

Predictive value of negative 3T multiparametric magnetic resonance imaging of the prostate on 12-core biopsy results

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Abstract

Objectives: To evaluate the cancer detection rates for men undergoing 12-core systematic prostate biopsy with negative prebiopsy multiparametric magnetic resonance imaging (mpMRI) results.

Materials and methods: Clinical data from consecutive men undergoing prostate biopsy who had undergone prebiopsy 3T mpMRI from December 2011 to August 2014 were reviewed from an institutional review board-approved prospective database. Men with negative prebiopsy mpMRI results (negMRI) before biopsy were identified for the present analysis. Clinical features, cancer detection rates and negative predictive values were summarized.

Results: Seventy five men with negMRI underwent systematic 12-core biopsy during the study period. In the entire cohort, men with no previous biopsy, men with previously negative biopsy and men enrolled in active surveillance protocols, the overall cancer detection rates were 18.7, 13.8, 8.0 and 38.1%, respectively, and the detection rates for Gleason score (GS) ≥ 7 cancer were 1.3, 0, 4.0 and 0%, respectively. The NPVs for all cancers were 81.3, 86.2, 92.0, and 61.9, and for GS ≥ 7 cancer they were 98.7, 100, 96.0 and 100%, respectively.

Conclusions: A negative prebiopsy mpMRI confers an overall NPV of 82% on 12-core biopsy for all cancer and 98% for GS ≥ 7 cancer. Based on biopsy indication, these findings assist in prebiopsy risk stratification for detection of high-risk disease and may provide guidance in the decision to pursue biopsy.

Keywords: cancer detection; prostate MRI; prostate biopsy.

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