**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 2-8x 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 = 329/164 (66%)
- 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)
- Median (range) years = 11.4 (5.4–17.8)

**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

**Transplant characteristics**

- TBI: total body irradiation based conditioning
- chemo: chemotherapy only

**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.

**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)
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