International Study of Subsequent Colorectal Cancer Among Survivors of Childhood, Adolescent, and Young Adult Cancers (I-SCRY)

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Background

Among childhood, adolescent, and young adult cancer survivors, subsequent colorectal cancer has one of the highest absolute excess risks of any subsequent malignant neoplasm. Characterizing CRC risk in this population is important for understanding who might benefit from screening for early detection and prevention of CRC. We describe an individual patient meta-analysis representing data from 8 cohort studies across the North America and Europe assembled to evaluate CRC risk.

Methods

I-SCRY is a pooled cohort with data on 56,391 5-year survivors of a cancer diagnosed 1953-2012 before age 40 years. Age-, sex-, race-, and calendar year-specific rates of CRC were obtained from population-based cancer registries from each represented country and used to estimate standardized incidence ratios (SIR) with 95% confidence intervals (95%CI).

Results

With a median attained age of 39 years (range 5-85), and a median follow-up of 24 years (range 5-60), 290 survivors were diagnosed with CRC, representing a 2.6-fold increased CRC risk compared to the general population (SIR=2.6, 95%CI: 1.8-3.8). CRC was observed as early as 5 years, and at a median of XX years (range xx-xx) after primary cancer diagnosis, and the youngest age at CRC diagnosis was 9 years old. The most common tumor sites were the rectum (n=85, 29%) and sigmoid colon (n=54, 19%). While Wilms tumor survivors had the greatest risk (SIR=12.0, 95%CI: 8.3-16.6), there was more than a 3-fold increased risk in survivors of central nervous system tumors (SIR=3.6, 95%CI: 1.7-5.6), Non-Hodgkin lymphoma (SIR=3.7, 95%CI: 2.3-6.5), Neuroblastoma (SIR=3.1, 95%CI: 2.0-6.4), and soft tissue sarcomas (3.1, 95%CI: 2.0-4.4). Relative to the general population, survivors whose treatment did not include abdominal or pelvic radiotherapy nor with chemotherapy (n=9,967) had a risk of CRC that was not significantly different (SIR=0.9, 95%CI: 0.7-1.5) than the general population. Survivors treated with only chemotherapy (n=29,653) or only abdominal/pelvic radiation (n=2,944) had 2-fold increased risks (SIR=2.3, 95%CI 1.9-2.8; and SIR=2.4, 1.7-3.3, respectively). Survivors treated with both chemotherapy and abdominal/pelvic radiation (n=8,342) had close to a 7-fold increased risk (SIR=6.9; 95%CI:5.7-8.4). With 36 survivors (12%) diagnosed with CRC under age 30, 16 (44%) treated only with chemotherapy and 16 (44%) treated with both chemotherapy and abdominal/pelvic radiation, this age group had a notably increased risk of CRC relative to the general population under age 30 (SIR=10.6, 95%: 6.4-16.3).

Conclusions

Risk of subsequent colorectal cancer is high in survivors of a childhood, adolescent, and young adult cancer. Risk of early onset colorectal cancer is particularly elevated with many cancers occurring before the age at which guidelines recommend screening. Risk appears to be primarily concentrated among survivors treated with either chemotherapy or abdominal/pelvic radiation. Further study of colorectal cancer in this high-risk population is warranted.