Introduction

• Multiparametric MRI scan (mpMRI) of the prostate is the imaging study of choice for patients suspected to have prostate cancer (PCa).
• Dynamic contrast-enhanced (DCE) sequence only has an effect on distinguishing PI-RADS 3 and 4 lesions in the peripheral zone.
• Compared to mpMRI, biparametric MRI (bpMRI) excludes DCE sequence, which eliminates the possibility of cerebral deposition of gadolinium-based contrast agents.
• Recent studies proposed that non-contrast bpMRI is a useful diagnostic tool for PCa, also a more economical and safer tool than the current contrast mpMRI.

Objectives

• To test if the non-contrast bpMRI a useful diagnostic tool for patients with total serum prostate-specific antigen (tPSA) level of 4-10 ng/mL.

Materials & methods

• Retrospective study of biopsy naïve patients.

Inclusion criteria:

• 1) Underwent TRUS guided cognitive-fusion prostate biopsy at one of our three institutions;
• 2) pre-biopsy prostate MRI was performed within 3 months before the biopsy at one of our two urological cancer centers;
• 3) prebiopsy tPSA was 4-10ng/mL.

Exclusion criteria:

• Previous treatment for prostate cancer (neoadjuvant chemotherapy and/ or androgen deprivation therapy).

MRI sequence:

• MpMRI including T2-weighted imaging, diffusion-weighted imaging and DCE imaging was obtained and scored based upon PI-RADS v2.
• BpMRI PI-RADS score was performed using the same scale excluding DCE sequence.

• Univariate logistic analysis, bpMRI significantly predicts the presence of PCa (Wilcoxon Rank Order test, p<0.001; AUC=0.808) and csPCa (Wilcoxon Rank Order test, p<0.001; AUC=0.822).
• The negative predictive value for bpMRI (PI-RADS 1 or 2) is 96.65% for the prediction of csPCa and for PCa 88.27%.
• The negative predictive value of PI-RADS 3 performed similarly in bpMRI (85%) and mpMRI (87.33%) for csPCa.

Conclusion

• For patients with elevated tPSA of 4-10 ng/mL, bpMRI can identify 96.65% of csPCa and 88.27% of PCa.
• In bpMRI PI-RADS 3 patients, bpMRI had a similar diagnostic efficacy with mpMRI.
• Without the possible adverse effects of contrast agents, bpMRI is a safer and economic alternative for the aforementioned patient group.
• Moreover, in patients with low risk of csPCa, bpMRI without biopsy can be a possible option to avoid unnecessary invasive procedures.

Results

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<tr>
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<th>Number (%)</th>
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<tbody>
<tr>
<td>Cancer-free</td>
<td>273(63.9%)</td>
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<tr>
<td>Prostate Cancer</td>
<td>154(36.1%)</td>
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<tr>
<td>Clinically Significant PCa</td>
<td>95(22.2%)</td>
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<tr>
<td>Total</td>
<td>427</td>
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