



Thyroid cancer is the most frequent secondary solid tumour following allogeneic stem cell transplantation in childhood – a single centre experience



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Nothing to disclose

Introduction

- Allogeneic haematopoietic stem cell transplantation (**HSCT**) is a curative approach for a variety of malignant or non-malignant disorders.
- With improved outcomes, increasing attention has been drawn to late complications in long-term survivors.
- The development of **secondary malignancy** is recognized as one of the **most serious late complications**.
- The incidence is **2 - 8 x higher** than expected in general adult population: **2 - 6% at 10 years and 6 - 15% at 15 years after HSCT**.

Objective

Aim of the study was to evaluate **occurrence of secondary solid tumours** at HSCT Unit, University Hospital Prague - Motol, Czech Republic.

Characteristics of cohort

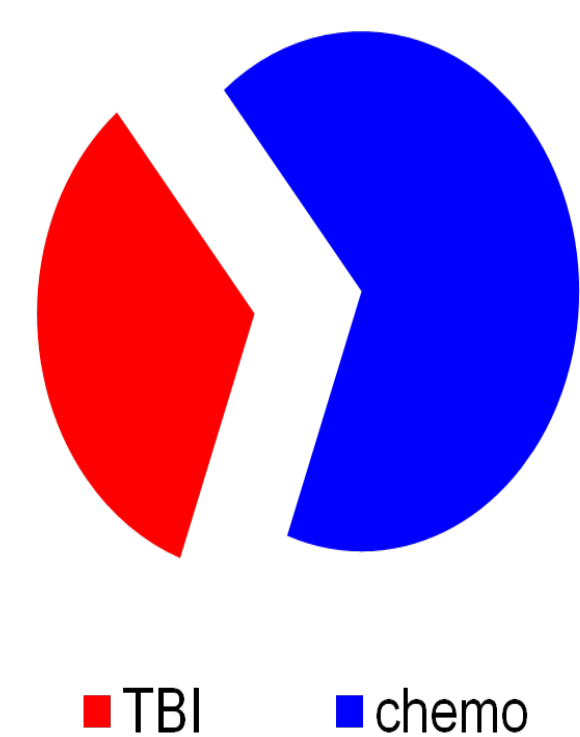
HSCT performed within the period 1989 – 2014

Inclusion criteria:
HSCT in childhood or in adolescence

| Patients | n | 499 |
|-------------------------------------|-------|------------------|
| Female/Male | n | 164/335 |
| Malignant diagnosis | n | 352 |
| Survivors at the time of study | n | 329/499 (66%) |
| TBI 10-14 Gy | n | 170 (34%) |
| Age at HSCT median (range) | years | 9.1 (0.2 – 20.5) |
| Follow-up after HSCT median (range) | years | 7.3 (0.1-26.4) |

TBI – total body irradiation

Transplant characteristics



conditioning

TBI: total body irradiation based

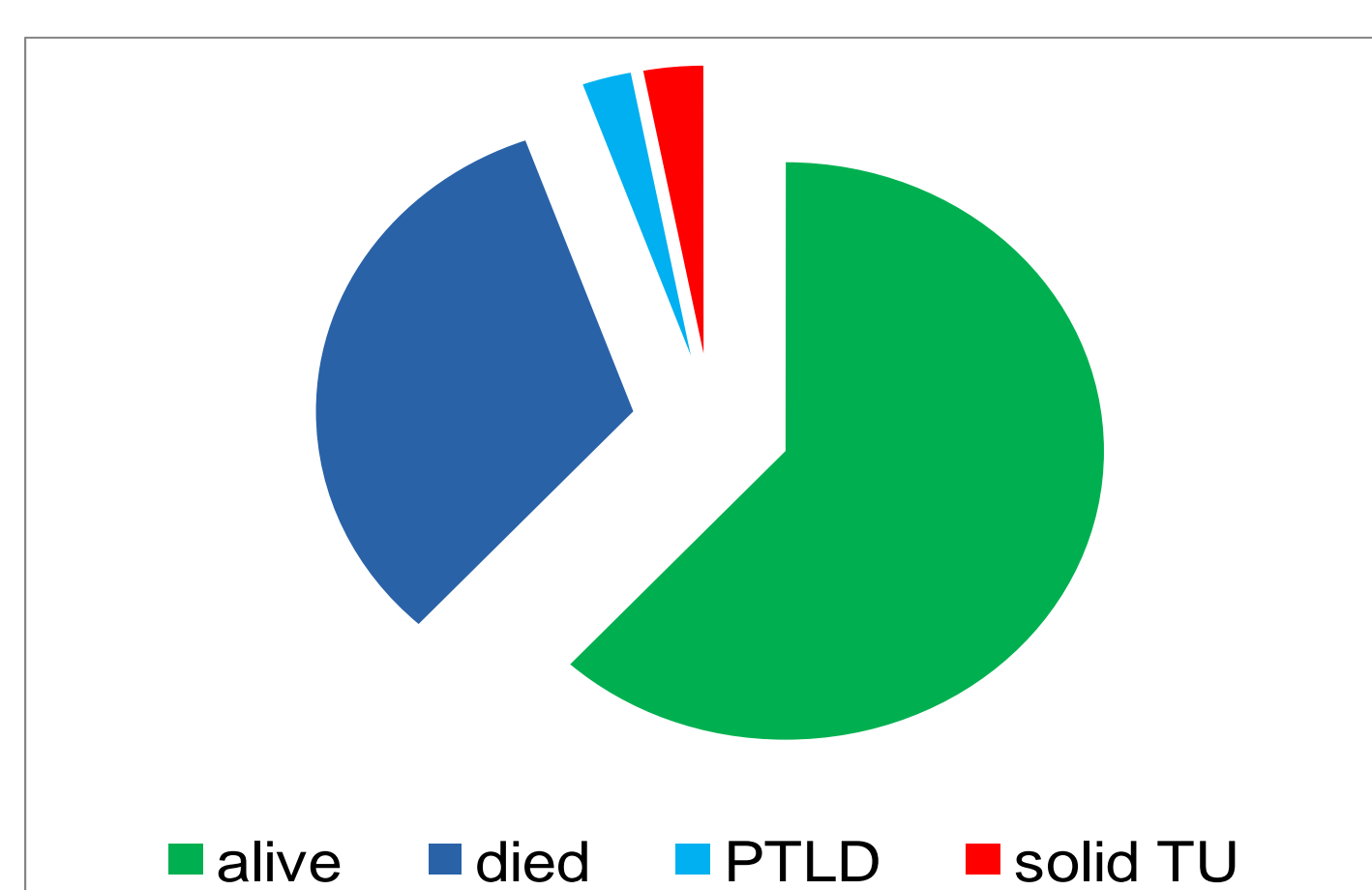
chemo: chemotherapy only

Methods

- All patients were screened yearly for:** serum fT4, TSH, thyroid antibodies, and thyroid function.
- Thyroid ultrasound** was performed with a Toshiba Nemio 17 ultrasound machine, transducer 7.5 MHz in **79/329 (24%) disease free survivors at least 1 year after HSCT**.

Results

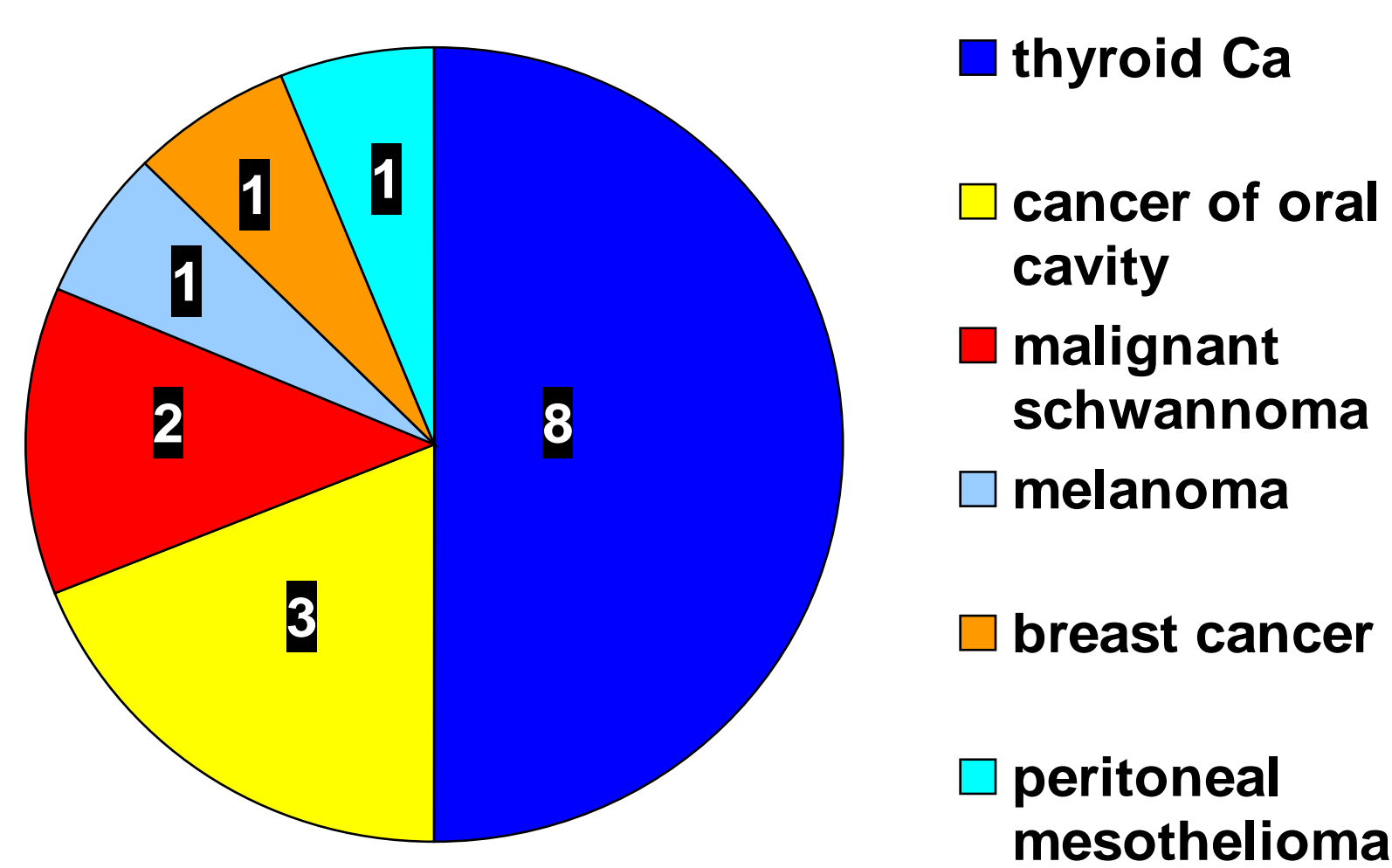
Secondary malignancy: n=29/499 (5.8%) subjects



- Post-transplant lymphoproliferative disease (PTLD) n=13/499 (2.6%)** patients, the early secondary malignancy after HSCT (median 0.3; range 0 – 1.8 yrs)
- Secondary solid tumour: n= 16/499 (3.2%)** patients (no patient with Fanconi anaemia)

Age at diagnosis of secondary solid tumour:
median **21.9** (11.8 -32.6) years

Time after HSCT:
median **11.4** (5.4–17.8) years



15/16 with secondary solid tumour: total body irradiation 12-14.4 Gy as a part of conditioning regime

8/16 (50%) patients: thyroid carcinoma

- Supported by MH CZ for conceptual development 00064203 University Hospital Motol.

Thyroid carcinoma is the most frequent secondary solid tumour following allogeneic stem cell transplantation

In all 8 patients with thyroid cancer:
papillary thyroid carcinoma (**PTC**)
micronodular (T1 or T2 stage)

| | |
|--|---|
| PTC diagnosed after HSCT | 11.3 years (range 5.4-17.0) |
| HSCT for malignant diagnosis in PTC | n = 7/8 |
| TBI-based regime in PTC | n=7/8 |
| Therapy of PTC | thyroidectomy and replacement thyroid hormone in all 2 with additional ¹³¹ I treatment |
| Previous therapy for thyreopathy | n=3 AITD n=1 hypothyroidism |

Conclusions

- Risk of secondary cancers after HSCT is increasing within the time.**
- It may be result of the *chemotherapy and radiotherapy before HSCT, and chemotherapy and radiation conditioning used for HSCT, immune dysregulation, immunosuppression, GvHD after HSCT or congenital predisposition.*
- Long-life late effects monitoring** as an important part of post-transplant care is **necessary**.
- Regular sonographic evaluation** of thyroid gland and neck is very important **especially more than 5 years after HSCT and namely in all patients after TBI**.
- Regular monitoring** of thyroid function, laboratory parameters and ultrasound is highly recommended.

