase in demand for thyroid surgical procedures in elderly patients. However, debate exists about the feasibility and safety of thyroid surgery in this subgroup of patients.[6,7]

The aim of our study was to review the outcomes of thyroid surgery in our hospital to compare features of two groups of patients who have undergone surgery. The first group included patients younger than 65 years and the second group included patients older than 65 years.

Furthermore, it was aimed to investigate effectiveness and safety of surgery in the geriatric patients.

METHODS

A retrospective analysis of 1176 patients who underwent surgery for thyroid cancer between January 2007 and December 2016 was carried out. Patients with insufficient clinical data and histopathology reports and patients with an additional malignancy were excluded. Patients were grouped as ≥65 (geriatric group) and <65 years old (non-geriatric group). Demographical, cytological results and final histopathological diagnosis were obtained from medical records. For all patients, Ultrasound Guided (US-guided) FineNeedle Aspiration Biopsy (FNAB) was performed by an experienced endocrinologist.

Surgery

Total/near-total thyroidectomy (BTT/NT) or hemithyroidectomy was performed depending on the size and/or cytopathological result of the nodule. All procedures were performed under general anesthesia. Kocher cervical incision (6-10 cm) was usually performed. Shorter or longer incisions were decided depending on the expected dimension of the specimen and type of approach needed (unilateral versus bilateral exploration), and length also varied according to patient's shape and surgeon's expertise.

The surgeon visualized the superior pedicle, divided it using either energy devices or ties, avoiding injuring of the external branch of the superior thyroid nerve.[10] Then parathyroid glands were identified, dissected from the thyroid and left in its bed.

The recurrent laryngeal nerve was always observed. Lymphadenectomy was carried out in selected patients, according to accepted criteria.[11] Hemostasis was achieved by means of cautery and topical hemostatic agents; suction drains were placed to all patients. Patients were discharged after 4 days at the longest and were subsequently evaluated in outpatient clinic after 10 and 30 days, then at least every 6 months for the first year. All data concerning surgery, pathologic classification, and postoperative complications were accurately gathered.

Statistical analysis

SPSS for Windows 20 (IBM SPSS, Armonk, NY: IBM Corp.) program was used for statistical assessments. Descriptive statistics for continuous variables were expressed as the mean±the standard deviation or as the median (minimum–maximum). The categorical variables are denoted as the number and percent (%).

Data were compared using 2-tailed Fisher's exact test. A p value <0.05 with 95% confidence interval was accepted to indicate statistical significance. Multiple logistic (binomial) regression analyses were performed, with complications as outcome.

RESULTS

There were 1176 patients operated with thyroid cancer, in total, 139 (11.8%) patients were ≥65 and 1037 patients (88.2%) were <65 years old. In geriatric group, there were 104 female (74.8%) and 35 (25.2%) male patients. In non-geriatric group, 917 (78%) patients were female and 259 (22%) were male. There was not any significant difference in sex distribution between groups (p=0.39). Mean age was 68.73±3.23and 47.21±10.10 years in geriatric and non-geriatric groups, respectively (p <0.001).

Table 1: Comparison of surgical treatment and postoperative complications between geriatric and nongeriatric patients.

	Geriatric (≥65) (n = 139)	Non-geriatric (<65) (n = 1037)	p value
Age	68.73±3.23	47.21±10.10	<0.001
Sex			0.39
Female	104 (88.2%)	917 (78%)	
Male	35 (11.8%)	259 (22%)	
Surgical approach			
BTT/NT	137 (98.57%)	1022 (98.56%)	1
with lymphadenectomy	14 (10.7%)	65 (6.27%)	0.15
Hemithyroidectomy	2 (1.43%)	15 (1.44%)	
Major postoperative complications			
Transient RLN injury	6 (4.32%)	46 (4.44%)	1
Permanent RLN injury	1 (0.72%)	13 (1.25%)	1
Transient hypoparathyroidism	15 (10.79%)	111 (10.70%)	1
Permanent hypoparathyroidism	1 (0.72%)	15 (1.45%)	0.71
Hemorrhage	2 (1.44%)	12 (1.16%)	0.67

RLN, recurrent laryngeal nerve. Significant p values are indicated as bold in the table

Total/near-total thyroidectomy or hemithyroidectomy was performed depending on the size and/or cytopathological result of the nodule. There is no difference between the groups in terms of operations and postoperative major complications. Demographic characteristics of the patients, surgical approach and postoperative major complications are depicted (Table 1).

FNAB showed a marked increase in malignant potential in the elderly (p=0.005). But there was no significant difference in the histopathological examination of the removed specimen. Papillary cancer was detected to be around 90% in both groups, the medullary and anaplastic

carcinoma types did not show any difference between the groups. Capsular invasion was detected in 40 patients from the geriatric group (29%) in histopathological examination, whereas in the non-geriatric group this ratio was 19.40% (n=201) and statistically significant. Frequency of lymph node metastasis (LNM) and distant metastasis did not change between groups (p=0.542 and p=0.222 respectively) (Table 2).

Table 2: Cytological and histopathological features of malignant thyroid nodules in geriatric and non-geriatric patients.

	Geriatric (≥65) (n=139)		Non-geriatric (<65) (n=1037)		p value
Cytological diagnosis	**n**	**%**	**n**	**%**	
Nondiagnostic	13	9.21	150	14.50	0.116
Benign	20	14.39	163	15.70	0.805
AUS/FLUS	23	16.40	195	18.80	0.646
FN/SFN	4	3.00	73	7.00	0.093
Suspicious for malignancy	33	24.00	228	22.00	0.663
Malignant	46	33.00	228	22.00	0.005
Total	139	100.00	1037	100.00	
Histopathological features					
Tumor type	0		0		
Papillary (PTC)	124	89.00	966	93.13	0.115
Follicular (FTC)	3	2.00	35	3.38	0.611
Hurthle cell (HCC)	6	4.00	18	1.74	0.054
Medullary (MTC)	1	0.70	6	0.60	0.586
Anaplastic (ATC)	3	2.00	5	0.48	0.057
WDT-UMP	3	2.50	7	0.68	0.104
Total	139	100	1037	100.00	
Capsular invasion	40	29.00	201	19.40	0.013
Vascular invasion	8	6.00	38	3.70	0.241
Extrathyroidal extension	19	14.00	93	9.00	0.089
Lymph node metastasis	13	64			0.542
Distant metastases	1	1			0.222

AUS/FLUS atypia of undetermined significance/follicular lesion of undetermined significance, FN/SFN follicular neoplasm/suspicious for follicular neoplasm, PTC papillary thyroid cancer, WDT-UMP well-differentiated tumor of uncertain malignant potential Significant p values are indicated as bold in the table.

DISCUSSION

An exact definition of the geriatric patient is not available in the medical literature. Like the other authorswe have chosen 65 years as an age limit with the aim of obtaining a larger series.[12,13] In our series, malignant differences are less marked between the geriatric and non-geriatric groups among the thyroid carcinomas except capsular invasion. Although there was no significant difference in the histopathological examination of the removed specimen, malignant cytology was higher in the elderly. This is an expected result because it is known that there is a direct relationship between age and the malignant potency of thyroid nodules.[14]

In the study of Livhits MJ et al, 27912 patients who underwent thyroid cancer surgery was analysed. It was found that the rate of hypoparathyroidism and vocal cord paralysis was higher in patients over 65 years of age.15 However, our findings contradict with these observations. However, with different diagnoses, elderly patients received surgical treatments similar to and suffered from a rate of complication comparable to those of younger patients (Table 1).

Only 2 (1.43%) of the patients underwent hemithyroidectomy in the geriatric patient group and the rest underwent Total/Near-total thyroidectomy. Central lymph node dissection is not routinely performed in our center for patients undergoing thyroidectomy which might have caused misjudgement regarding characteristic of nodules. However, prophylactic central lymph node dissection is still a controversial issue, and there is not an exact recommendation favoring this procedure in the lack of clinical and imaging evidence of metastasis.[16]

Differentiated thyroid cancer (DTC) prevalence increases significantly with age.[17] Although some studies do not show differences prevalence of well-differentiated histotypes in their ages, PTC and FTC showed others it has been reported that PTC is less common in these patients.[17-19] In this study, PTC, the most common type of thyroid cancer in both groups at the same time, is less noticeable in geriatric than in non-geriatric patients. Authors could not find any difference in derivative distribution in geriatric and non-geriatric patients.

Anaplastic thyroid cancer is mostly found in older age and can be seen very rarely in younger patients.[18,20] Although some studies reported higher frequency of MTC in patients older than 75 years others reported no difference.[12,20-23] Likely, authors did not find any difference in MTC between geriatric and nongeriatric patients in this study.

Well-differentiated tumors of uncertain malignant potential (WDT-UMP) are possible borderline lesion of thyroid follicular cell tumor and usually have a more favorable prognosis.[24] Authors did not observe any statistical difference in frequency of WDT-UMP and anaplastic thyroid cancer between two groups, but in percentage, it is higher in the geriatric group (Anaplastic 2% vs. 0,48%. WDT-UMP 2,5% vs. 0,68%)

There are some limitations in our study. Firstly, it is a retrospective and single-centered study. Secondly, number of geriatric patients was lower than non-geriatric patients.

CONCLUSION

Thyroid nodules in elderly patients should be evaluated carefully and diagnostic procedures should be offered without delay. Lymph node metastases, vascular invasion and extrathyroidal extension do not differ, but capsular invasion and anaplastic thyroid cancer are increased in geriatric patients. In experienced hands, Total/near-total thyroidectomy can be safe for elderly patients. No differences in terms of complications should be expected.

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