Risk of secondary malignancies after HSCT is increasing within the time.

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.

Introduction

- Increasing number of survivors following hematopoietic stem cell transplantation (HSCT) leads to necessity to focus also on careful monitoring for late effects. High dose chemotherapy and total body irradiation (TBI) is used for conditioning regimen in many patients.

- Thyreopathies belong to the most frequent among late endocrinopathies.

Objective

Aim of the study was to evaluate prevalence of secondary thyroid malignancies after HSCT in young age, especially after TBI.

Subjects

HSCT performed 1989 – 2012

Inclusion criteria

- HSCT in childhood or in adolescence
- Patients surviving more than 1 year after HSCT

Characteristics of patients

<table>
<thead>
<tr>
<th>Patients</th>
<th>n</th>
<th>288</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female/Male</td>
<td>n</td>
<td>110/178</td>
</tr>
<tr>
<td>Malignant diagnosis</td>
<td>n</td>
<td>177 (61.5%)</td>
</tr>
<tr>
<td>TBI 10-14 Gy</td>
<td>n</td>
<td>91 (32%)</td>
</tr>
<tr>
<td>Age at HSCT Median (range)</td>
<td>years</td>
<td>8.2 (0.2 – 20.5)</td>
</tr>
<tr>
<td>Age at evaluation Median (range)</td>
<td>years</td>
<td>17.9 (1.8 – 40.5)</td>
</tr>
<tr>
<td>Time after HSCT Median (range)</td>
<td>years</td>
<td>8.5 (1.3 – 24.3)</td>
</tr>
</tbody>
</table>

Transplant characteristics of study group

Preparative regimen

- TBI : 92
- TBI+Bu/Cy : 10
- Bu/Cy : 114
- Other : 72

Bu: busulphan  Cy: cyclophosphamide

Prepared by FN MOTOL

Benign thyroid nodules (FNAB confirmed)

9 patients (3.1%)
7 after TBI-based regimen
4 treated for AITD
all are regularly monitored

Thyroid dysfunction (TDF) after HSCT

<table>
<thead>
<tr>
<th>Patients with TDF</th>
<th>n (%)</th>
<th>83/288 (29.0%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset of TDF after HSCT</td>
<td>years</td>
<td>3.4 (0.5-16.3)</td>
</tr>
<tr>
<td>Hypothyroidism (subclinical)</td>
<td>n (%)</td>
<td>82 (28.5%)</td>
</tr>
<tr>
<td>Hyperthyroidism</td>
<td>n (%)</td>
<td>2 (0.7%)</td>
</tr>
<tr>
<td>AITD (autoimmune thyroiditis)</td>
<td>n (%)</td>
<td>18 (6.2%)</td>
</tr>
</tbody>
</table>

Results

Malignant tumours

4 patients (1.4%) - 2 male, 2 female all with papillary thyroid carcinoma (PTC) micronodular, T1 or T2 stage all of these patients survive after PTC, disease free

PTC diagnosed after HSCT | 8.7 years (5.3-15.2)

HSCT for malignant diagnosis

n = 3

TBI-based regimen

all 4 patients

Therapy of PTC

thyroidectomy and replacement thyroid hormone in all 1 with additional 131I treatment

Previous therapy for thyreopathy

n=3 AITD
n=1 hypothyroidism

Methods

- All patients were screened yearly for:
  Serum fT4, TSH, thyroid antibodies, thyroid function
- thyroid ultrasound (US) was performed in 62/288 (21.5%) patients with a Toshiba Nemio 17 ultrasound machine, transducer 7.5 MHz

Conclusions

- Risk of secondary malignancies after HSCT is increasing within the time.
- 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.

- Supported by MH CZ – DRO, University Hospital Motol, Prague, Czech Republic 00064203.