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INTRODUCTION

Substituting transrectal ultrasound (TRUS)-guided systematic biopsies (SBx) with multiparametric MRI (mpMRI) targeted biopsy (TBx) only remains controversial in the biopsy-naïve setting.

Contrast-enhanced ultrasound (CEUS) with quantitative parametric imaging has shown promising results for the detection of prostate cancer (PCa).

AIM

- To compare clinically significant (cs) PCa detection rates of mpMRI- and CEUS-TBx with routine SBx in biopsy-naïve men

MATERIALS & METHODS

Biopsy-naïve men with PCa suspicion: PSA level ≥ 3.0 and/or abnormal DRE

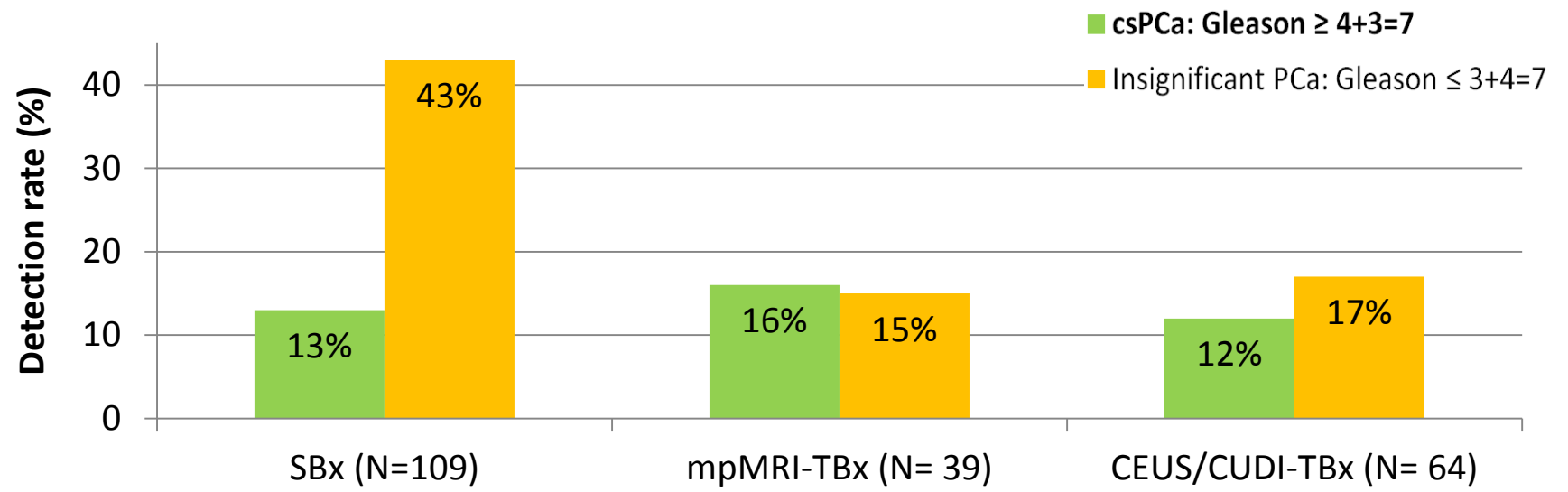
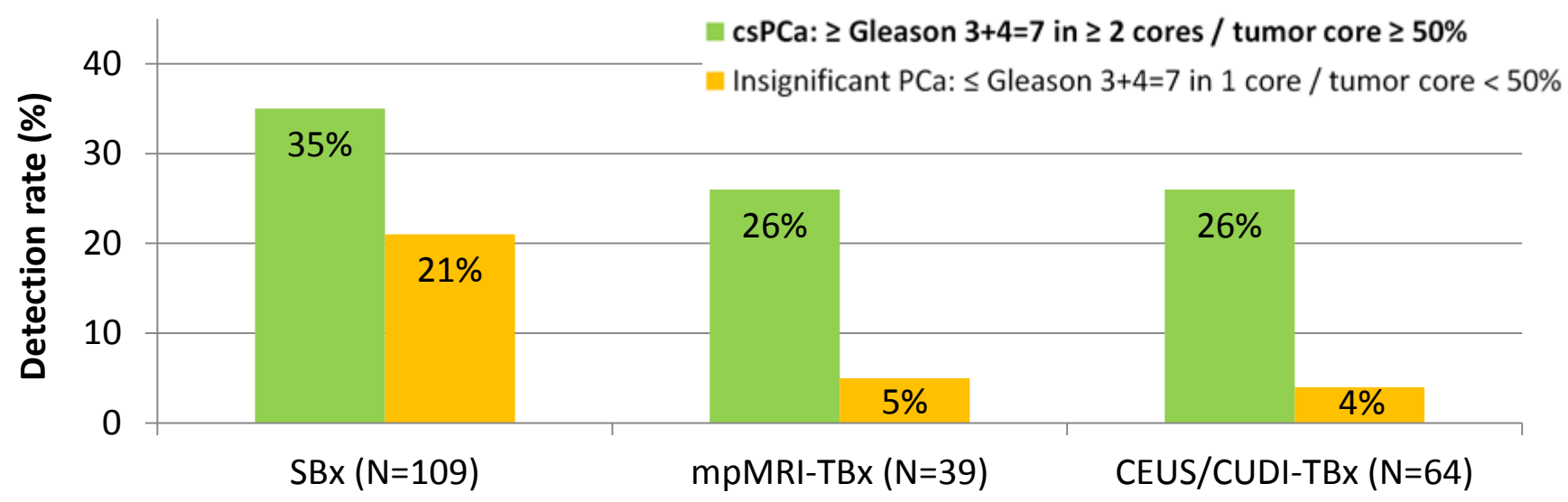
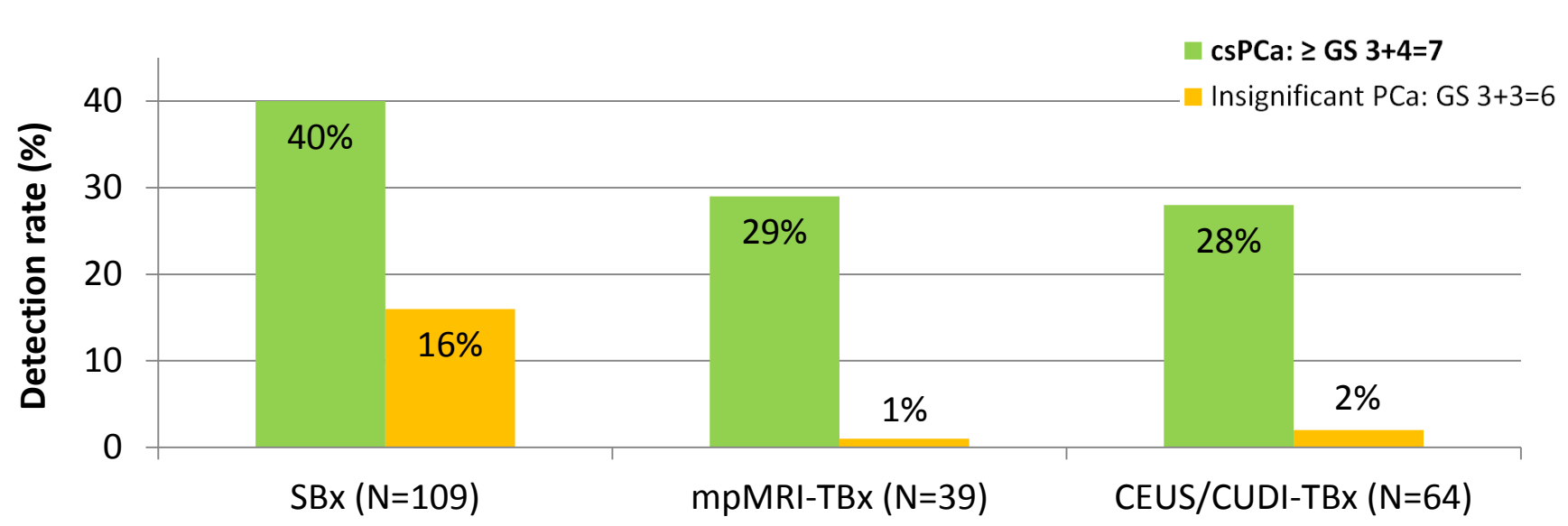
mpMRI: 3T with T2W + DWI + DCE (PI-RADSv2)
 CEUS: 4 prostate-plane recordings with quantification software: Contrast ultrasound dispersion imaging (CUDI).

12-core SBx (all) and TBx biopsy (if necessary):
 mpMRI-TRUS fusion TBx (PI-RADS ≥ 3)
 CEUS/CUDI TBx (Likert ≥ 3).

Outcome: csPCa detection of biopsy regimens (different Gleason score (GS) thresholds)

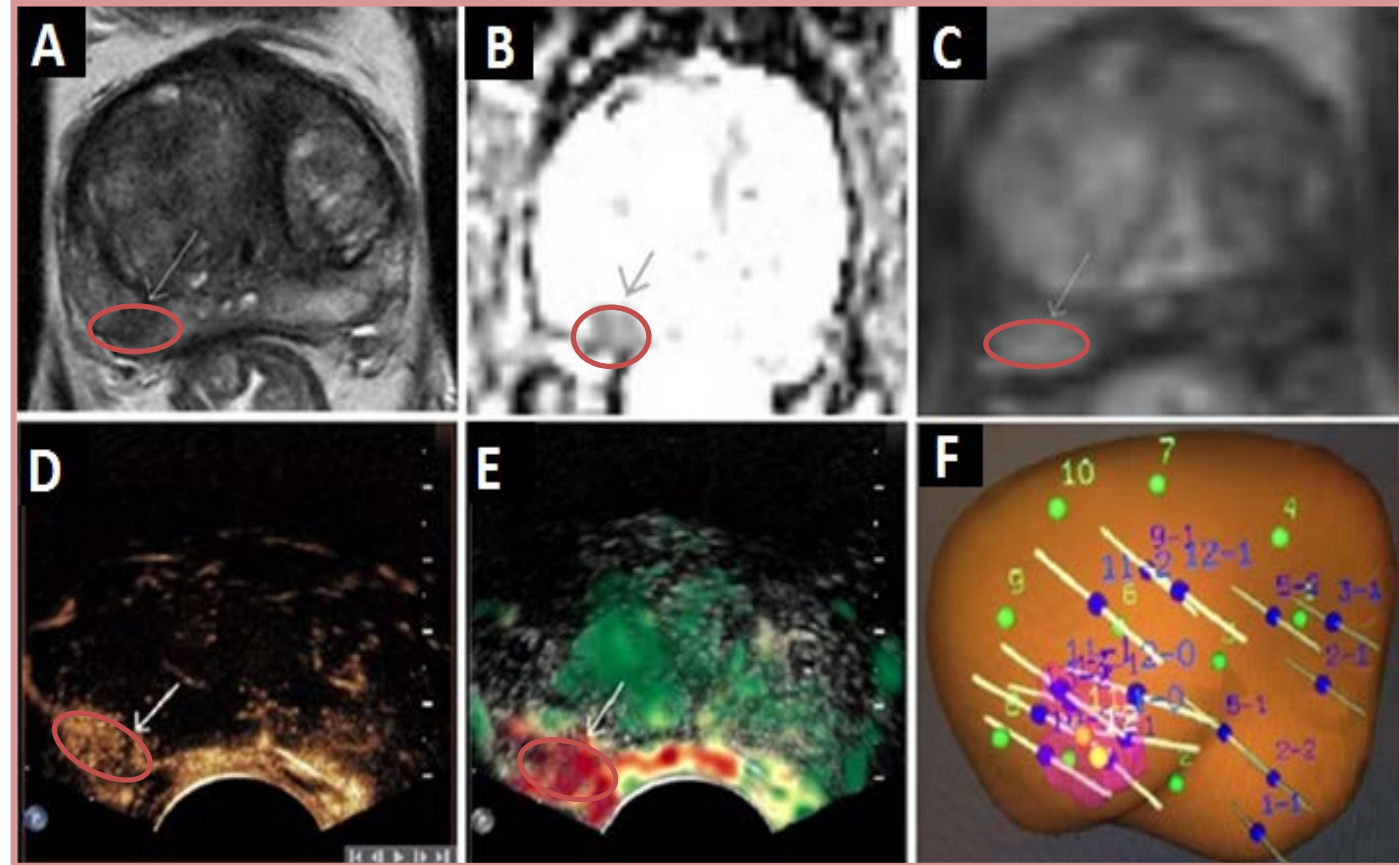
PRELIMINARY RESULTS

Detection rate of the biopsy regimens for csPCa (different GS thresholds). First 115 included patients



STUDY EXAMPLE

66 year old man with a PSA of 5.8 ng/mL and a suspicious DRE on the right



A, B and C: mpMRI imaging: A: T2-weighted image, B: Diffusion-weighted ADC map, C: Dynamic contrast enhanced image
D and E: US imaging: D: Contrast enhanced image (single frame), E: CUDI parametric image. In all MRI and US imaging modalities a clear lesion (red circle and arrows) is visible.
F: Artemis image fusion: Suspicious lesion in pink with biopsy tracking (SBx and TBx).
Results: mpMRI- and CEUS-TBx: Gleason score 4+3=7 PCa; SBx: Gleason score 3+4=7 PCa.

CONCLUSIONS

- This ongoing trial is the first to compare mpMRI imaging with CEUS imaging using quantification software for csPCa detection.
- mpMRI- and CEUS/CUDI-TBx detect high GS PCa and avoid biopsy in men without PCa or low-grade PCa.
- Both imaging modalities miss GS 3+4=7 PCa as compared to SBx.