

Stereotactic Body Radiotherapy For Early Stage Prostate CA: PSA, Toxicity, and Erectile Function Outcomes From a Single Institution Study

Friedland, Jay L., Freeman, Debra E., Masterson-McGary, Mary Ellen, Spellberg, David E.

Objective(s): Here we report results from a Phase II, single-institution protocol using CyberKnife® stereotactic body radiation (SBRT) for early stage prostate cancer.

Methods: Between February 2005 and December 2007, 212 patients with localized, biopsy-proven adenocarcinoma of the prostate (clinical stage T1cN0M0 to T2cN0M0) were treated. Most patients had a Gleason score of 3+3, initial PSA ranged from 1.1 to 25.5 ng/ml, and initial prostate volume ranged from 15.5 cc to 109 cc. Selected patients received neoadjuvant hormonal therapy. Implanted gold fiducials were used for image guided targeting and tracking. The gross volume (GTV), which included the prostate and the proximal seminal vesicles, was identified on CT/MRI scans. The planning target volume (PTV) included the GTV with a 5-mm margin anteriorly and laterally and 3 mm posteriorly. Most patients received 35 Gy or 36.25 Gy, administered in 5 fractions. Minimum follow-up was 6 months.

Results: PSA levels decreased for all patients during the initial 12 months post-treatment. At a median follow-up of 12 months, the mean PSA value was 0.98 ng/ml. Two patients have developed biopsy-confirmed local relapse; one developed distant metastases. Acute side effects were generally mild and resolved shortly after treatment. A single Grade 3 rectal complication was reported (bleeding), managed conservatively. Ninety percent of patients who were sexually potent before treatment maintained erectile function post-treatment.

Conclusion: Hypofractionated SBRT for localized prostate cancer was delivered by the CyberKnife Radio-surgery system in a minimally invasive fashion, resulting in short-term PSA response, minimal complications, and preservation of erectile function in the majority of patients.