

Abstract: MALE INFERTILITY IN CHILDHOOD AND ADOLESCENT CANCER SURVIVORS DIAGNOSED FROM 1970-1986: A REPORT FROM THE CHILDHOOD CANCER SURVIVOR STUDY (CCSS)

Karen Wasilewski-Masker, MD*, ^{a, b} Kristy D. Seidel, MS, ^c Wendy Leisenring, ScD, ^c Ann Mertens, PhD, ^{a, b} Margaret Shnorhavorian, MD, ^d Chad W. Ritenour, MD, ^e Marilyn Stovall, MD, ^f Daniel M. Green, MD, ^g Charles A. Sklar, MD, ^h Gregory T. Armstrong, MD, ^g Leslie L. Robison, PhD, ^g Lillian R. Meacham, MD ^{a, b}

^aThe Aflac Cancer Center and Blood Disorders Service at Children's Healthcare of Atlanta, Atlanta, GA, USA;

^bDepartment of Pediatrics, Emory University School of Medicine, Atlanta, GA, USA; ^cClinical Statistics and Cancer Prevention Programs, Fred Hutchinson Cancer Research Center, Seattle, WA, USA; ^dDivision of Pediatric Urology, Seattle Children's Hospital, University of Washington, Seattle, WA, USA; ^eDepartment of Urology, Emory University School of Medicine, Atlanta, GA, USA; ^fDepartment of Radiation Physics, The University of Texas M.D. Anderson Cancer Center, Houston, TX, USA; ^gDepartment of Epidemiology and Cancer Control, St. Jude Children's Research Hospital, Memphis, TN, USA; ^hDepartment of Pediatrics, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

Background: The American Society of Reproductive Medicine describes "infertility" as, "a disease, defined by the failure to achieve a successful pregnancy after 12 months or more of regular unprotected intercourse." In this study we analyzed the inability of a female partner to conceive after 12 months of trying to become pregnant with adult male survivors of childhood cancer.

Purpose: To determine the prevalence of infertility and treatment-related risk factors for infertility in male survivors of childhood cancer.

Methods: Within the CCSS cohort, 1622 adult long-term survivors and 274 sibling controls completed the self-administered Male Health Questionnaire. The analysis was restricted to survivors (938/1622; 57.8%) and siblings (174/274; 63.5%) who responded positively to the question, "Have you and a partner ever tried to become pregnant". The prevalence of self-reported infertility, relative risk (RR) and 95% confidence intervals (CI) were calculated for associated demographic and treatment-related factors.

Results: The prevalence of infertility was 17.5% in sibling controls versus 46.0% in survivors ($p < 0.001$). Survivors were less likely to have all the children they wanted, with male infertility being the most common reason for not having more children, cited by 64% of survivors and 15% of siblings ($p < 0.001$). Among survivors, 53.6% reported being evaluated for infertility. In a multivariable analysis, risk factors for infertility included a summed alkylator score ≥ 3 (RR= 2.13, 95% CI 1.69-2.68), surgical excision of any organ of the genital tract (RR=1.63, 95% CI 1.20-2.21), testicular radiation dose ≥ 4 Gy (RR=1.99, 95% CI 1.52-2.61), and exposure to bleomycin (RR=1.55, 95% CI 1.20-2.01).

Conclusions: Male survivors of childhood cancer are at significantly increased risk for infertility. This analysis confirms known risk factors of dose of exposure to alkylating agents, testicular radiation, and surgery with the novel finding of an association of infertility with bleomycin exposure.

*Corresponding Author:

Karen Wasilewski-Masker, MD

The Aflac Cancer Center and Blood Disorders Service at Children's Healthcare of Atlanta, Atlanta, GA, USA

Department of Pediatrics, Emory University School of Medicine, Atlanta, GA, USA

Phone: 404-785-1717

Fax: 404-785-1418

E-mail: karen.wasilewski@choa.org

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