BODY MASS INDEX (BMI) AND FINAL HEIGHT IN ADULT SURVIVORS OF CHILDHOOD CANCER: A REPORT OF THE CHILDHOOD CANCER SURVIVOR STUDY (CCSS).

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Background: Pediatric cancer survivors can have disturbances of growth and development including short stature, poor weight gain and obesity as sequelae to their cancer therapy.
Objective: To determine adult body mass index (BMI) and final height for the most common pediatric cancers and assess correlates of poor outcome in survivors.
Design/Methods: The CCSS is a multi-institutional cohort study of 5 year or more survivors of pediatric cancer who were diagnosed between 1970-1986. Self-reported heights and weights were analyzed and BMI (kg/m^2) calculated for survivors $\geq$ 20 year of age. BMI was categorized into: underweight (<18.5), normal weight (18.5-24.9), overweight (25.0-29.9) and obese ($\geq$ 30). Short stature was defined as height < 10th percentile. Population-based norms from the 1995 National Health Interview Survey (NHIS) were used for comparisons. Analysis was stratified into 2 categories of age at interview: 20-29 and 30-39. Factors evaluated for correlation included: gender, age at diagnosis, race, cancer diagnosis, and cancer therapy.
Results: Of the 7,214 survivors analyzed, 53.2% had a normal weight (NHIS, 48%), 6.3% were underweight (NHIS, 3%), 27.7% were overweight (NHIS, 33%) and 12.8 % were obese (NHIS, 17%). Short stature was found in 22.3% of the survivors. Multivariate analyses (excluding brain tumor and lymphocytic leukemia) found the following factors to be significantly associated with being underweight: for females, Hodgkin's disease (odds ratio [OR]=1.95, 95% CI [CI]=1.3-2.9), Wilms' tumor (OR=1.79, CI=1.1-2.8), and bone cancer (without amputation) (OR=2.05, CI=1.2-3.5). and for males underweight was significantly associated with Hodgkin's disease (OR=2.91, CI=1.6-5.1), non-Hodgkin's lymphoma (OR=2.9, CI=1.5-5.2), Wilms' tumor (OR=6.2, CI 3.6-10.8), Neuroblastoma (OR= 5.8, CI 2.8-11.8), and soft tissue sarcoma (OR=4.22, CI 2.3-7.6). Treatment factors associated with being underweight in females included total body irradiation (OR=2.4, CI=1.0-5.5) or use of alkylating agents with (OR=1.8, CI 1.1-2.8) or without (OR=2.16, CI=1.2-3.7) anthracyclines. For males the use of both anthracyclines and alkylating agents (OR=2.15, CI=1.1-4.2) was associated with being underweight. Excluding survivors of BT and ALL, none of the cancer groups was associated with an increased likelihood of obesity. Younger age at diagnosis and pelvic radiation were associated with short stature for both genders.
Conclusions: A significant proportion of childhood cancer survivors are underweight or of short stature as adults. Interestingly, the likelihood of obesity was lower than would be expected from population norms.

No information to disclose