

Longitudinal assessment of cardiovascular risk factors (CVRF) in adult survivors of pediatric cancer: a report from the childhood cancer survivor study (CCSS).

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Abstract Text:

Background: Childhood cancer survivors are at increased risk of having individual and multiple cardiovascular risk factors (CVRF). We estimated the prevalence of CVRFs with increasing age in survivors as compared to sibling controls.

Methods: Analyses included 13,268 ≥5-yr survivors of childhood cancer diagnosed between 1970-86 and followed longitudinally over 15 yrs (median age at last follow-up 31.9 yrs, range 5.6-58.9). Prevalence of obesity (body mass index BMI ≥ 30 kg/m²) and CVRFs requiring medical treatment (diabetes, hypertension and dyslipidemia) were ascertained at baseline and through three follow-up surveys for survivors and a comparison sibling cohort (n=4,001). Associations between CVRFs and demographic and treatment variables were assessed.

Results: Prevalence of individual and multiple (≥3) CVRFs increased with age in both survivors and siblings. Prevalence odds ratios (ORs) and 95% confidence intervals (CIs) for CVRFs in survivors compared to siblings:

Age	BMI ≥ 30 kg/m ²	Hypertension	Dyslipidemia	Diabetes Mellitus	≥ 3 CVRF
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
<30 yrs	1.1 (1.0-1.2)	2.7 (2.3-3.2)	3.3 (2.4-4.6)	1.9 (1.4-2.7)	1.9 (1.1-3.6)
30-39 yrs	1.0 (0.9-1.1)	2.5 (2.1-2.8)	2.7 (2.3-3.3)	2.1 (1.6-2.6)	2.3 (1.7-3.2)
40-49 yrs	0.9 (0.9-1.0)	2.3 (2.0-2.6)	2.4 (2.1-2.9)	1.9 (1.5-2.4)	2.1 (1.6-2.7)
≥50 yrs	0.8 (0.6-1.0)	2.3 (1.8-2.9)	1.9 (1.5-2.4)	2.1 (1.5-2.9)	1.6 (1.1-2.3)

Multiple CVRF (≥ 3) were more common in African Americans (OR 2.1; 95% CI 1.1-3.8) and former smokers (OR 1.6; 95% CI 1.2-2.2). Total body irradiation (OR 3.0; 95% CI 1.2-7.7), cranial spinal radiation (OR 2.2; 95% CI 1.3-3.7) and exposure to alkylating agents (OR 1.5; 95% CI 1.1-2.1) were associated with multiple CVRFs.

Conclusions: In their 3rd and 4th decades, survivors of childhood cancer exhibit individual and multiple CVRFs at higher rates than their siblings; however, the relative odds remained stable or decreased with age.