

Management of Thyroid Carcinoma: Hahnemann Experience

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Abstract

The primary treatment of thyroid carcinoma is surgery and the outcome depends on its extent. The post-operative management alternatives in thyroid carcinoma include thyroid hormone, radio-iodine ablation (I-131 Na), external beam radiation therapy (EBRT) and occasionally adjuvant chemotherapy.

This retrospective study analyzes the managements of 153 patients (102 , 51), age range 10-96 years, mean age 50.2 years treated for thyroid carcinoma. The range of follow-up was 1.0-294 months with median follow-up for 60.4 months. Twenty patients without therapy were excluded. Group A included 87 patients treated with I-131. Group B consisted of 13 patients received EBRT. Group C included both therapies in 33 patients. The therapies in all different stages of thyroid carcinoma and with various histopathologies were reviewed.

	Stage I	Stage II	Stage III	Stage IV
Group A: = 87	12	29	34	12
Group B: = 13	0	0	2	11
Group C: = 33	0	0	14	19

The I-131 Na therapy was applied in all stages of thyroid carcinoma, but the need for EBRT or

combined therapy was only in advanced stages of the disease ($p \leq 0.0001$).

	Papillary	Papillary Follicular	Follicular	Medullary	Anaplastic
Group A: = 87	29	32	22	2	2
Group B: = 13	1	2	3	3	4
Group C: = 33	11	6	12	1	3

The I-131 Na therapy was applied in the management of well differentiated thyroid carcinoma vs. EBRT in aggressive histopathology ($p \leq 0.0001$). I-131 Na and/or combined therapy were used in similar histopathologies ($p = ns$).

We conclude that I-131 Na therapy in post-operative patients is the primary method of treatment in all disease stages and in majority of well differentiated thyroid carcinomas (WDTC). EBRT is commonly used in follicular carcinoma and the histopathologies other than WDTC. In the management for local control of the disease, or in patients with aggressive or unresectable tumors, combined therapy is commonly applied.

Introduction

Surgery combined with I-131 Na ablation therapy and hormonal replacement remains the keystone for the treatment of differentiated thyroid carcinoma. However, whenever the surgical resection is incomplete or technically not feasible, External Beam Radiation Therapy

(EBRT) may be considered as a contemporary tool. Although EBRT has been used for many years, its precise place and role in the management of thyroid cancers remains somewhat controversial. There are, however, some data to suggest that the adequate course of EBRT improves local control after incomplete resection and survival.

The incidence of various thyroid malignancies are as follows: papillary carcinoma 82%, follicular 8%, medullary 6%, Hürthle cell CA 3%, and anaplastic carcinoma 1%.

Multiple factors which are effective in the prognosis of thyroid cancers and the patient's survival are as follows:

- 1) **Histology:** With papillary as the least aggressive and anaplastic as the most aggressive thyroid tumor.
- 2) **Size:** The smaller tumors <3 cm have better prognosis.
- 3) **Multicentricity:** The tumors have lower survival.
- 4) **Extra thyroidal invasions** are associated

with increased rate of local recurrences.

5) **Regional lymph node metastasis** and **blood vascular invasion** have worse prognosis.

6) **Distant metastasis** is associated with poor prognosis

7) **Patient's age:** The patients over 40 years show worse prognosis than younger patients.

8) **Gender:** May or may not play a significant role in patient survival.

9) **Tumor Grade:** The higher tumor grade is associated with higher mortality.

10) **Extent of therapy** including the tumor resection, radio-iodine ablation and hormonal replacement therapy are the key in the management of patients with thyroid carcinoma. EBRT has a major role in the local control of the disease in unresectable tumors in the neck and for therapy of the distant metastasis.

Patients and Methods

During 1969-1997 at the Allegheny University Hospitals- Hahnemann, one hundred and fifty three patients (102 , 51), age range 10-96 years, mean age 50.2 years were treated for thyroid carcinoma. The range of follow-up

was 1.0-294 months with median follow-up for 60.4 months. Twenty patients without therapy were excluded.

Histopathologies:

Papillary:	48
Papillary Follicular:	45
Follicular:	43
Medullary:	8
Anaplastic:	9

Different Modalities of therapies in thyroid Carcinoma

Group A: Patients received only I-131 Na Therapy: 87

Group B: Patients received DBRT only: 13

Group C: Patients received both (I-131 Na & EBRT): 33

Group D: Patients received only Hormonal Therapy 20 and/or refused therapy and were not included in the study:

The effect of different modalities of therapies in all stages of thyroid carcinoma with various histopathologies were reviewed.

	Stage I	Stage II	Stage III	Stage IV
Group A: = 87	12	29	34	12
Group B: = 13	0	0	2	11
Group C: = 33	0	0	14	19

Stage I & II patients were excessively treated with I-131 Na therapy above, but the need for EBRT and combined I-131 Na and EBRT was only in advanced stages of the disease. ($p \leq 0.0001$).

	Papillary	Papillary Follicular	Follicular	Medullary	Anaplastic
Group A: = 87	29	32	22	2	2
Group B: = 13	1	2	3	3	4
Group C: = 33	11	6	12	1	3

The I-131 Na therapy was applied in the management of well differentiated thyroid carcinoma vs. EBRT in aggressive histopathologies such as medullary and anaplastic carcinoma ($p \leq 0.0001$). I-131 Na and/or combined therapy were used in similar histopathologies ($p = ns$).

Conclusions

- I-131 Na therapy in post-operative patients is the primary method of treatment in all disease stages and in majority of well differentiated thyroid carcinomas.

- External Beam Radiation Therapy is commonly used in follicular, medullary, and anaplastic carcinomas as well as in advanced papillary and follicular carcinomas.

- Local control of the disease and management of aggressive, unresectable tumors requires combined I-131 Na and external beam radiation therapy.

References

1. Mazzaferri EL, Jhiang SM. Long-term impact of initial surgical and medical therapy on papillary and follicular thyroid cancer. *Am J Med* 1994; 97: 418-428
2. Simposn WJ, Panzarella T, Carruthers JS, Gospodarowicz MK, Sutcliffe SB. Papillary and follicular thyroid cancer: impact of treatment in 1578 patients. *Int J Radiat Oncol Biol Phys* 1988; 14: 1063-1075.
3. Mazzaferri EL, Young RL, Papillary thyroid carcinoma: a 10-year follow-up report of the impact of therapy in 576 patients. *Am J Med* 1981; 70: 511-518.
4. Robbins J. Approaches to the treatment of high-risk thyroid cancer. *Thyroid* 1994; 385-387.
5. Leeper RD, Shimaoka K. Treatment of the metastatic thyroid cancer. *Endocrinol Metab Clin North Am* 1980, 9: 383-405