Neurocognitive outcomes in adult survivors of neuroblastoma: A report from the Childhood Cancer Survivor Study.

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**Background:** Long-term survivors of neuroblastoma may be at risk for neurocognitive impairment due to young age at diagnosis and intensive multimodal therapies. **Methods:** 837 survivors of neuroblastoma (57% female; median [range] age 25 [17-58] years, age at diagnosis 1 [0-21] years) and 728 siblings (56% female; age 32[16-43] years) self-reported neurocognitive problems using a neurocognitive questionnaire. Impairment was defined as scores ≥90th percentile of siblings in emotional regulation (ER), organization, task efficiency (TE), and memory. Multivariable log-binomial models evaluated associations with treatment exposures, era and chronic conditions (Grade 2-4 CTCAE v5) adjusting for sex, age, and race. Analyses were stratified by age at diagnosis (≤1 and > 1 year) as proxy for risk group. **Results:** Rates of impairment were 19.7% (ER), 25.3% organization, 21.9% TE and 19.4% for memory. Survivors had 50% higher risk of impaired TE (≤1 year relative risk [RR] 1.48, 95% confidence interval [CI] 1.08-2.03; > 1 year: RR 1.58, CI 1.22-2.06) and ER (≤1 year RR 1.51, CI 1.07-2.12; > 1 year RR 1.44, CI 1.06-1.95) versus siblings. Among survivors ≤1 year at diagnosis, treatment with platinum (RR 1.74, CI 1.01-2.97), hearing loss (RR 1.95, CI 1.26-3.00), cardiovascular (RR 1.83, CI 1.15-2.89) and neurologic (RR 2.00, CI 1.32-3.03) conditions were associated with higher risk of impaired TE. Female sex (RR = 1.54, CI, 1.02-2.33), cardiovascular (RR 1.71, CI 1.08-2.70) and respiratory (RR 1.99, CI 1.14-3.49) conditions were associated with higher risk of impaired ER. Among survivors > 1 year at diagnosis those treated in 1970-79 vs. 1990-99 had 80% higher risk of impaired ER (RR 1.77, CI 1.02-3.06). Hearing loss (RR 1.56 (1.09-2.24), respiratory (RR 2.35, CI 1.60-3.45) and cardiovascular (RR 1.74, CI 1.22-2.69) conditions were associated with higher risk of impaired TE. **Conclusions:** Adult survivors of neuroblastoma are at-risk for neurocognitive impairment. Differences associated with age at diagnosis, chronic disease and treatment exposures may inform risk-stratified inventions to improve neurocognitive outcomes. Reduced risk in later eras may reflect improved supportive care and knowledge of late effects.