Predictors of castration-resistant prostate cancer after dose-escalated external beam radiotherapy.


Author information

Abstract

BACKGROUND: Castration-resistant prostate cancer (CRPC) is a near uniformly fatal form of prostate cancer; however, information on time to development and predictors for progression to CRPC is limited. We report a detailed longitudinal study for development of CRPC in men initially treated with external beam radiotherapy (EBRT).

METHODS: During 1991-2008, 2,478 patients with clinically localized prostate cancer were treated with dose-escalated EBRT at a single institution. The primary objective was to determine predictors of CRPC among men who failed definitive EBRT and progressed to salvage androgen-deprivation therapy (ADT). CRPC was defined as castrate levels of testosterone (<50 ng/dl) with progressive biochemical or radiographic disease.

RESULTS: For the entire cohort (n = 2,478), the 10-year cumulative incidence rate for developing CRPC was 9.9%. For those that progressed to salvage ADT (n = 362), the 7-year cumulative incidence rates for developing CRPC from time of salvage ADT was 33.7%. Amongst this cohort, multivariable analysis demonstrated that PSA doubling-time (continuous; hazard ratio [HR], 0.98 [0.97-0.99], P < 0.001), higher Gleason score (HR, 1.96 [1.12-3.43]; P = 0.034), and duration of ADT at time of EBRT (continuous; HR, 1.02 [1.01-1.03]; P = 0.007) were associated with development of CRPC.

CONCLUSIONS: This represents the first report of predictors of CRPC for patients treated with modern dose-escalated EBRT. We demonstrate that among the minority of patients not initially cured after EBRT, those treated with longer-course ADT have higher rates of resistance to the re-introduction of ADT. Future trials will need to test this subgroup with more aggressive or alternative forms of salvage therapies. Prostate © 2014 Wiley Periodicals, Inc.

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KEYWORDS: androgen deprivation therapy; castration resistant prostate cancer; radiotherapy

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