**The Impact of Radiation Field Size on Long-Term All-Cause Mortality of Stage I-II Hodgkin Lymphoma Patients**

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**Purpose/Objective(s):** Prior studies have shown a significantly reduced second-cancer risk in Hodgkin lymphoma (HL) survivors treated with more limited-field radiation therapy (RT), although the impact of RT field size reduction on long-term overall survival (OS) has been un- clear. The purpose of this study is to analyze long-term OS by field size.

**Materials/Methods:** An institutional review board-approved retrospective study was conducted using a multi-institutional database of stage I and II HL patients treated 1967-2007 with RT with or without chemotherapy. Statistical analysis was conducted using SAS 9.3 (SAS Institute, Inc., Cary, NC) and Stata 14 (StataCorp LP, College Station, TX). Covariates included age, gender, year of treatment, histology, number of sites, B symptoms, favorable versus unfavorable prognostic group, chemotherapy regimen, RT field, and mediastinal RT dose. The Kaplan-Meier method was used for estimates of OS and the log-rank test was used to test for significance of univariate differences. A Cox proportional hazards model was constructed based on an established method to evaluate for factors associated with all-cause mortality.

**Results:** A total of 1,541 clinical stage I and II HL patients were included. The overall median follow-up time was 15.2 years, with 35% of patients having >20 years of follow-up. The 10-, 15- and 20-year OS rates were 89%, 83%, and 76%, respectively. There was an increasing percentage of patients treated with involved-field (IF) RT in more recent year-cohorts of treatment: 1967-1983 (2%), 1983-1993 (3%), and 1994- 2007 (42.2%). On univariate analysis, younger age at diagnosis (P<0.01), favorable-prognosis disease (P<0.01), absence of B symptoms (P Z 0.04), classical or lymphocyte predominant histology (P<0.01) and more recent treatment era (P<0.01) were associated with longer OS. For the regression model, follow-up time was restricted to the first 20 years of follow-up to ensure parity between treatment-era cohorts. Although correlated with RT field size, chemotherapy regimen fell out of the model due to lack of significance. After adjusting for covariates, IFRT, as compared to extended-field (EF) RT, was associated with significantly lower all-cause mortality, with a hazard ratio of 0.59 (P = 0.038).

**Conclusion:** Treatment with IFRT in early-stage Hodgkin lymphoma was associated with a 41% reduction in the risk of death compared to those treated with EFRT. These results support current efforts to reduce RT volume to involved sites and potential further volume reduction in selected patients.