Turkish Journal of Endocrinology and Metabolism, (2002) 4 : 145-147 **ORIGINAL ARTICLE**

Evaluation of Thyroid Nodules: Incidence and Distribution of Thyroid Cancer

Mehmet Fırat **Engin Güney** **A. Gökhan Özgen** **Taylan Kabalak**

* *Department of Internal Medicine, Medical Faculty of Ege University, İzmir*
** *Department of Endocrinology, Medical Faculty of Adnan Menderes University, Aydın*
*** *Department of Endocrinology, Medical Faculty of Ege University, İzmir*

Thyroid nodules are a common problem in clinical practice, they are usually benign; only about 5% of these nodules harbor malignancy. It is important to identify those that are likely to be malignant. The majority of thyroid cancers are papillary cancers, and also, follicular, medullary and anaplastic cancers may be seen. In this study, we aimed to evaluate the patients with nodular goiter who were followed up in our hospital and to examine the ratio of thyroid cancer in thyroid nodules and the distribution of tumor types. 2072 patients (1710 females, 362 males) who were followed up for euthyroid nodular thyroid disease were included in the study. The frequency of patients to whom thyroidectomy was applied and found to have thyroid cancer was examined. And also, the distribution of different types of cancer in 126 patients with thyroid cancer was evaluated. It was determined that 58.7% of patients had papillary cancer, 23.0% had follicular cancer, 12.6% had medullary cancer, and 5.5% had anaplastic cancer. Ratios of the frequency and distribution of thyroid cancer among patients with nodular goiter are generally in agreement with the literature.

Key words: Thyroid, nodule, cancer

Introduction

Thyroid nodules are a common problem in clinical practice, its prevalence shows large variance according to the method used in research (1,2). Thyroid nodules are usually benign; only about 5% of these nodules harbor malignancy (3,4). In contrast to thyroid nodules, thyroid cancer is a rare condition, with an incidence of 0.004% per year according to the Third National Cancer Survey. Thus, most thyroid nodules are benign, and it is important to identify those that are likely to be malignant (5). The increase in thyroid cancer incidence may be associated with using more intensive diagnostic activities (6). However, the approach to the patient with a thyroid nodule remains controversial.

Correspondence address:

Engin Güney
Meşrutiyet Mah. Atatürk Bul. Keçelioğlu apt. No: 31/28 Aydın
Tel: 0 256 212 49 74 GSM: 0 532 749 62 60
E-mail: enginguney@hotmail.com

The therapeutic alternatives range from suppressive medical therapy with serial examinations to surgical excision; therefore, to obviate unnecessary surgery, several diagnostic techniques and approaches have evolved which attempt to predict the presence of malignancy (7). It is suggested that performing fine-needle aspiration biopsy (FNAB) in all nodules and thyroidectomy is necessary in patients evaluated as malignant or suspicious in cytologic examination (8,9). Cold nodules established with a thyroid scan have a 10-20% probability of malignancy, but the incidence of malignancy in hot nodules is about 1% (10,11). Generally, the incidence of malignant involvement in multinodular goiter does not differ significantly from that found in solitary nodules (12).

The majority of thyroid cancers are papillary cancers and also, follicular, medullary and anaplastic cancers may be seen. In this study, we aimed to evaluate the patients with nodular goiter who were followed up in our hospital and to examine the ratio of

thyroid cancer in thyroid nodules and the distribution of tumor types.

Materials and Methods

Two thousand and seventy-two patients (1710 women, 362 men) who were followed-up for euthyroid nodular thyroid disease in the Endocrinology Department of Ege University Hospital were included in the study. The frequency of patients to whom thyroidectomy was applied considering malignity according to the result of FNAB or due to some other cause, and found to have thyroid cancer as the result of pathology were examined. Also, the distribution of different types of cancer in 126 patients (96 women, 30 men, age: 44.3 ± 11.0 years) with thyroid cancer was evaluated. SPSS 10.0 program was used for statistical results and χ^2 test was applied.

Results

Thyroid cancer was found in 126 of 2072 patients who were followed-up with nodular goiter, and thyroid cancer frequency was calculated as 6%. It was determined that a large majority of patients with nodular goiter and also with thyroid cancer were women (Table 1).

Table 1. Sexual distribution of patients with nodular goiter and thyroid cancer.

	Nodular Goiter	Thyroid Cancer
Women	1710 (82.5 %)	96 (76.2 %)
Men	362 (17.5 %)	30 (23.8 %)
Total	2072	126

The distribution of 126 patients with thyroid cancer is given in Table 2. It was determined that 74 patients (58.7%) had papillary cancer, 29 patients (23.0%) had follicular cancer (14 of these were found to have hurthle cell cancer), 16 patients (12.6%) had medullary cancer, and 7 patients (5.5%) had anaplastic cancer (Table 2).

Table 2. The distribution of cancer types among patients with thyroid cancer.

Papillary Cancer	74 (% 58.7)
Follicular Cancer	29 (% 23.0)
Medullary Cancer	16 (% 12.6)
Anaplastic Cancer	7 (% 5.5)
Total	126

Discussion

Thyroid nodules are the commonest disorder presenting to the endocrine surgeon. Most of the lesions are benign, but the principal problem facing the clinician is that of identifying the malignant nodule requiring surgery (13). We evaluated the patients to whom thyroidectomy was applied and who were found to have thyroid cancer. Of 2072 patients who were followed-up with nodular goiter, 126 patients had thyroid cancer with a frequency of 6% and this ratio was evaluated to be in concordance with the literature (14). It was determined that 82.5% of patients that have nodular goiter and 76.2% of patients with thyroid cancer were women and these findings were also in correlation with previous data It is reported that thyroid carcinoma is two or three times more common in women than in men, especially during the reproductive years, hormonal factors being probably involved (15,16). Data from recent studies support the hypothesis that reproductive factors and patterns may influence, or contribute to, the risk of thyroid cancer among women (17).

The majority of thyroid cancers originate from follicle cell. Follicle cells based cancers are papillary and follicular cancer. Approximately 75% of all thyroid cancers are papillary carcinoma and 16% are follicular carcinoma. Cancers that do not originae from follicle cell are seen less frequently: 5% of all thyroid cancers are medullary cancers and 3% are anaplastic cancers (5). Lymphoma and metastatic cancers have a lesser incidence (~1%). It was found that 58.7% of patients had papillary cancer, 23.0% had follicular cancer, 12.6% had medullary cancer, and 5.5% had anaplastic cancer in our study. It was seen that the medullary cancer percentage was particularly high. The reason for this was thought to be dependent on the investigation of calcitonin level in 773 patients (586 women, 187 men) followed up with nodular goiter. 4 patients with medullary cancer were confirmed during this search (18). The anaplastic cancer ratio was found to be slightly high. Due to the possible confusion of this cancer type with lymphoma, some of these diagnoses may be thought to be lymphoma. However, ratios of frequency and distribution of thyroid cancer are generally in agreement with the literature.

References

1. Larsen PR, Davies TF, Day ID. The thyroid gland. In Williams Textbook of Endocrinology (Eds: Wilson JD, Foster DW, Kronenberg HM, Larsen PR). WB Saunders Company 1998, 389-515.

2. Bruneton JN, Balu-Maestro C, Marcy PY, Melia P, Mourou MY. Very high frequency (13 MHz) ultrasonographic examination of the normal neck: detection of normal lymph nodes and thyroid nodules. *J Ultrasound Med* **13** (2): 87-90, 1994.
3. Kabalak T. Tiroid nodülleri. Endokrinoloji el kitabı (Ed: Kabalak T, Yılmaz C, Tüzün M) 2001, 181-190.
4. Castro MR, Gharib H. Thyroid nodules and cancer. When to wait and watch, when to refer. *Postgrad Med* **107**(1): 113-116, 2000.
5. Greenspan FS. The thyroid gland. In Basic & Clinical Endocrinology (Eds: Greenspan FS, Gardner DG) 6th edition McGraw-Hill, 2001, 201-72.
6. Liu S, Semenciw R, Ugnat AM, Mao Y. Increasing thyroid cancer incidence in Canada, 1970-1996: time trends and age-period-cohort effects. *Br J Cancer* **85**(9): 1335-1339, 2001.
7. Campbell JP, Pillsbury HC. Management of the thyroid nodule. *Head Neck* **11**(5): 414-425, 1989.
8. Barbaro D, Simi U, Lopane P, Pallini S, Orsini P, Piazza F, Pasquini C, Soriani G. Thyroid nodules with microfollicular findings reported on fine-needle aspiration: invariably surgical treatment? *Endocr Pract* **7**(5): 352-327, 2001.
9. Ravetto C, Colombo L, Dottorini ME. Usefulness of fine-needle aspiration in the diagnosis of thyroid carcinoma: a retrospective study in 37,895 patients. *Cancer* **90**(6): 325-329, 2000.
10. Clark OH. Thyroid nodules and thyroid cancer: surgical aspects. *West J Med* **133**(1): 1-8, 1980.
11. Thompson NW, Nishiyama RH, Harness JK. Thyroid carcinoma: current controversies. *Curr Probl Surg* **15**(11): 1-67, 1978.
12. Sachmechi I, Miller E, Varatharajah R, Chernys A, Carroll Z, Kissin E, Rosner F. Thyroid carcinoma in single cold nodules and in cold nodules of multinodular goiters. *Endocr Pract* **6**(1):5-7, 2000.
13. Wong CK, Wheeler MH. Thyroid nodules: rational management. *World J Surg* **24**(8): 934-941, 2000.
14. Werk EE Jr, Vernon BM, Gonzalez JJ, Ungaro PC, McCoy RC. Cancer in thyroid nodules. A community hospital survey. *Arch Intern Med* **144**(3): 474-476, 1984.
15. dos Santos Silva I, Swerdlow AJ. Sex differences in the risks of hormone-dependent cancers. *Am J Epidemiol* **138** (1): 10-28, 1993.
16. Schneider AB, Ron E. Carcinoma of follicular epithelium: Pathogenesis. In Werner & Ingbar's The Thyroid A Fundamental and Clinical Text (Eds: Braverman LE, Utiger RD) 8th edition Lippincott Williams & Wilkins. 2000, 875-886.
17. Memon A, Darif M, Al-Saleh K, Suresh A. Epidemiology of reproductive and hormonal factors in thyroid cancer: evidence from a case-control study in the Middle East. *Int J Cancer* **97**(1): 82-89, 2002.
18. Özgen AG, Hamulu F, Bayraktar F, Yılmaz C, Tüzün M, Yetkin E, Tuncyürek M, Kabalak T. Evaluation of routine basal serum calcitonin measurement for early diagnosis of medullary thyroid carcinoma in seven hundred seventy-three patients with nodular goiter. *Thyroid* **9**(6): 579-582, 1999.