Cigarette smoking during external beam radiation therapy for prostate cancer is associated with an increased risk of prostate cancer-specific mortality and treatment-related toxicity.

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Abstract

PURPOSE: To evaluate whether a history of smoking or smoking during therapy after external beam radiotherapy (EBRT) for clinically localized prostate cancer is associated with increased treatment-related toxicity or disease progression.

METHODS: Of 2,358 patients receiving EBRT for prostate cancer 1988-2005, 2,156 had chart-recorded smoking histories. Patients were classified as never smokers, current smokers, former smokers, and current smoking unknown. Variables considered included quantity of tobacco use in pack-years, duration of smoking, and, for former smokers, how long before initiation of RT the patient quit smoking, when available. Median EBRT dose was 8100 Gy and median follow-up was 95 months. Toxicity was graded according to the National Cancer Institute's Common Terminology Criteria for Adverse Events.

RESULTS: Current smoking significantly increased the risks of both prostate-specific antigen relapse (hazard ratio [HR] = 1.4, P = 0.02) and distant metastases (HR = 2.37, P <0.001), as well as prostate cancer-specific death (HR = 2.25, P <0.001). Multivariate analysis demonstrated that smoking was also associated with increased risk of EBRT-related genitourinary toxicities (current, HR = 1.8, P = 0.02; former, HR = 1.45, P = 0.01). Smoking did not increase gastrointestinal toxicity.

CONCLUSIONS: Current smokers with prostate cancer are at increased risk of biochemical recurrence, distant metastasis, and prostate cancer-related mortality after definitive RT to the prostate. Current and former smokers, regardless of duration and quantity of exposure, are at an increased risk of long-term genitourinary toxicity after EBRT. Oncologists should encourage patients prior to therapy to participate in smoking-cessation programs to potentially lower their risk of relapsing disease and post-treatment toxicities. prostate cancer, radiotherapy, cigarette smoking, toxicity, distant metastases.

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KEYWORDS: cigarette smoking; distant metastases; prostate cancer; radiotherapy; toxicity

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