High-Dose Robotic Stereotactic Body Radiotherapy in the Treatment of Patients With Prostate Cancer: Preliminary Results in 26 Patients.


Abstract

BACKGROUND: Stereotactic body radiotherapy (SBRT) can emulate high dose rate brachytherapy (HDR-BRT) dose fractionation. We report our preliminary results using SBRT in monotherapy or pre-external-beam radiotherapy (EBRT) boost in patients with localized prostate cancer (LpC). The primary end point was the evaluation of both acute and late toxicities; secondary end point was the observation of prostate-specific antigen (PSA) nadir.

PATIENTS AND METHODS: Patients with LpC having prostate volume ≤90 cm³ were enrolled in the present study. Patients were treated with SBRT alone or in combined modality (SBRT + EBRT). SBRT was performed using a CyberKnife System (Accuray Incorporated, Sunnyvale, California) and fiducial tracking system.

RESULTS: From February 2008 to July 2013, 21 patients for monotherapy (38 Gy/4 fractions) and 5 for combined modality (9.5 Gy/2 fractions plus 46 Gy/23 fractions EBRT) were enrolled. Androgen deprivation therapy (ADT) was administered in 16 of the 26 patients. The median pretreatment PSA was 9.4 (range, 4.5-14.3) ng/mL. All patients completed the planned therapy. Acute Grade 1 toxicity was observed in 18 patients, genitourinary (GU) in 12 / 26 patients, and gastrointestinal (GI) in 6 / 26 patients. Acute Grade 2 GU toxicity was reported in 1 / 26 patients, and Grade 2 GI toxicity was observed in 2 / 26 patients. The median PSA nadir was 0.15 (range, 0.02 = 1.4) ng/mL. Late toxicities were observed in 5 / 26 patients: Grade 1 GU (3 of 26), Grade 2 GU (1 of 26), and Grade 1 GI (1 of 26). Median follow-up was 21.5 (range, 8-65) months.

CONCLUSIONS: Our preliminary results of SBRT "simulating" HDR for LpC confirm a minimal toxicity and an optimal PSA response. The PSA nadirs appear comparable with HDR-BRT.

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KEYWORDS: CyberKnife; prostate cancer; stereotactic body radiation therapy

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