

Genito-Urinary (GU) Second Malignant Neoplasms (SMN) in Survivors of Childhood Cancer: A Report from the Childhood Cancer Survivor Study (CCSS)

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Purpose: To describe the occurrence of GU SMNs among five year survivors in the CCSS cohort.

Methods: Among 14,358 five-year survivors, cumulative incidence of first GU SMN was calculated using death as a competing risk. Standardized Incidence Ratios (SIRs) were calculated using age- sex- year-specific rates from SEER program.

Results: A total of 72 GU SMNs were identified among 68 subjects. Median age at diagnosis of first GU SMN was 31.0 years (range 9.0-51.0), occurring a median of 21.9 years (range 6.3-35.7) after primary cancer. Among GU SMN cases, 68.4% had received radiation therapy (RT) involving the GU system. Sites of first GU SMN included: 27 female reproductive (13.2% ovary, 11.8% endometrium, 7.4% cervix, 2.9% uterus, 2.9% vulva), 24 kidney (35.3%), 10 bladder (14.7%) and 7 male reproductive (5.9% testes, 4.4% prostate). Most common histologies included: 24 renal cell carcinoma (24.3%), 7 adenocarcinoma (9.7%), 5 transitional cell carcinoma (6.9%), and 5 endometrioid carcinoma (6.9%). The overall cumulative incidence at 30 years post diagnosis was 0.6% (95% CI: 0.4-0.8%) and SIR was 11.6 (95% CI: 9.1-14.7). Cumulative incidence was significantly higher for females (0.7%; 95% CI: 0.5-1.0%) as compared to males (0.5%; 95% CI 0.2%-0.7%) ($p=0.01$) as were SIRs (females: 20.9; 95% CI 15.4-28.4; males 6.5; 95% CI 4.3-9.6; $p<0.0001$). Cumulative incidence did not significantly differ between exposure levels of GU RT and risk was elevated in comparison to the general population among those with no GU RT (SIR 12.1; 95% CI: 7.5-19.6), <2000 cGY (SIR 8.4; 95% CI 5.6-12.7) and RT \geq 2000 (SIR 20.6; 95% CI 11.7-36.2)

Conclusion: Although the absolute cumulative incidence is low, survivors of childhood cancer are at significantly increased risk for a GU SMN. In particular, female survivors and survivors with GU RT \geq 2000 cGY have highest elevated risk for a GU SMN.