

Treatment-specific risks of second malignancies and cardiovascular disease in 5-year survivors of testicular cancer

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Abstract

Purpose: To compare radiotherapy and chemotherapy effects on long-term risks of second malignancies (SMNs) and cardiovascular diseases (CVDs) in testicular cancer (TC) survivors.

Patients and methods: In our nation-wide cohort comprising 2,707 5-year TC survivors, incidences of SMNs and CVDs were compared with general-population rates, by calculating standardized incidence ratios (SIRs) and absolute excess risks (AERs). Treatment effects on risks of SMN and CVD were quantified in multivariable Cox regression and competing risks analyses.

Results: After a median follow-up time of 17.6 years, 270 TC survivors developed SMNs. The SIR of SMN overall was 1.7 (95% CI, 1.5 to 1.9), with an AER of 32.3 excess cases per 10,000 person-years. SMN risk was 2.6-fold (95% CI, 1.7- to 4.0-fold) increased after subdiaphragmatic radiotherapy and 2.1-fold (95% CI, 1.4- to 3.1-fold) increased after chemotherapy, compared with surgery only. Subdiaphragmatic radiotherapy increased the risk of a major late complication (SMN or CVD) 1.8-fold (95% CI, 1.3- to 2.4-fold), chemotherapy 1.9-fold (95% CI, 1.4- to 2.5-fold) and smoking 1.7-fold (95% CI 1.4- to 2.1-fold), compared with surgery only. The median survival time was 1.4 years after SMN and 4.7 years after CVD.

Conclusion: Radiotherapy and chemotherapy increased the risk of developing SMN or CVD to a similar extent as smoking. Subdiaphragmatic radiotherapy strongly increases the risk of SMNs but not of CVD, whereas chemotherapy increases the risks of both SMNs and CVDs. Prolonged follow-up after chemotherapy is needed to reliably compare the late complications of radiotherapy and chemotherapy after 20 years.