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Prostate-Specific Antigen 5 Years following Stereotactic Body Radiation Therapy for Low- and Intermediate-Risk Prostate Cancer: An Ablative Procedure?

Our previous work on early PSA kinetics following prostate stereotactic body radiation therapy (SBRT) demonstrated that an initial rapid and then slow PSA decline may result in very low PSA nadirs. This retrospective study sought to evaluate the PSA nadir 5 years following SBRT for low- and intermediate-risk prostate cancer (PCa).

65 low- and 80 intermediate-risk PCa patients were treated definitively with SBRT to 35-37.5 Gy in 5 fractions at Georgetown University Hospital between January 2008 and October 2011. Patients who received androgen deprivation therapy were excluded from this study. Biochemical relapse was defined as a PSA rise >2 ng/ml above the nadir and analyzed using the Kaplan-Meier method. The PSA nadir was defined as the lowest PSA value prior to biochemical relapse or as the lowest value recorded during follow-up. Prostate ablation was defined as a PSA nadir <0.2 ng/ml. Univariate logistic regression analysis was used to evaluate relevant variables on the likelihood of achieving a PSA nadir <0.2 ng/ml.

The median age at the start of SBRT was 72 years. These patients had a median prostate volume of 36 cc with a median 25% of total cores involved. At a median follow-up of 5.6 years, 86 and 37% of patients achieved a PSA nadir ≤0.5 and <0.2 ng/ml, respectively. The median time to PSA nadir was 36 months. Two low and seven intermediate risk patients experienced a biochemical relapse. Regardless of the PSA outcome, the median PSA nadir for all patients was 0.2 ng/ml. The 5-year biochemical relapse free survival (bRFS) rate for low- and intermediate-risk patients was 98.5 and 95%, respectively. Initial PSA ($p = 0.024$) and a lower testosterone at the time of the PSA nadir ($p = 0.049$) were found to be significant predictors of achieving a PSA nadir <0.2 ng/ml.

SBRT for low- and intermediate-risk PCa is a convenient treatment option with low PSA nadirs and a high rate of early bRFS. Fewer than 40% of patients, however, achieved

an ablative PSA nadir. Thus, the role of further dose escalation is an area of active investigation.

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