

## Differentiated Thyroid Malignancies

Tharwat I. Sulaiman \* FRCS, CABS

Thyroid cancer is a rare malignancy with wide interethnic and geographic variations (1). It constitutes 1% of solid organ malignancy (2) but they are still the most common endocrine (3) cancer. Well differentiated (follicular and papillary thyroid carcinoma) accounts for 80-90% of the approximately 28000 new cases each year and the estimate of 376000 existing cases of primary thyroid cancer in Europe and United States (2), while in Germany it is the 13<sup>th</sup> most frequent malignancy (2-7) new cases per 100000 inhabitants (1).

There have been many recent advances in our understanding of thyroid diseases. An adenoma-carcinoma sequence for the development of thyroid neoplasm has been based on the characterization of a number proto-oncogene and tumour suppressor gene, and different pathways for the development of papillary and follicular thyroid carcinoma have been demonstrated (5).

Over the past several decades, iodides supplementation to food supplies in many parts of the world has been followed by a correspondence decrease in the incidence of follicular thyroid carcinoma (4).

The mean survival rates in papillary thyroid cancer usually exceed 90%, whereas in follicular thyroid cancer they amount to approximately 80% (1). For that reason differentiated thyroid cancer is considered among the most curable neoplasm (3).

The prognostic factors for papillary thyroid carcinoma are distant metastasis, age and extra thyroidal growth, and for follicular carcinoma they are distant metastasis, extra thyroidal extension and multifocal growth. Also in follicular carcinoma, survival is significantly influenced by some of the clinical variables, particularly loco regional extension of the disease and patients age (6,7,8).

The Union International Contre Le Cancer and European organization for research and treatment score and the age, grade, extent and size scores are all highly significant (6,7). On the other hand.

Hormones, sex and lymph node metastasis are not considering prognostic factors for survival (7).

A comprehensive study in Japan on 3277 patients with thyroid carcinoma showed that in papillary carcinoma there is a difference in the survival between young (less than 45 years of age) and old patients (45 years of age or older). The rate of patients who died of thyroid cancer also increased in cases with extra thyroidal tissue invasion, and metastasis to distant organs (7).

The prognostic significance of nuclear size was recently demonstrated in a series of thyroid carcinomas including tumours with different morphologies and progression pattern (8).

In conclusion the approach to management of thyroid carcinoma can now be based on comprehensive scoring system for assigning patients to a particular risk groups, the most recent of which is the MACIS system based on distant metastasis (M), age (A), completeness of resection (C), invasion (I), and size (S) (5).

Diagnosis of thyroid cancer is based on fine needle aspiration cytological examination. Recently reverse transcription polymerase chain reaction for the detection of cancer specific m-RNA was shown to be a useful adjunct in both initial diagnosis and detection of recurrent disease (3).

In addition Positron Emission Tomography has become a valuable tool for staging and surveillance of thyroid cancer (3).

The surgical treatment of differentiated thyroid carcinoma continues to be a matter of considerable debate in terms of defining the appropriate extent of thyroid or lymph node resection to ensure optimal patient survival. Whereas, at organ level, the majority of surgeons are in favour of total thyroidectomy, both the extent and timing of lymphadenectomy remain controversial issues (10). However progress in molecular biology and tumour genetics is likely to enable us to identify new prognostic factors which may prove useful when deciding on the most appropriate therapeutic option (9).

So the standard treatment procedure in differentiated papillary and follicular thyroid cancer consists of total thyroidectomy followed by adjuvant ablative therapy with radio-iodine (1). Only in

\* Dept. of surgery, collage Of Medicine Baghdad.

papillary thyroid cancer stage pT1N0M0 lobectomy alone is considered to be appropriate (1).

The capsular technique of thyroidectomy has now been shown to be the best method. It preserve parathyroid blood supply, protect the recurrent laryngeal nerve and minimize the complications (5).

In patients with locally invasive differentiated thyroid cancer stage pT4 , adjuvant percutaneous radiation therapy is a treatment option(1).

Radio iodine therapy has to be performed under the stimulation influence of TSH. Usually TSH suppressive medication with Levothyroxine has to

be withdrawn approximately 4- weeks prior to radio iodine therapy. In the future, exogenous stimulation by recombinant TSH may be used instead of thyroid hormone withdrawal and in patients with distant metastasis up to 50% of complete response may be achieved with radio iodine treatment (1).

Because of the long term risk of recurrence, and the importance of timely detection, diagnostic follow up of well differentiated thyroid carcinoma is life long and must be very sensitive.

The past three decades have seen great progress in improving the safety; efficacy and convenience of the diagnostic follow up of well differentiated thyroid cancer.

Three major innovations account for this progress;

1. Increased understanding of prognostic factors for disease recurrence and individualization of follow up according to other factors.

2. The emergence of serum thyroglobulin (Tg) measurement as the principle modality in diagnostic follow up.

3. And most recently, the introduction of recombinant human thyroid stimulating hormone ( rh TSH) to provide TSH stimulation during thyroid hormone suppressive therapy (THST)and to avoid TSH withdrawal or Tg testing or iodine -131 (I-131)whole body scanning (3)

### References

1. Reiners-C; Farahati-J. 131I therapy of thyroid cancer. Q-J-Nucl- Med. 1999 Dec; 43(4):324-35.
2. Schlumberger-MJ. Diagnostic follow up of well differentiated thyroid carcinoma: historical perspective and current status. J-Endocrinol-invest, 1999; 22(11Suppl):3-7.
3. Bi-J;Lu-B.advances in the diagnosis and management of thyroid neoplasm. Curr-Opin Oncol. 2000 Jan;12 (1);54-9.
4. LiVolsi-VA;Asa -SL. The demise of follicular carcinoma of the thyroid gland. Thyroid. 19994 Summer; 4(2):233-6.
5. Younes-N;Robinson-B;Delbridge-L. the etiology, investigation and management of surgical disorders of the thyroid gland. Aus-N-Z-J-Surg.1996Jul;66(7):481-90.
6. Steinmuller-T;Klupp-J; et al. prognostic factors in patients with differentiated thyroid carcinoma. Eur-J-Surg.2000 Jan;166(1):29-33
7. Yasumoto-K;miyagi-C et al. papillary and follicular carcinoma: the treatment results of 357 patients at the national Kyushu centre of japan. J-Laryngol- Otol. 1996: 110(7);657-62
8. Palestini-N; Cappello-N et al . prognostic value of nuclear morphometry in follicular carcinoma of the thyroid gland. Ann-Ital-Chir. 1994 Jan-Feb;65(1):69-73
9. Pozzetto-B; Roseano-M et al .surgical treatment of differentiated carcinoma of thyroid gland . Chir-Ital. 2000 Jan-Feb;52(1):49-56