

Influence of Pretreatment Magnetic Resonance Imaging on Local Therapy Decisions in Intermediate-Risk Prostate Cancer Patients

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Abstract : Prostate cancer has the third highest incidence rate and is the second leading cause of cancer death for men in the United States. Of the diagnostic tools available for intermediate-risk prostate cancer, magnetic resonance imaging (MRI) provides superior soft tissue delineation serving as a valuable tool for both diagnosis and treatment planning. Currently, there is minimal data regarding the practical utility of MRI for evaluation of intermediate-risk prostate cancer. As such, the National Comprehensive Cancer Network's guidelines indicate MRI as optional in intermediate-risk prostate cancer evaluation. This project aims to elucidate whether MRI affects radiation treatment decisions for intermediate-risk prostate cancer. This was a retrospective study evaluating 210 patients with intermediate-risk prostate cancer, treated with definitive radiotherapy at our institution between 2019-2020. NCCN risk stratification criteria were used to define intermediate-risk prostate cancer. Patients were divided into two groups: those with pretreatment prostate MRI, and those without pretreatment prostate MRI. We compared the use of external beam radiotherapy, brachytherapy alone, brachytherapy boost, and androgen deprivation therapy between the two groups. Inverse probability of treatment weighting was used to match the two groups for age, comorbidity index, American Urologic Association symptoms index, pretreatment PSA, grade group, and percent core involvement on prostate biopsy. Wilcoxon Rank Sum and Chi-squared tests were used to compare continuous and categorical variables. Of the patients who met the study's eligibility criteria, 133 had a prostate MRI and 77 did not. Following propensity matching, there were no differences between baseline characteristics between the two groups. There were no statistically significant differences in treatments pursued between the two groups: 42% vs 47% were treated with brachytherapy alone, 40% vs 42% were treated with external beam radiotherapy alone, 18% vs 12% were treated with external beam radiotherapy with a brachytherapy boost, and 24% vs 17% received androgen deprivation therapy in the non-MRI and MRI groups, respectively. This analysis suggests that pretreatment MRI does not significantly impact radiation therapy or androgen deprivation therapy decisions in patients with intermediate-risk prostate cancer. Obtaining a pretreatment prostate MRI should be used judiciously and pursued only to answer a specific question, for which the answer is likely to impact treatment decision. Further follow up is needed to correlate MRI findings with their impacts on specific oncologic outcomes.

Keywords : magnetic resonance imaging, prostate cancer, definitive radiotherapy, gleason score 7

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