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LETTER TO THE EDITOR

Biparametric MRI: a further improvement to PIRADS 2.0?

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Dear Editor,

We have read with great interest the short communication by Turkbey and Choyke (1) in the September-October 2015 issue of *Diagnostic and Interventional Radiology*. The authors reported that Prostate Imaging Reporting and Data System (PIRADS) 2.0 provides extensive information on how to acquire, interpret, and report multiparametric magnetic resonance imaging (mpMRI) of the prostate and the highlights of the changes compared with PIRADS 1.0. However, there are some concerns to be discussed regarding the role of mpMRI and its limits in PIRADS.

Current PIRADS 2.0 appears to have good diagnostic accuracy in prostate cancer (PCa) detection and localization, but standardizing the reporting of mpMRI exams and correlating it with tumor aggressiveness remain controversial (2). Dynamic contrast-enhanced (DCE)-MRI is a specific modality to detect PCa in the peripheral and transition zones and to correlate tumor aggressiveness and type of enhancement curves (3). DCE-MRI plays only a minor role in determining PIRADS assessment category, and each lesion gets a positive or negative score based on DCE-MRI (2). The gold standard for assessment of PCa aggressiveness is the Gleason score obtained from prostate biopsy or radical prostatectomy specimens.

Furthermore, other limits to be considered for the mpMRI include the cost and the time required to complete the study, such as the use of gadolinium-based contrast agents requiring intravenous access and different technical parameters (e.g., field strength and b values).

In the diagnosis of PCa, it is essential to consider that: 1) Histopathology remains the gold standard method for diagnosis of PCa; 2) Dominant sequences in the lesion detection are diffusion-weighted imaging (DWI) and T2-weighted MRI; 3) DCE-MRI has a secondary role to T2-weighted MRI and DWI, and it is often difficult to differentiate focal enhancement of small PCa (especially in the transition zone) from adjacent normal prostatic tissues; and 4) T2-weighted MRI alone or with DWI is sufficient for MRI-ultrasonography fusion to direct biopsy needles under transrectal ultrasound guidance. Considering the abovementioned points, in patients suspected of having PCa, the goals of MRI are essentially detection, localization, and staging of the lesions suspected for PCa.

We use biparametric MRI (bpMRI) at 3.0 T with nonendorectal coil incorporating axial fat suppression T1-weighted MRI, axial, sagittal, and coronal T2-weighted MRI and DWI series with apparent coefficient diffusion (ADC) maps. In our experience, we consider DWI as the dominant sequence in lesion detection both in the peripheral and transition zones and in the anterior fibromuscular stroma (Fig.), as reported (4). In addition to DWI/ADC, we consider the appearance of the lesions on T2-weighted MRI to prevent overcalling in the transition zone.

Currently, there is no prospective randomized study that evaluates role of bpMRI for detection of PCa. The current limited experience is all based on retrospectively evaluated data. The real impact of DCE-MRI and/or use of endorectal coil is unknown.

BpMRI offers diagnostic scan in approximately 15 min at a reduced cost, an accurate sector map of the prostate, detection, localization and tumor staging allowing direct biopsy needle under MRI-ultrasound or MRI-guided endorectal prostate biopsy (4–6).

A further improvement of PIRADS 2.0 would be its simplification and the introduction of bpMRI, considering that assigned DWI/ADC and T2-weighted MRI score can be sufficient for the stratification of patients for further diagnostic workup.

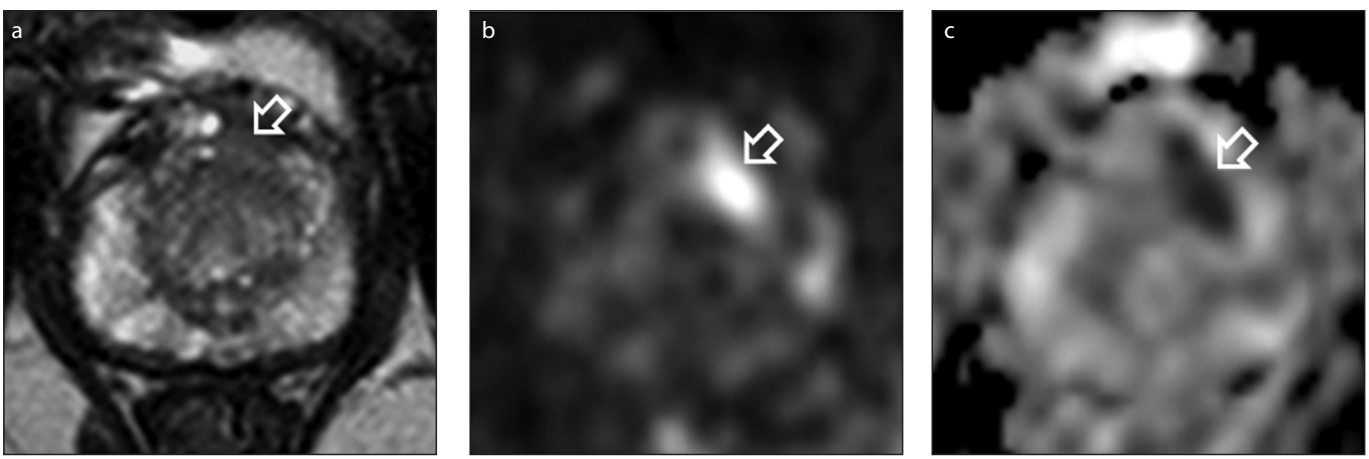

Figure. a–c. Biparametric prostate 3.0 T MRI of a 59-year-old male with a serum prostate specific antigen of 10.31 ng/mL (two negative transrectal ultrasound-guided biopsies prior to MRI). The lesion affects anterior fibromuscular stroma in the left at the prostate apex. Targeted biopsy: Gleason score 3 + 4 carcinoma. Lesion appears slightly hypointense on T2-weighted MRI (**a**, *arrow*), hyperintense on DWI (b value = 2000 s/mm^2) (**b**, *arrow*), and hypointense on ADC map (**c**, *arrow*). T2-weighted MRI and DWI scores were sufficient to indicate targeted biopsy.

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