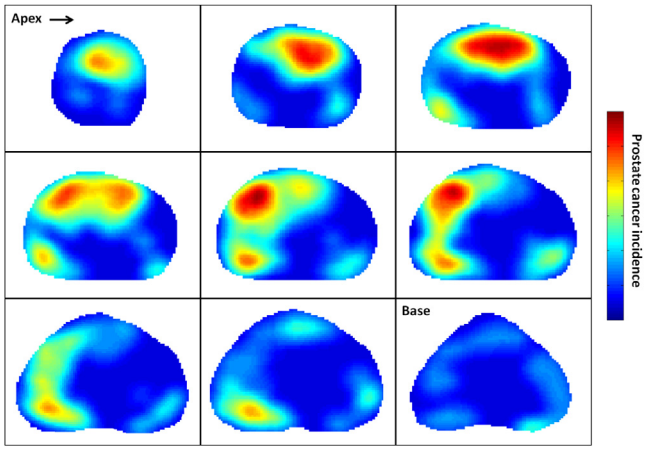

Source of Funding: The Joseph and Diane Steinberg Charitable Trust

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MP53-11

A PRE-BIOPSY NOMOGRAM FOR PREDICTION OF THE RISK OF GLEASON SCORE = 7 PROSTATE CANCER ON COMBINED MRI-US FUSION TARGETED AND SYSTEMATIC PROSTATE BIOPSY AMONG MEN WITH NO PREVIOUS BIOPSY

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INTRODUCTION AND OBJECTIVES: MRI-targeted prostate biopsy (PB) is increasingly being utilized to aid cancer diagnosis in clinical practice. Our objective was to develop a nomogram to predict the probability of Gleason score ≤7 prostate cancer (CaP) on MRI targeted and systematic prostate biopsy in men with no previous biopsy.

METHODS: From June 2012 to June 2015, MR-US fusion targeted prostate biopsy was performed on approximately 1,140 men with suspicious regions identified on pre-biopsy 3T multiparametric-MRI along with systematic 12 core biopsy, utilizing the ProFuse|Artemis™ system. Logistic regression modeling was used to evaluate predictors of Gleason score ≥7 CaP, and corresponding nomograms were generated. Models were created with a randomly selected training sample (n=232), tested (n=59), and then validated (n=98). Bias-corrected using bootstrap resampling, and Akaike information criterion was used to select best-fit models.

RESULTS: A total of 389 men with no previous biopsy and complete records were included for analysis (median age 66 years, PSA 4.8 ng/ml, prostate volume 46 cc, PSA density 0.09 ng/ml-cc). Statistically significant independent positive predictors of CaP on targeted and systematic PB were found to be PSA density, age, and MRI suspicion score (MRIss). A CaP probability nomogram (Figure 1) was generated using the predictors and model performance characteristics bias-corrected areas under the receiver-operating characteristic curves (AUC) were validated (Figure 2).

CONCLUSIONS: PSA density, age, and MRI suspicion score predict CaP on MRI-targeted and systematic biopsy. Our CaP probability nomogram may allow further individualization of the decision to perform PB in men with clinical suspicion of prostate cancer and no previous biopsy.

Figure 2. Receiver-operating characteristic curves of the training, testing, and validations cohorts

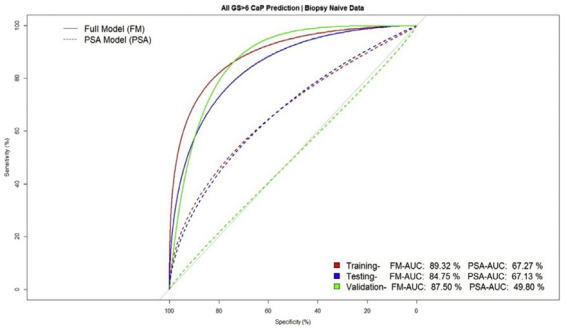
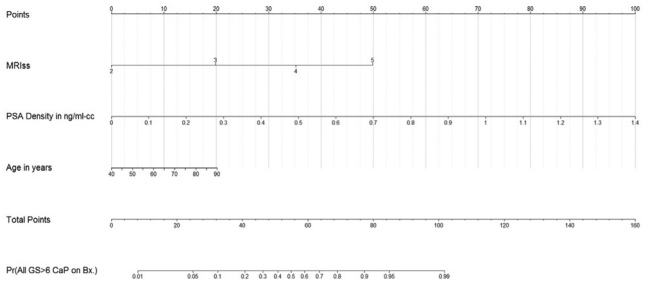


Figure 1. Predictive nomogram of clinically Gleason Score ≥ 7 on MRI-targeted and systematic biopsy in men with no previous biopsy



Source of Funding: None

MP53-12

THE ROLE OF PROSTATE CANCER ANTIGEN 3 (PCA3) TEST AND MULTI-PARAMETRIC PROSTATIC MAGNETIC RESONANCE IMAGING (MPMRI) AMONG PATIENTS WITH PRIOR NEGATIVE BIOPSY: CORRELATION WITH RADICAL PROSTATECTOMY PATHOLOGY

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INTRODUCTION AND OBJECTIVES: MPMRI has emerged as a new tool for improving PC detection, especially in patients with a previous negative TRUSBX. Our hypothesis is questioning the potential value of PCA3 coupled with MPMRI among patients with at least 2 negative prior biopsies undergoing a repeat biopsy and correlating their result with final pathology post radical prostatectomy (RadP).

METHODS: A retrospective study on 291 patients with at least 2 prior negative biopsies scheduled to undergo repeat prostate biopsy due to worrisome PSA were included. 85 pts had both PCA3 and MPMRI done prior to TRUSBX. Pts were divided into 4 groups based on PCA3 and MPMRI status, Table 1.

In a subgroup of pts with clinically significant PC who underwent RadP, we correlated the post RadP pathology report with pre-op PCA3 and MPMRI correlating their diagnostic ability to detect PC. PCA3 test was considered positive with a PCA3 score = 35. MPMRI were reviewed by a dedicated uroradiologist at Princess Margaret Cancer Centre.

RESULTS: In group 1, 48% from the PCA3 group had positive results with 76% sensitivity, 58% specificity, 40% PPV and 87% NPV. PCA3 was correlated with diagnosis of PC p=0.003, while it failed to differentiate high grade PC (HGPC) or to detect clinically significant PC.