Incidence of thyroid microcarcinoma in relation to gender and age in non-toxic thyroid diseases treated with total thyroidectomy

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Introduction - Objective

Thyroid cancer comprises the most common endocrine malignancy (~90%) and ~1% of all malignant tumours. The rate between females and males is 2-3:1.

Established risk factors for differentiated thyroid cancer (DTC):
1. Head and neck radiation for a variety of illnesses, mainly at child- and adolescent age
2. Iodine deficiency
3. Gene mutations with activation of oncogenes or loss of the function of genes, which inhibit the activity of oncogenes.

There appears to be a poor relationship of thyroid cancer with racial- demographic factors, origin, nutritional habits, etc.1

A variety of clinical studies worldwide have examined the incidence of microcarcinomas in benign thyroid disorders (rate 5.0-22.0%).2,3,4

Objective of the present retrospective study was the assessment of the possible influence of age and gender parameters in the presence of thyroid microcarcinoma in a patient cohort with non-autonomous thyroid disorders and without cytological establishment of thyroid cancer who underwent total thyroidectomy.

Patients and Methods

Between 2005-2010 186 patients (146 females/ 46 males - 79.8% / 20.2%) underwent total thyroidectomy because of non-toxic goiter with a solitary nodule (STN) or multiple nodules (multinodular goiter, MTG). The classification of patients in both genders was conducted in the following age-groups: a) 20-39 y; b) 40-59 y; c) =>60 y. The surgical specimens were histopathologically examined at the University Pathology Department for the establishment of the final diagnosis of benignity or malignancy. Thyroid cancer cases were categorised in relation to gender and age group. Exclusion criteria were the following: 1. Any type of previous thyroidectomy. 2. Any history of head and neck radiation. 3. Any cytological diagnosis of thyroid malignancy.

Results

32 patients (17.2%) were diagnosed with incidental thyroid microcarcinoma (ITC) (rate females:males 2.2:1), while 154 patients (82.8%) were free of thyroid malignancy. Specifically: 30 subjects (93.75%) had DTC [26 papillary (81.25%) and 4 follicular thyroid cancer (12.5%)]

<table>
<thead>
<tr>
<th>Age group</th>
<th>Males (% Ca)</th>
<th>Females (% Ca)</th>
<th>p value</th>
<th>Odds ratio (OR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a (20-39 y)</td>
<td>4/9 (44.4)</td>
<td>4/9 (44.4)</td>
<td>0.080</td>
<td>3.77</td>
</tr>
<tr>
<td>b (40-59 y)</td>
<td>1/15 (6.67)</td>
<td>9/73 (12.30)</td>
<td>0.529</td>
<td>0.51</td>
</tr>
<tr>
<td>c (=&gt;60 y)</td>
<td>5/16 (31.25)</td>
<td>6/33 (18.20)</td>
<td>0.304</td>
<td>2.05</td>
</tr>
</tbody>
</table>

The prevalence of ITC was statistically significant higher (~4 times) in males 20-39 years compared to women of the same age range. There was no statistically significant difference in the other age groups.

Conclusions

Thyroid microcarcinoma shows an elevated incidence in males with non-toxic goiter, especially in the age groups 20-39 y and >60 y. Total thyroidectomy appears to be the therapeutic method of choice in men with indication of surgical removement of an euthyroid goiter which belong to the above age groups. Contrarily, there is no statistically significant variation of microcarcinoma incidence in women with benign thyroid disorders in relation to age.