Patients and Methods

• Cross-sectional study of clinically assessed participants in SJLIFE, an established cohort of adult CCS who have survived their initial cancer for ≥ 10 years (Figure 1).

• The diagnosis of POI, AOF and PM was based on the medical history in regards to puberty, menarche, menses, pregnancies, childbirth, use of hormonal therapies and timing of menopause supplementation by clinical data and laboratory results from the SJLIFE evaluation.

• In amenorrheic women <40 years old who were not on hormonal therapies such as oral contraceptives, estradiol <17 pg/mL associated with FSH >30 IU/L were considered indicative of POI.

• Multivariable logistic regression was used to study associations between demographic and treatment-related risk factors and POI.

• The mean radiation dose based on the estimated average location of exposure was used to calculate the ovarian radiotherapy dose.

• Exposure to alkylating agents (AA) was quantified using the validated cyclophosphamide equivalent dose (CED).

Results

• 921 patients (median age 31.7 years, range 19.0-60.6) were evaluated at a median of 24.0 years (range 10.2-48.1) after the primary diagnosis.

• 153 (13.3%) were exposed to pelvic radiation and 546 (59.3%) to AA.

• 100 (10.9%) had POI; 58 had AOF and 42 PM.

• Associations between risk of POI, age ≥ 25 years at the time of the study, ovarian exposure to any radiotherapy and CED ≥ 12000 mg/m² were found to be significant (Table 1).

• Radiation associations were noted when AOF and PM were assessed as separate outcomes (Tables 2 and 3).

Conclusions

• POI is a frequent complication of childhood cancer and its treatments with a prevalence of nearly 11%.

• POI was associated with any dose of radiation to the ovaries and CED ≥ 12000 mg/m². Increased risk of POI in older survivors (> 25 years old) highlights its possible occurrence as a late-effect.

• Host factors affecting ovarian reserve may influence vulnerability to cancer treatments; genetic markers in particular deserve further study.

References


• Additional support is provided by a Cancer Center Support (CORE) grant CA21765 and U01 grant U01CA185547-01 from the National Cancer Institute.