

LONG-TERM FOLLOW-UP OF YOUNG PATIENTS SUBMITTED TO RADIOTHERAPY – ANALYSIS OF 10 THYROID CANCER CASES

Joana Simões-Pereira, Margarida da Silva Vieira, M. Conceição Pereira
Endocrinology Department, Portuguese Cancer Centre of Lisbon, EPE.

European Congress of Endocrinology 2014, Wrocław, Poland

INTRODUCTION

The increasing risk of thyroid cancer (TC) in patients who underwent radiotherapy (RT) is well documented, especially at early ages. In our centre, young patients undergoing cancer treatments are referenced to Endocrine Rehabilitation Clinics (ERC). Their risks are initially identified and monitored regularly.

Aims
We intended to analyze the characteristics and outcomes of patients who developed post-RT TC.

Methods

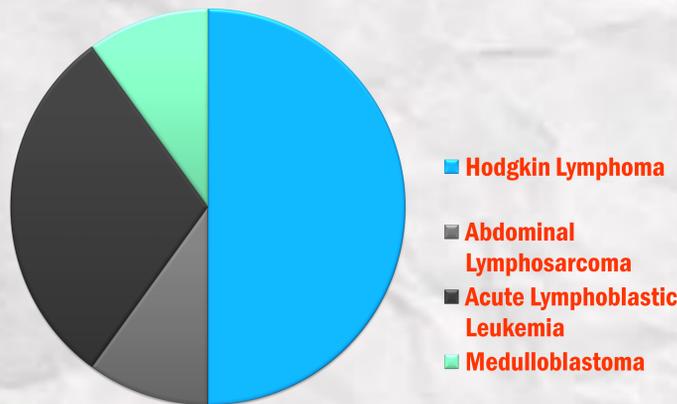
Prospective, descriptive, non-comparative and single centre study. Medical records of patients registered in ERC who underwent radiotherapy and developed TC were reviewed. Data related to primary diagnosis, RT, chemotherapy (CT), thyroid nodules' characteristics and its evolution to thyroid carcinoma were registered. Statistic analysis performed with SPSS 20th Edition.

RESULTS



Mean age at primary diagnosis: $9 \pm 5,6$ years

Primary Diagnosis



Radiotherapy

Site	Frequency (%)
Cervical	1 (10%)
Cervical+Mediastinum	4 (40%)
Abdominal ¹	1 (10%)
CNS ²	2 (20%)
CNS+Neuroaxis	1 (10%)
Total Body Irradiation	1 (10%)
Age at last treatment	Mean 10±5.5 years
RT's dose	24±8.4 Gy (12-40)
¹ 3 years-old patient (Linfosarcoma abdominal). ² 5 and 6 years-old patients (both with ALL).	
90% also submitted to chemotherapy	

EVOLUTION

100% WITHOUT thyroid dysfunction during follow-up

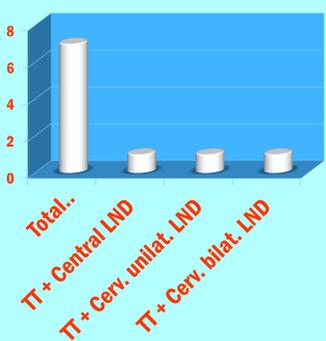
Post-RT Thyroid Nodules' Characteristics

AVERAGE TIME OF BETWEEN RT AND FIRST NODULE	14±4.7 YEARS (6-22)
Mean n.º of cytologies/patient	2
Dominant nodule / ≥2 nodules	7 / 3
Average Increase/year of the nodules	2.4±1.6mm
First cytology results	6 - Colloid goiter (CG) 1 - Follicular tumor 2 - Papillary carcinoma 1 - Unknown

CG cytologies were reviewed by an anatomopathologist
→ No atypia suggestive of malignancy (similar to those without previous RT).

Patien t	Nodule's size in 1st cytology	1st Cit.	Interval (years)	Nodule's size in 2nd cytology	2nd Cit.	Interval (years)	Nodule's size in 3rd cytology	3rd Cit.
1	13mm	CG	1	17mm	Follicular tumor			
2	15mm	CG	7	16mm	Suspect			
3	17.7mm	CG	1	17.7mm	CG	2	19mm	Follicular tumor
4	15mm	CG	6	33mm	CG			
5	10mm	CG	4	14mm	Follicular tumor			
6	15m1m	CG	1	19mm	CG; lymph node cyt. of papillary carcinoma			

Surgical Approach



Histological characteristics

PAPILLARY THYROID CARCINOMA (PTC)	100%
Medium size (mm)	16.6±8.13
Variants: Classical / follicular / diffuse sclerosing	40%/ 50% / 10%
Multifocality	44%
Angioinvasion	12.5%

TNM Staging

T1NxMx	40%
T1N1bMx	10%
T2NxMx	20%
T3NxMx	10%
T3N1aMx	10%
TxNxMx	10%

All received ¹³¹I
All in remission

Median follow-up:

PRIMARY DIAGNOSIS-HISTOLOGY OF PTC: 20 (10-25) YEARS;
PTC-present: 3 (0.5-24) years.

DISCUSSION AND CONCLUSION

Thyroid carcinoma (TC) is a late radiotherapy complication, even when the gland is not directly irradiated. These cancer survivors must be regularly monitored once these nodules are at high risk of malignancy.

The average time of development of TC was similar to the described in the literature.¹⁾

According to our centre's experience and also to *Guidelines for Survivors of Childhood, Adolescent and Young Adult Cancers*²⁾, we recommend:

- *Ab initio* cervical ultrasound for later comparisons;
- Annual thyroid palpation;
- Cervical ultrasound 5 years after the primary diagnosis ; annually thereafter if there are nodules or every 2 years in the absence of nodules;
- Cytology must be performed in nodules > 5 mm (according to ATA ³⁾ criteria);
- Cytologies' evaluation can be difficult due to persistent results of colloid goiter in growing nodules and given the celular atypia produced by RT. The threshold for surgical indication should be anticipated.⁴⁾

¹⁾ Ron E et al. Thyroid cancer after exposure to external radiation: a pooled analysis of seven studies. *Radiat Res* 1995 141:21. ²⁾ Cure Search Children's Oncology Group. Long-term follow-up Guidelines for Survivors of childhood, adolescent, and young adult cancers, October 8 (www.survivorshipguidelines.org). ³⁾ Cooper Det al. Revised ATA Management Guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid* 2009 19(11). ⁴⁾ Carr RF et al. Morphologic changes in the thyroid after irradiation for Hodgkin's and non-Hodgkin's lymphoma. *Cancer* 1989 64.