

Late effects of oncological treatment for childhood cancers

Abstract

The study aimed to describe the occurrence of subsequent neoplasms and their risk factors at the Department of Pediatric Haematology and Oncology, Motol University Hospital, Prague. Moreover, we focused on sporadic renal angiomyolipomas as the most frequent benign subsequent neoplasms. Out of 4,059 survivors treated between 1975 - 2018 for a solid tumor on Department of Pediatric Haematology and Oncology, 170 (4.2 % of all survivors) had at least one subsequent malignant neoplasm, 21 of them (0.5 of all survivors) developed more subsequent malignant neoplasms, and 34 (0.8 of all survivors) developed one subsequent malignant neoplasm and at least one subsequent benign neoplasm. Mortality among patients with subsequent malignant neoplasm was 38 %, i.e. 1.6 % of all survivors. The most common subsequent malignant neoplasms was thyroid carcinoma (37; 19.2 %), central nervous system tumors (25; 13 %), and soft tissue sarcomas (23; 11.9 %). 119 (2.9 %) survivors developed only subsequent benign neoplasm. Out of 1,098 survivors who underwent ultrasound examination between 2014 - 2019, 48 (4.4 %) had sporadic renal angiomyolipoma; moreover, 20 of them also had another subsequent neoplasm. The median age at diagnosis was 27.9 years, and the median time between the first cancer diagnosis and renal angiomyolipoma diagnosis was 22.6 years. In 21 patients (44 %), there were multiple or bilateral lesions, and there was a correlation between development of sporadic renal angiomyolipoma and radiotherapy of retroperitoneum. There was no significant difference in CDKN2A expression between cells treated by doxorubicin and non-treated cells *in vitro*.

Key words: late effects, subsequent neoplasms, risk factors, cellular senescence, sporadic renal angiomyolipomas, CDKN2A gene