MP46-06

NOMOGRAM TO PREDICT ABSENCE OF CLINICALLY SIGNIFICANT PROSTATE CANCER ON PATIENTS WITH NEGATIVE MULTIPARAMETRIC MRI UNDERGOING PROSTATE BIOPSY

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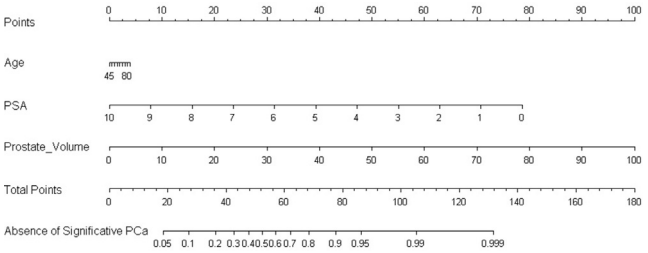
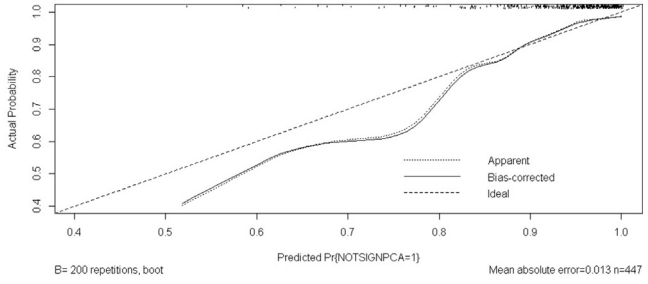
INTRODUCTION AND OBJECTIVES: To develop a nomogram to predict the probability of not detecting clinically significant prostate cancer (CSPCa) on transrectal ultrasound (TRUS) guided systematic prostate biopsy (PBx) in patients with a negative multiparametric magnetic resonance imaging (mpMRI).

METHODS: Institutional databases of three tertiary referral centers were queried to identify 447 patients who underwent a systematic TRUS PBx after a negative mpMRI between 2013 and 2016. Exclusion criteria were PSA >10ng/mL, prostate volume (PV) >100 cc on MRI and any prior treatment for PCa. mpMRIs (3T, T2W, ADC, DCE) were reported by experienced radiologists and were consider negative if PIRADS V2 score < 3. CSPCa was defined as Gleason ≥ 3+4 PCa, or Gleason 3+3 PCa with > 8mm PCa length on PBx. The Mann-Whitney U and the Chi-square tests were applied. A logistic regression model was created to identify predictors for non-CSPCa on PBx. Predictive accuracy was quantified using the concordance index (CI). Internal validation with 200 bootstrap resampling and calibration plots were generated to explore nomogram performance. Limitations include the small sample size, the paucity of events and the need for an external validation.

RESULTS: The median (IQR) age was 67 yrs (63-70), PSA was 5.3 ng/mL (3.7-6.9) and PV was 50cc (34.6-68.5). Overall CSPCa detection rate was 6.5% (29/447). Age, PSA and PV were included in the model (Fig.1A). The nomogram showed high predictive accuracy (CI 0.81) and a slight underestimation on calibration plot (Fig.1B). At internal validation with 200 bootstrap resampling the predictive accuracy was 0.80.

CONCLUSIONS: We first developed a nomogram that provides high accuracy in predicting the probability of absence of clinically significant prostate cancer on systematic prostate biopsy in patients with a negative mpMRI. Due to the high negative predictive value of mpMRI, this nomogram is a reliable and useful tool to identify those patients who might safely avoid unnecessary prostate biopsy in case of negative mpMRI.





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MP46-07

PROSTATE CANCER DETECTION IN BIOPSY-NAÏVE MEN: A PROSPECTIVE, COMPARATIVE, ONGOING CLINICAL TRIAL OF MULTIPARAMETRIC MRI- AND CONTRAST ENHANCED ULTRASOUND-TARGETED BIOPSY VERSUS SYSTEMATIC BIOPSY

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INTRODUCTION AND OBJECTIVES: Substituting transrectal ultrasound (TRUS) guided systematic biopsies (SBx) with multiparametric MRI (mpMRI) targeted biopsy (TBx) remains controversial in the biopsy-naive setting. Contrast-enhanced ultrasound (CEUS) with quantitative parametric imaging has shown promising results for the detection of prostate cancer (PCa). In this trial, we will determine the individual and complementary value of mpMRI and CEUS for PCa detection by comparing PCa and clinically significant (csPCa) detection for mpMRI/TRUS-fusion TBx and CEUS TBx with routine SBx in biopsy-naive men.

METHODS: This institutional review board-approved, prospective trial (ClinicalTrials.gov: NCT02831920) will include 299 biopsy-naive men. Prebiopsy mpMRI consists of T2-weighted, diffusion-weighted and dynamic contrast-enhanced imaging while CEUS imaging consists of 4 prostate-plane recordings using an US contrast agent and quantification software. The mpMRI and CEUS will be evaluated in a blinded fashion by an uro-radiologist and a CEUS expert using likelihood of PCa based on PIRADSv2 and a 1 to 5 Likert Scale, respectively. A TRUS-guided 12-core SBx protocol is performed by an operator blinded for imaging. A second operator, using an MRI/TRUS fusion device will take TBx from mpMRI and CEUS lesions. PCa and csPCa (definition 1: Gleason score (GS) ≥3+4=7 / definition 2: GS ≥4+3=7) detection rates will be compared between the regimens.

RESULTS: In this ongoing trial in progress, 97 patients signed informed consent. Ninety patients were eligible for preliminary analysis with median PSA (IQR) of 6.4 ng/mL (4.7-8.2) and clinical T-stage (cT2c vs. T1c) of 38% vs. 62%. A total of 50 (56%) men had PCa; of these, 39 (78%) were diagnosed with GS ≥7 PCa and 11 (22%) with GS 6 PCa. For definition 1: mpMRI TBx (N=32) yielded GS ≥3+4=7 PCa in 26 (29%) men and 0 GS 6 PCa while CEUS TBx (N=54) yielded GS ≥3+4=7 PCa in 24 (27%) men and 2 (2%) GS 6 PCa. SBx yielded GS ≥3+4=7 PCa in 36 (40%) men and 13 (14%) GS 6 PCa. For definition 2: mpMRI TBx and CEUS TBx yielded GS ≥4+3=7 PCa in 17 (19%) and 13 (14%) men compared to 11 (12%) in SBx, respectively.

CONCLUSIONS: This trial is the first to combine mpMRI imaging with advanced CEUS imaging using quantification software for PCa detection. Preliminary results demonstrate that mpMRI and CEUS TBx enable detection of high GS PCa and avoidance of biopsy in men without PCa or low-grade PCa. However, both imaging modalities do not guarantee complete certainty of GS 3+4=7 PCa detection as compared to SBx.

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MP46-08

WHAT IS THE PERFORMANCE OF MPMRI IN MEN WHO HAVE NEVER HAD A PRIOR BIOPSY OF THE PROSTATE: A META-ANALYSIS OF PROSPECTIVE STUDIES

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INTRODUCTION AND OBJECTIVES: While multi-parametric MRI (mpMRI) of the prostate was initially described in men with a