Frequency of thyroid cancer in patients operated at Cantonal Hospital Zenica, Bosnia and Herzegovina, in the period 2007-2014

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ABSTRACT

Aim To determine frequency and type of thyroid cancer (TC) as well as gender and age distribution of patients operated at the Department of Ear, Nose and Throat (ENT), Cantonal Hospital Zenica, Bosnia and Herzegovina.

Methods A retrospective analysis of data obtained from an operating protocol and disease history of patients operated in the eight-year period (2007-2014) was made according to the frequency and type of thyroid cancer, as well as age and gender of the patients. χ² test was used for statistical with p<0.05.

Results A total of 818 surgeries of the thyroid gland were conducted, in 714 (87.29%) female and 104 (12.71%) male patients. Malignancies were diagnosed in 74 (9.05%) patients, of whom 64 (86.49%) were females and 10 (13.51%) were males, resulting in the gender prevalence of 8.96% and 9.62%, respectively. The most often presented type was papillary carcinoma, in 48 (out of 74, 64.86%) patients, followed by follicular carcinoma in 10 (13.51%), medullary carcinoma in four (5.41%), Hurthle cell carcinoma in four (5.41%) patients, while anaplastic carcinoma was found in one (1.35%) patient. The number of diagnosed malignancy varied from 0% (in 2007) to 13.91% (in 2014) (p=0.05).

Conclusion The prevalence of thyroid cancer is low, but has an increasing trend. A large number of unnecessary surgeries on thyroid gland was performed. Preoperative diagnostic procedures for diseases of the thyroid gland in Cantonal Hospital Zenica should be improved in order to avoid unessential surgeries.

Key words: thyroidectomy, malignant disease, thyroid nodule

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INTRODUCTION

Thyroid carcinomas (TC) are rare tumors with the rate of 1% of all malignoma (1). It is the most common endocrine carcinoma and includes about 5% of all thyroid nodules (2). In general population it is considered that 20-50% of people have nodules in the thyroid gland (3). About 8% of the adult population have palpable nodules (4). Majority of the nodules are benign and only 10% harbor malignancy (5). In an autopsy series from Malmö, Sweden, comprising 821 thyroid glands, the reported nodule prevalence was 49.5% (3). Some statistics indicate that one quarter of the population (13-35%) has papillary thyroid carcinoma (PTC), detected in 3-9 cases per 100000 yearly mostly by accident (3). Thyroid cancer is 2-4 times more frequent in females than in males (2). Also, the incidence of TC has been on the continuous rise in the last 20 years (1). There is a report describing overall prevalence of TC in 53 856 patients from the United States with approximately 79% of cases with papillary thyroid carcinoma (PTC), 13% of follicular carcinoma (FTC), and approximately 3% of Hurthle cell carcinoma. Medullary thyroid cancer (MTC) accounts for about 4% of thyroid carcinomas (6). Anaplastic carcinomas, lymphoma and metastatic disease make a small portion of thyroid malignancies (6). There are many reports showing an increasing incidence of TC (7-9).

There are different methods of diagnostic evaluation but it always begins with history and clinical examination (10). The diagnostics continues with laboratory tests (thyroid hormone, thyroid antibodies, thyroglobulin, and calcitonin) and then is expanded to ultrasonography (US), thyroid scintigraphy, fine needle aspiration biopsy (FNAB) (10). The evaluation and management of cold thyroid nodules remains the area of controversy (11). In most centers, FNAB has supplanted imaging studies as the routine initial procedure for differentiating benign from malignant nodules (12). Cytological diagnosis is reliable and inexpensive, and it results in better selection of patients for surgery (12).

Risk factors for TC include low alimentary iodine intake, genetics, certain familial syndromes (e.g. familial polyposis coli, Gardner syndrome), obesity (women), ionizing radiation (especially in childhood, children tend to get papillary cancer), reproductive and hormonal status (higher risk associated with high parity and late menarche) (13).

Epidemiology of TC in the developed world is sufficiently described (2,6,14). In Bosnia and Herzegovina and other Balkan countries there are only a few reports (15,16). The aim of this retrospective study was to review hospital records in order to assess data on TC prevalence as well as characteristics (age, gender, type of TC) of patients operated at the Department of Ear, Nose and Throat (ENT), Cantonal Hospital Zenica, Bosnia and Herzegovina.

PATIENTS AND METHODS

Patients and study design

A retrospective analysis of data obtained from operating protocols and disease history of patients with the diagnosis of multinodular goiter or suspicions of malignancy of thyroid gland operated at the Ear, Nose and Throat (ENT) Department of Cantonal Hospital Zenica in the eight-year period (January 01, 2007- December 31, 2014) was conducted.

Methods

Indications for surgery including multinodular goiter, big goiter with compression syndrome or suspicions of malignancy of thyroid gland operated at the Ear, Nose and Throat (ENT) Department of Cantonal Hospital Zenica was performed. Histopathological examination was done at the Pathology Department of the Cantonal Hospital Zenica. Immunohistochemistry was performed at the Institute of Pathology at Clinical University Center in Sarajevo or Tuzla.

All patients with histological confirmation of TC were selected. Age, gender, number and type of operation were recorded. Histologically, tumors are classified according to the WHO classification into 4 main types: papillary (PTC), follicu-
lar (FTC), medullar (MTC) and anaplastic) (17). Adenocarcinoma and squamous cell carcinoma (SCC) in the thyroid gland were considered as metastases from other organs (17).

**Statistical analysis**

Age, gender and type of TC as well as annual prevalence were analyzed using χ2 test with statistically significance limit of p <0.05.

**RESULTS**

In the eight-year period 818 surgeries on the thyroid gland were performed. There were 714 (87.29%) females and 104 (12.71%) males. Three oldest patients at the time of surgery were 79 years old (without malignancy); the youngest patient was a 12-year old girl operated due to suspicion of MTC, but after lobectomy no malignancy was found on histopathological examination.

Among 818 surgeries there were 385 total thyroidectomies, 379 lobectomies, 28 subtotal thyroidectomies, 15 cyst enucleations, and 11 other types of surgeries (biopsy, isthmectomy).

The number of operations had an increasing trend during the 2007-2014 period (the lowest number was recorded in 2008 with 62 patients, and highest in 2012 with 156 patients). The number of diagnosed malignancy varied from 0% (in 2007) to 13.91% (in 2014) with cutoff statistically significant difference (p=0.05). Every year a large number of operations was done on patients without the malignant disease (86.09% and 100% in 2014 and 2007, respectively) (Table 1).

The largest proportion of patients had PTC tumor type, 48 (64.86%) (five males and 43 females), of which eight were micro carcinoma; 10 patients (13.51%) had FTC (one male and nine females); four (5.41%) patients had MTC (all females); four (5.41%) patients had Hurthle cell carcinoma (all females); one male patient (1.35%) had anaplastic type of TC. Of the remaining seven patients three had adenocarcinoma (one male and two females) and four had squamous cell carcinoma (SCC) (two males and two females) (Table 3). The distribution of TC type according to gender has shown statistically significant difference (p=0.03).

**DISCUSSION**

The results of this study related to frequency of each histopathology type of thyroid cancer do not differ from the published literature; follicular and anaplastic TC were noticed less frequently,
while Hurthle cell carcinoma was slightly more common in our study (6,10,18). Data from this study on gender and age distribution are similar to those of the relevant literature: TC was more frequent in females than in males (2), and the diagnosis of all carcinomas increased significantly from the age of 40 (18).

There are two sets of data on the incidence of TC in the literature. In institutions where FNAB is routinely performed preoperatively, the incidence of TC is much higher, because this procedure has high sensitivity and specificity (19,20,21). The second group of data report incidentally discovered TC in the patients undergoing surgery without suspicion of malignancy, usually with the diagnosis of multinodular goiter. The data from our study do not differ from the published literature (22-25).

In our institution the FNAB is not performed routinely because of the lack of cytopathologists. In most cases the diagnostic process ends with ultrasonography (US) or scintigraphy. Relying on such a diagnostic evaluation, majority of our patients were sent to surgery with the diagnosis of multinodular goiter without suspected malignancy. A small number of patients was referred to surgery with suspected malignancy after US or scintigraphy, and even then in many cases the diagnosis was not confirmed by histopathological analysis. Consequently, a large number of patients could avoid surgical treatments if the diagnostic procedures were satisfactory. Additionally, money could be saved because the cost of FNAB diagnostic procedures is much lower than the cost of unnecessary surgical treatment (11). Due to better diagnostic evaluation, a large number of patients with suspected TC are referred to surgery, and this is the reason for a very extensive type of surgery. In our daily practice each TC and even microcarcinoma undergo total thyroidectomy. An analysis of autopsy material from Malmoe (Sweden) showed high prevalence of undiagnosed TC suggesting a large number of microcarcinomas and slow growing well-differentiated TC, which do not require surgery, or operations may not be too extensive (2,18, 25-27).

In conclusion, a lot of unnecessary surgeries on thyroid gland were performed. One of ten patients operated in our institution has TC. The development of a strategy for better preoperative diagnostic procedures is necessary to avoid unessential surgeries. This would reduce costs, and more importantly, ensure better health care for our patients and getting closer to standards of the developed countries.

**REFERENCES**


Učestalost karcinoma štitne žlijezde kod pacijenata operisanih u Kantonalnoj bolnici Zenica u periodu od 2007. do 2014. godine

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SAŽETAK

Cilj Utvrđiti učestalost i vrstu, te spolnu i dobnu distribuciju karcinoma štitne žlijezde u pacijenata operisanih na Odjelu za bolesti uha, grla i nosa Kantonalne bolnice Zenica.

Metode Napravljena je retrospektivna analiza podataka dobijenih iz operativnih protokola i historijal bolesti pacijenata u periodu od 2007. do 2014. godine. Analizirana je učestalost i tip karcinoma, te spolna i starosna dob pacijenata. Za statističku obradu korišten je χ2 test uz p≤0.05.

Rezultati Ukupno je izvedeno 818 operativnih zahvata na štitnoj žlijezdi. Operisano je 714 (87.29%) žena i 104 (12.71%) muškarca. Dijagnosticirano je 74 (9.05%) maligniteta, 64 (86.49%) kod žena i 10 (13.51%) kod muškaraca. Zabilježena je učestalost karcinoma kod 9.62% (10/104) muškaraca i kod 8.96% (64/714) žena. Najčešće je bio zastupljen papilarni karcinom, u 48 od 74 (64.86%) pacijenata, folikularni karcinom kod 10 (13.51%) pacijenata, a po 4 (5.41%) pacijenta imala su medularni i Hurthle cell karcinom, dok je 1 (1.35%) pacijent imao anaplastični karcinom. Broj dijagnosticiranih karcinoma varirao je od 0% (2007. god.) do 13.91% (2014. god.) (p<0.05).


Ključne riječi: tireoidektomija, maligna bolestan, žlijezdina Štitna Žlijezda