

RISK FACTORS FOR LATE CARDIOVASCULAR MORBIDITY & MORTALITY AFTER HEMATOPOIETIC CELL TRANSPLANTATION

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BACKGROUND

Risks of cardiovascular (CV) disease & mortality are increased after hematopoietic cell transplantation (HCT). Most HCT studies have not been able to examine the effect of pre-HCT exposures or long-term CV outcomes.

PURPOSE

Examine pre-HCT & HCT-related factors for CV disease using linked FHCRC, hospital discharge, death certificate data.

METHODS

Nested case-cohort study (n=807). Washington State residents who were ≥2yr HCT survivors treated at FHCRC 1985-2006. Cases were identified using ICD9/10 codes from state hospital discharge & death registries (n=436). Random subset of remaining cohort chosen as controls (n=371). Treatment exposures abstracted from FHCRC medical records (pre-HCT treatment, transplant exposures, and post-HCT 1yr evaluations).

Cardiovascular Outcomes (ICD9/10)

Primary: CV death, ischemic heart disease, cardiomyopathy / congestive heart failure, stroke, vascular disease, rhythm disorder
Related: hypertension, diabetes mellitus, dyslipidemia

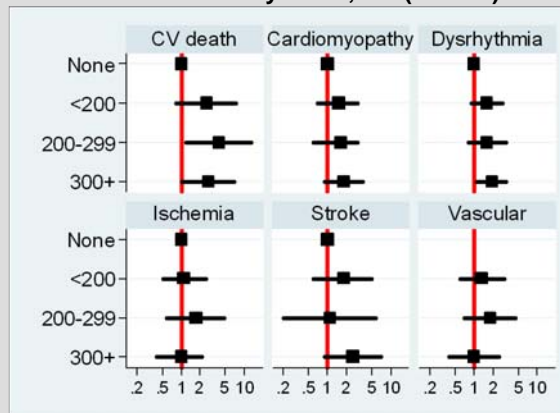
RESULTS

Characteristics	N=807	CV outcomes	N
Age, median (range)	41 (0, 73)	Death	39
Female, n (%)	373 (46)	Ischemic heart	56
Non-white race/ethnicity, n (%)	111 (14)	Cardiomyopathy	80
Underlying diagnosis, n (%)		Stroke	33
Hematologic malignancy	671 (83)	Vascular disease	52
Solid tumor	85 (11)	Rhythm disorder	109
Non-malignant	51 (6)	Hypertension	218
Allogeneic donor, n (%)	467 (58)	Diabetes mellitus	86
Unrelated	168 (21)	Dyslipidemia	84

HCT Exposures, HR (95% CI)*

Exposure	CV Death	Cardiomyopathy	Hypertension
Allogeneic vs. autologous	2.8 (0.9-8.5)	0.8 (0.4-1.5)	1.6 (1.1-2.3)
Unrelated vs. related	1.0 (0.4-2.7)	1.6 (0.7-3.7)	1.5 (1.0-2.2)
Peripheral blood vs. marrow	5.7 (1.6-20.6)	1.9 (0.5-7.2)	1.5 (0.8-2.7)
Chronic GVHD	2.6 (0.7-9.8)	0.8 (0.4-1.8)	1.9 (1.2-2.9)

Pre-HCT Anthracyclines, HR (95% CI)



Related traits 1-yr post-HCT, HR (95% CI)*

Present at 1yr	Present ≥2yrs			
	Ischemic Heart	Hypertension	Dyslipidemia	Diabetes
Lipid medication	8.9 (3.1-25.9)	0.8 (0.3-2.1)	2.3 (0.5-9.9)	1.4 (0.3-7.0)
Hypertension medication	1.2 (0.6-2.5)	2.3 (1.5-3.5)	1.1 (0.6-2.0)	2.2 (1.2-3.9)

* Other CV outcomes demonstrated no consistent associations

Radiotherapy exposures

Pre-HCT radiation to the chest (none, <35Gy, ≥35Gy), brain, abdomen/pelvis, and HCT-related total body irradiation (none, <12Gy, ≥12Gy) were not consistently associated with any CV outcome.

CONCLUSIONS

Increased anthracycline exposure (especially ≥300 mg/m²) is a risk factor for selected CV outcomes in this population. Chest & other radiation exposures were not independently associated; however this may change with longer follow-up. Peripheral blood stem cell recipients appear to be increased risk of CV death vs. marrow recipients. Survivors on lipid and/or blood pressure medications at 1yr post-HCT may be at increased risk of developing subsequent adverse CV traits and events.