

Abstract SNO total of 300 words

Title: Recurrent Stroke Risk in Childhood Cancer Survivors

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Background: Central nervous system (CNS) tumor survivors are at high risk for first stroke. Cranial radiation therapy (CRT) predicts stroke risk in a dose-dependent fashion, but little is known about rates and predictors of recurrent stroke in this population.

Methods: The Childhood Cancer Survivor Study (CCSS) is a multi-institutional retrospective cohort of 14,358 five-year survivors of childhood cancer (<21 years old at cancer diagnosis; treated from 1970-1986), and 4,023 randomly selected sibling controls with longitudinal follow up. CCSS participants (or their proxy) periodically completed comprehensive questionnaires on demographics and medical conditions. We surveyed 334 survivors who had self-reported first-stroke, and 109 proxies of deceased survivors, to identify recurrent stroke. We estimated

recurrent stroke rates using cumulative incidence and evaluated associations with risk factors using Cox regression.

Results: Among 329 respondents (deceased/proxy report n=76; alive/survivor report n=253), 271 confirmed a first-stroke at median age of 19 years. 119 (44%) carried an original diagnosis of CNS tumor. A second stroke was reported in 70 patients at median age of 32 years (range 1, 56). Of these, 37 (53%) were reported in CNS tumor survivors. The 10-year cumulative incidence of recurrent stroke was 21% (95% CI 16, 27) overall, and 33% (21, 44) for those treated with >50 Gy of CRT. In a multivariable Cox Proportional Hazards model, independent predictors of stroke recurrence included: CRT dose >50 Gy (compared to none, hazard ratio [HR] 4.4; 95% CI, 1.4-13.7), hypertension (HR 1.9; 95% CI, 1.0-3.5), and age \geq 40 years at time of first-stroke (HR 6.4; 95% CI 1.8-23; for the comparison of age \geq 40 to age 0-17).

Conclusions: Survivors of childhood cancer, particularly those treated with high-dose CRT, are at high risk for recurrent stroke over the decade after a first-stroke. Hypertension further increases the risk of stroke recurrence in these childhood cancer survivors.