

Differentiated thyroid tumors: surgical indications

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SUMMARY: Differentiated thyroid tumors: surgical indications.

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Thyroid gland tumors represent 1% of malignant tumors. In Italy

their incidence is in constant growth. The aggressiveness depends on the histological type. The relative non-aggressive grade of different forms of tumors is the basis for discussing the treatment of choice: total thyroidectomy vs lobectomy with or without lymphadenectomy of the sixth level in the absence of metastasis. Authors report about their experience, and they advocate, given the high percentage of multicentric forms, total thyroidectomy as treatment of choice.

KEY WORDS: Thyroid - Differentiated tumor - Surgery.

Introduction

Thyroid gland tumors represent 0.7 to 1% of malignant tumors, with an incidence estimated to be currently in Italy about 3600 new cases/year, in constant growth. 94% of these is represented by Differentiated Thyroid Cancer (DTC) i.e. papillary (80%), follicular (11%) and Hürthle cells (3%), 6% from anaplastic carcinoma. The aggressiveness is different depending on whether it is differentiated tumor, with which the majority of patients leads a life almost normal mean survival with 98% to 20 years, or of the variety that is anaplastic universally fatal within weeks of diagnosis (1). The relative non-aggressive grade of different forms means that even today we are discussing about what is the surgical treatment of choice for this type of tumor: total thyroidectomy *versus* lobectomy, with or without associated lymphectomy of the VI level even in the absence of lymph node metastases (2-6). In this review, we want to report our 7-

year experience on the surgical treatment of differentiated thyroid cancer.

Patients and methods

From January 2005 to December 2011, at the "AFOI (Area Funzionale Omogenea Interaziendale) of Endocrine Surgery of the Neck and Soft Tissues", in the Umbria region, Italy, 538 interventions for DTC were performed. Since 2005 we have seen a progressive increase in the number of cancers up to 2010 when we recorded a three times increase of cases in comparison to 2005. The increase is just partially justified from the technical improvement of diagnostic instruments. All the patients were subjected to total thyroidectomy; central compartment lymphadenectomy was performed for cancers > 2cm and for cancers < 2cm associated with lymphadenomegaly. Patients were discharged in the second to third postoperative day (patients outside the Region). Six patients (1%) had dysphonia and 30 patients hypocalcemia, in 15 of these the hypocalcemia has been definitive. Histologically 226 patients (42.7%) had multifocal distribution of tumor and 240 (44.6%) had lymph node metastases in the central compartment and 51 had monofocal tumors (Fig. 1).

Of the 226 patients with multifocal distribution of neoplastic disease, 133 (59%) were female and 93 (41%) males (Fig. 2)

In relation to the size, multifocality was found in 41 tumors with a diameter > 2 cm (18%), in 142 with diameter between 1 and 2 cm (63%) and in 43 with diameter < 1 cm (19%). In relation to the age, multifocality was found in 147 patients over 45 years (65%) and in 79 patients under 45 years (35%) (Fig. 3).

Of the patients with metastatic lymph nodes in central Compartment 174 were females (72.5%) and 66 males (27.5%) (Fig. 3).

Of these, 146 patients were older than 45 years (61%) and 94

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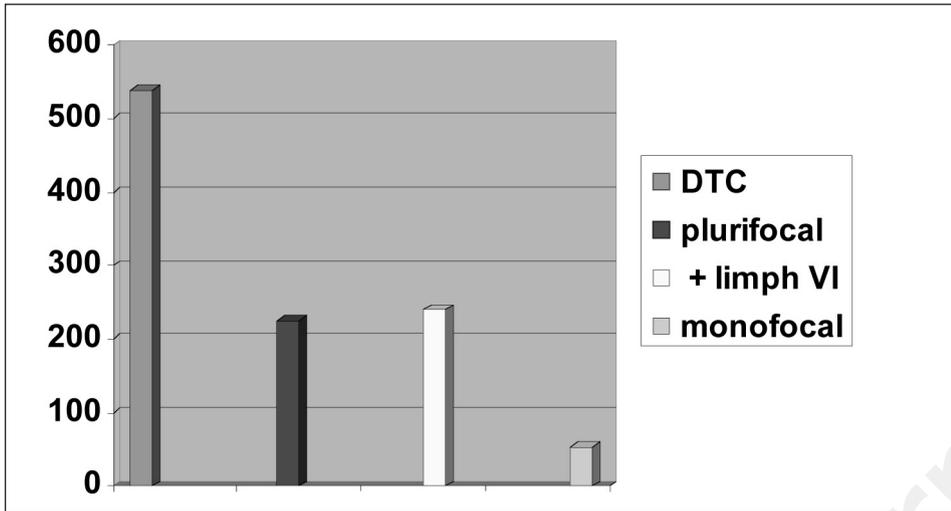


Fig. 1 - DTC in our experience.

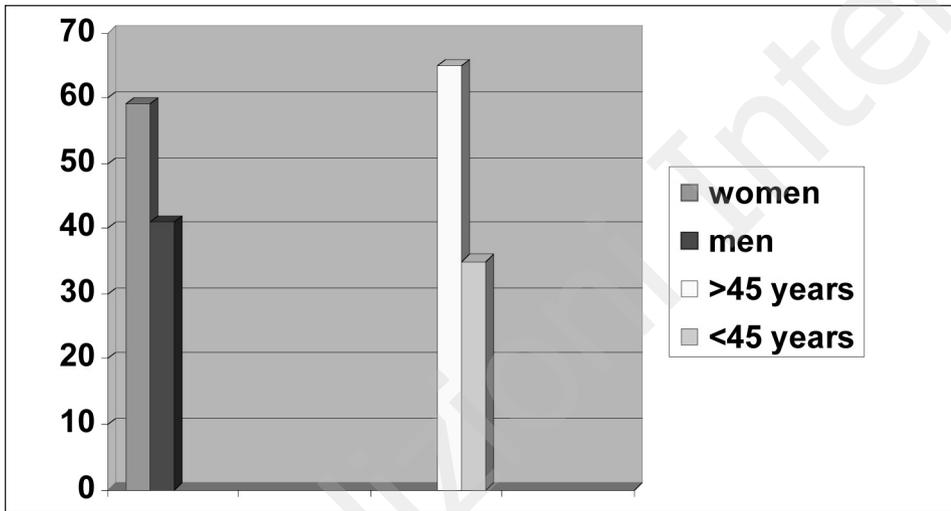


Fig. 2 - DTC plurifocal distribution for age and sex.

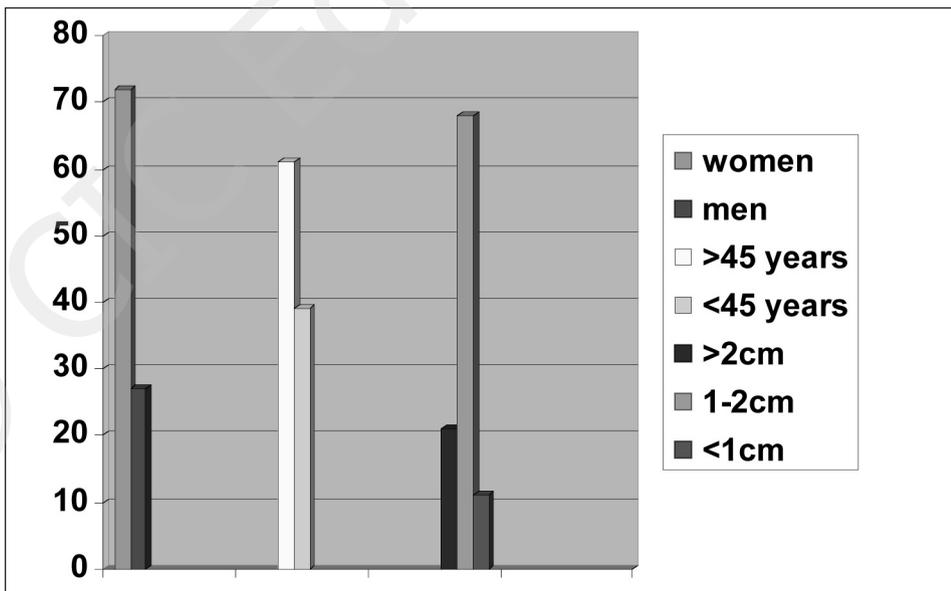


Fig. 3 - DTC + lymph node metastasis VI level.

under 45 years (39%); as regards the size, 50 patient (21%) had a tumor with diameter > 2 cm, 163 (68%) with diameter between 1 and 2 cm, and 26 (11%) with diameter <1 cm (Fig. 3).

In DTC with a diameter > 2 cm surgically treated, the positivity rate of the central compartment was 47%, as well as 47% was for cancer of diameter between 1 and 2 cm. The positivity rate for tumors <1 cm was 27%.

Discussion

Malignant tumors of the thyroid fit 11th place among all malignancies and the first of the endocrine system. The mortality, elevated to the forms anaplastic, is rather low for the differentiated. The rare deaths are recorded in elderly patients with aggressive forms poorly differentiated or locally (7, 8). In order to facilitate the choices of the appropriate treatments other prognostic variables are taken into considerations. These can be relating to patient (age, sex), tumor (size, multicentricity, histologic grade, histologic type, extrathyroidal invasion, lymph node metastasis, distant metastasis) or surgical procedure (complete and incomplete resection). These variables are then represented in the most common classification systems: AMES (Age, Metastasis, Extension, Size), AGES (Age, Grade, Extension, Size), MACE (Metastasis, Age, Completeness, Invasion, Size) and TNM, at the end of a proper identification of subjects at low and high risk. The role of the different prognostic factors in the definition of risk groups varies substantially between the authors (2-19). Shaha has catalogued all patients in low, medium and high risk with a mortality rate of 1%, respectively, 13%, 43% respectively (2). The risk can be discriminatory factor in choosing the surgical and post-surgical therapeutic strategy. The correct stratification of the risk can be made only on surgical specimen (20).

Molecular analysis of FNAB samples or surgical specimen provide useful information (21, 22). Genetic alterations (BRAF, ret / PTC, RAS, TRK for papillary carcinoma and RAS, PAX8-PPAR γ , PIK3CA, PTEN for follicular carcinoma) are meaningful indicators of the tumor aggressiveness (23-42). In micro carcinomas the percentage of metastatic spread to lymph nodes of the central compartment reaches up to 40% (3, 4). Percentage of recurrence of disease, in relation to age (> or <50 years), is not significantly different from tumors above and below 1 cm (5-7). If literature is concordant for the lymphadenectomy of level VI only in the presence of pathological lymph nodes, controversial is the opinion on total thyroidectomy versus lobectomy (5, 15). Everyone agrees on the total thyroidectomy in patients at high risk, in youth with lymphadenopathy, in bulky tumors and/or extracapsular disease and with cytological diagnosis of

poorly differentiated cancer (13, 14, 16, 20, 23, 25). For the new guidelines (20), total thyroidectomy is the most appropriate treatment for nodules > 1 cm with FNAB-positive for neoplasia in the presence of other nodules or contralateral lymph node metastases and/or distant metastases, with a history of neck irradiation or family history of thyroid cancer, for patients older than 45 years.

The lobectomy is sufficient for subcentimeter and unifocal cancer, low-risk cancer in the absence of pathological lymph nodes.

Rebecca I. Brown (23) consider total thyroidectomy the treatment of choice because prospective studies have showed increased and decreased disease-free period of relapse, even allowing for the treatment ablation with iodine 131 (21-22). We believe, from the literature given the high incidence of multicentric tumors (30-85%), and the percentage relatively low complications, according to some authors, (9, 6, 23) always make the total thyroidectomy (TT) because:

- in 40-70% of cases there are microscopic foci in the contralateral lobe;
- Total thyroidectomy removes the entire thyroid tissue allowing: the use of thyroglobulin recurrence as a cancer or distant metastasis marker; easier replacement therapy with thyroxine; effective ablative treatment with radioiodine;
- TT reduces the chance of anaplastic or poorly differentiated tumor in residual parenchyma;
- the correct assessment of medium or low risk is only postoperative, on the basis of tumor size and extracapsular infiltration (3, 4).

Conclusions

As unanimously recognized, the goal of an adequate surgical approach to DTC is to: remove the primary tumor and lymph nodes affected by the disease; to minimize the morbidity related to treatment; to facilitate the staging of the disease, and the treatment with 131 I (9); to allow an accurate surveillance in the long term; and reduce the risk of recurrent disease and metastatic spread. Then we consider TT appropriate for DTC, considering the possible multifocality and dissemination in lymph nodes of the central compartment also for tumors with a diameter <1 cm that the approach. However, surgery should consist in the execution of total thyroidectomy and central compartment lymphadenectomy when pathological. In this context, the formulation of guidelines and a multidisciplinary approach allows more uniform and shared approach to diagnostic work up and treatment and more meaningful comparison of the data.

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