

SECOND PRIMARY NEOPLASMS (SPNS) OF THE CENTRAL NERVOUS SYSTEM (CNS) IN FIVE YEAR SURVIVORS OF CHILDHOOD CANCER — A REPORT FROM THE CHILDHOOD CANCER SURVIVOR STUDY (CCSS)

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SPNs of the CNS are well-recognized occurrences among long-term survivors of childhood cancer, reported most often among survivors of leukemia or primary CNS tumors. The CCSS is a multi-institutional retrospective cohort study created as a resource for the study of late events. Incident cases between 1970 and 1986, under age 21, surviving 5+ years were identified at the 25 CCSS institutions. Among 13,610 survivors (median age 26 years) included in this initial analysis, 488 SPNs were confirmed (pathology reports) among 428 individuals. Of these 488 SPNs, 71 arose in the CNS including 32 meningiomas (all benign), 30 glial tumors, five primitive neuroectodermal tumors and four other CNS tumors. Thirty-eight followed a primary diagnosis of leukemia; 21 followed a primary CNS tumor. Malignant CNS tumors (n=35) occurred a median of 9.4 years from the original cancer and meningiomas a median of 13.3 years. With over 206,000 person-years of follow-up in the cohort, 5.17 malignant CNS tumors were expected (applying age and sex-specific SEER rates) resulting in a statistically significant elevated observed/expected ratio of 6.77 (95% Confidence Intervals 4.71, 9.42). The excess risk of CNS tumors was greatest during the 5th through 15th year of follow-up but persisted up to 30 years. In multivariate analyses, radiation exposure was identified as an independent predictor for any CNS SPN. Young age at original diagnosis and an original diagnosis of leukemia (R.R. 2.56 vs. non-leukemia) were also identified as significant independent predictors of a secondary malignant CNS tumor. A primary original diagnosis of CNS tumor was an independent predictor of secondary meningioma (R.R. 2.76 vs. leukemia). Despite the increased risk observed, the absolute excess risk of secondary malignant tumors of the CNS was low, with a total of 1.4 excess cases occurring per 10,000 person-years of follow-up. Additional investigation of the risk factors identified in this analysis is underway and may facilitate the development of more effective primary and secondary preventive strategies.