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**ADDED VALUE OF MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING IN PATIENTS WITH NEGATIVE ULTRASOUND-GUIDED PROSTATE BIOPSY**

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**Aim:** To prospectively investigate the incremental value of multiparametric magnetic resonance (MR) imaging compared with standard T₂-weighted imaging for biopsy planning. **Patients and Methods:** A total of 43 consecutive patients underwent T₂-weighted MR imaging supplemented with multiparametric 1.5-T MR imaging, consisting of proton (¹H) MR spectroscopy, diffusion-weighted (DW) imaging and dynamic contrast-enhanced (DCE) MR imaging. From the multiparametric MR imaging, quantitative maps of the following parameters were calculated: choline plus creatine to citrate ratio, apparent diffusion coefficient, and volume-transfer and exchange-rate constants. The prostate was divided into 20 standardized areas. Each area was classified as benign, inconclusive, or suspicious at T₂-weighted imaging, followed by quantitative evaluation of all inconclusive and suspicious areas with MR parameter maps. Transrectal ultrasound (TRUS) biopsy, guided by the MR findings, was performed for lesions classified as suspicious for cancer using at least one of the MR parameter maps after being overlain on the T₂-weighted images, and displayed in three dimensions. Diagnostic parameters were calculated on a per-lesion and per-patient basis for all combinations of T₂-weighted images with MR parameter maps. **Results:** A total of 43 patients had a median of two prior TRUS biopsies with negative findings. Each patient had a median count of three suspicious lesions. Prostate cancer was demonstrated in 21 of 43 patients. Biopsy was performed for 128 lesions; 53 of them were positive for prostate cancer. Digital rectal examination was not suspicious for malignancy in 40 patients, while it indicated malignancy in only 3 cases. The biopsy Gleason score (GS) within this group was distributed as follows: 52% GS≤6, 33% GS=7, 14% GS≥8. **Conclusion:** Only the combination of T₂-weighted imaging with all three MR multiparametric techniques depicted all identifiable prostate carcinomas. The combination of T₂-weighted imaging with only two MR multiparametric techniques (DW imaging and ¹H MR spectroscopy or DW imaging and DCE MR imaging) missed 6%, reasonably reducing the number of areas needing biopsy.