

Evaluation of Outcomes after Stereotactic Hypofractionated Radiotherapy for Prostate Cancer

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Abstract

Objective(s): Several randomized trials support the use of high doses of radiation for localized prostate cancer. We retrospectively report collected data from a cohort of localized prostate cancer patients treated with Cyberknife (CK) in our Center.

Methods: From July 2007 through June 2016 a retrospective analysis was carried out on 217 pts with a median age of 75 years (range 52 – 86), median prostate volume of 75.6 cc (range 37.03-163.16) and clinically localized prostate cancer. CK was used to deliver fiducials based image guided Stereotactic Body Radiotherapy Treatment. The majority of pts 116 (53%) were low risk, 60 pts (28%) were intermediate risk and 41 patients (19%) were high risk (according to the NCCN criteria). Median pre-treatment PSA was 8.51 ng/ml (range 1.51- 51 ng/ml). 17 (41%) of 41 high risk pts received Androgen Deprivation Therapy. The course of radiotherapy consisted of 38 Gy over 4 fractions (9.5 Gy per fraction) given daily to the PTV. Heterogenous dose planning was used, dose was normalized to the 75% isodose line in order for the prescription dose to cover at least 95% of PTV. Real-time intrafractional motion tracking was used.

Results: With a median follow up of 61 months (range 12 – 120), the six years actuarial PSA relapse free survival rate is 94.4% (CI: 90.8%-98.2%) with 98.2% for low risk, 94.5% for intermediate and 85.6% for high risk. The patterns of PSA response show a gradual decline with a PSA nadir below 1.0 ng.ml, 12 months after the treatment. 23 (10.5%) pts died during the follow up for unrelated causes, only one (0.5%) died for prostate cancer. Limited acute urinary symptoms (grade I - II) were common (46.5% of pts), no one experienced grade III or worse acute urinary symptoms. 20.3% of pts reported grade I or II acute GI symptoms, only one experienced a grade III acute proctitis. No grade IV rectal toxicity was observed. The majority of pts (78.3%) experienced grade 0 GU late toxicity, 39 (18 %) experienced grade I or II GU symptoms, 7 (3%) pts reported grade III toxicity. In one patient (0.5%) a grade IV bladder fistula was observed. The majority of pts (95%) did not experienced late GI toxicity, only Grade I or II symptoms were observed in 10 patients (4.6%), higher was not reported.

Conclusion(s): Cyberknife SBRT represents a non invasive method for the definitive treatment of localized prostate cancer with results not inferior to standard fractionated radiotherapy in terms of biochemical control rates at up to 6 years and toxicities.

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Abstract

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