

GENETIC DISEASE IN OFFSPRING OF SURVIVORS OF CHILDHOOD AND ADOLESCENT CANCER.

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No environmental agent has been proved to cause human germ cell mutation seen as genetic disease in offspring. Cancer survivors often receive intensive chemotherapy and radiotherapy that cause human and experimental somatic mutations and animal germline mutations. To study environmental germline mutagenesis, we used the Childhood Cancer Survivor Study, a retrospective cohort of 14,054 children diagnosed with common cancers before age 21 years and surviving at least 5 years, at 25 US and Canadian institutions (JNCI 2001;93:618). Participants were 54% male, 87% white, and 64% between ages of 20 and 39 years at follow-up; 44% received combination surgery, radiotherapy, and chemotherapy. Genetic disease in patients, families, and offspring was ascertained by self-administered questionnaires; verification by records is underway. Genetic and congenital disease occurred in 158 (3.7%) of 4,214 offspring of survivors, compared with 102 (4.4%) of 2339 offspring of controls; there were no apparent differences in the proportion of offspring with cytogenetic syndromes, single-gene defects, or simple malformations. These preliminary results, if confirmed after verification, provide reassurance that cancer treatment using modern protocols does not carry a large risk for genetic disease in offspring conceived many years after treatment. (NIH grant CA55727).