Multiple Regions of Interest on Multiparametric Magnetic Resonance Imaging are Not Associated with Increased Detection of Clinically Significant Prostate Cancer on Fusion Biopsy

Neal Patel [1], Joshua A Halpern [1], Khushabu Kasabwala [1], Eliza Cricco-Lizza [1], Michael Herman [2], Daniel Margolis [3], Chris Xu [4], Brian D Robinson [5], Yi Wang [6], Timothy McClure [1], Jim C Hu [7]
Affiliations expand

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Abstract

Purpose: We sought to determine the association between multiple regions of interest on prebiopsy magnetic resonance imaging and the detection of clinically significant prostate cancer in men undergoing magnetic resonance imaging-ultrasound fusion biopsy.

Materials and methods: We performed a retrospective, single institution analysis of men who underwent fusion biopsy. Men with prior positive biopsies, magnetic resonance imaging performed elsewhere and/or magnetic resonance imaging prior to release of the PI-RADS™ (Prostate Imaging Reporting and Data System) version 2 were excluded from study, resulting in 381 participants. Modeled independent variables included patient age, number of regions of interest with a PI-RADS categorization of 3 or greater, body mass index, prostate specific antigen, prostate volume and PI-RADS categorization. Multivariable logistic regression was performed to determine factors associated with finding clinically significant prostate cancer (Gleason 7 or greater) on biopsy.

Results: Median age was 67.2 years (IQR (61.6-73.0) and median prostate specific antigen was 6.6 ng/ml (5.0-10.0). Adjusted analysis demonstrated that age (OR 1.10, 95% CI 1.06-1.15, p ≤0.001), body mass index (OR 1.08, 95% CI 1.01-1.16, p = 0.038) and

prostate specific antigen (OR 1.06, 95% CI 1.01-1.10, p = 0.015) were associated with detection of clinically significant prostate cancer. PI-RADS categories 4 (OR 4.62, 95% CI 2.23-9.33) and 5 (OR 6.75, 95% CI 2.72-16.71, each p <0.001) were associated with greater odds of clinically significant prostate cancer. Multiple regions of interest were not associated with the detection of clinically significant prostate cancer (OR 1.05, 95% CI 0.60-1.84, p = 0.857).

Conclusions: Multiple regions of interest do not portend a greater likelihood of finding clinically significant prostate cancer. Physicians should recognize that multiple regions of interest should not influence the decision to perform fusion biopsy. Our findings may ease patient anxiety concerning these findings.