of radiomic and deep learning algorithms to automatically detect prostate cancer on MRI will be aided by the accurate labelling of tumour foci on mpMRI images using our 3D reconstruction approach.

Source of Funding: NHS/Aira-Matrix Project PO01

MP58-11

COMPARISON OF PROSTATE CANCER DETECTION RATES BETWEEN TRANS-RECTAL MRI/US FUSION AND TRANS-PERINEAL COGNITIVE TARGETED PROSTATE BIOPSY APPROACHES

Johnathan Drevik, Zafardjan Dalimov, Allen Rojhani, Phillip Abbosh, Steven Sterious, Joshua Cohn, Jay Simhan, Justin Friedlander, Eric Ghiraldi, Robert Uzzo, Serge Ginzburg, Philadelphia, PA*

INTRODUCTION AND OBJECTIVE: Many urology practices have access to MRI/US fusion technology for prostate targeting via transrectal (TR) approach. The adoption of transperineal (TP) prostate biopsy is increasing, but conversion to TP fusion technology can be financially prohibitive. Cognitive TP targeting is a cost-effective alternative but may be perceived as a barrier and assumed to result in lower cancer detection. We describe a single surgeon's transition from TR MRI/US fusion to cognitive TP targeted biopsies.

METHODS: A retrospective chat review of patients that underwent targeted prostate biopsy (either TP cognitive or TR MRI/US fusion) from 2015 - 2021 was performed. Patients with PSA $>$ 20, concomitant procedures or metastatic disease were excluded. In patients with multiple biopsies only the first targeted biopsy was abstracted. Chi-Square and Mann-Whitney tests were utilized for univariable analysis of categorical and continuous variables, respectively. Multivariable logistic regression models were fit to evaluate variables associated with clinically significant prostate cancer on targeted biopsy.

RESULTS: Of the 146 patients that underwent targeted prostate biopsy, 40% underwent TP cognitive approach. Clinicopathologic characteristics between the two groups differed in demographic distribution, prostate size, and MRI findings (Table 1). The detection of any prostate cancer (64% vs 39%, $p=0.003$) and clinically significant prostate cancer (csPCa) (48% vs 19%, $p<0.001$) were higher in the TP cognitive targeted group. On multivariable analysis, controlling for clinicopathologic characteristics, only PSA density above >0.15 ng/ml^2 was associated with csPCa on targeted biopsy (Table 2). Targeted biopsy approach, TR fusion vs. TP cognitive targeted biopsy, was not associated with detection of csPCa.

CONCLUSIONS: Clinically significant prostate cancer detection rate was not compromised when switching from transrectal MRI/US fusion to transperineal cognitive targeted biopsy technique.

Table 1. Characteristics of targeted prostate biopsy cohort.

	Transrectal MRI/US Fusion N=88	Transperineal Cognitive N=58	p Value
Patient Characteristics			
Age (years), median (IQR)	66 (62-71)	66 (59-71)	0.6
Race, n (%)			0.1
African American	19 (22)	22 (38)	
Caucasian	58 (66)	31 (53)	
Other	11 (12)	5 (9)	
PSA (ng/ml) prior to biopsy, median (IQR)	5.7 (4.7-8.2)	6.3 (4.6-9.8)	0.4
Prostate Volume (cc), median (IQR)	55.5 (40-88)	42 (28-64)	**0.002**
PSAD (ng/ml^2), median (IQR)	0.099 (0.067-0.168)	0.167 (0.085-0.292)	**0.001**
DRE, n (%)			0.3
Normal	73 (83)	48 (83)	
Abnormal	6 (6.8)	1 (1.7)	
Unknown	9 (12)	9 (15)	
Biopsy Naïve, n (%)	46 (52)	26 (45)	0.4
Number of ROI, median (IQR)	1 (1-2)	1 (1-2)	0.4
PIRADS 3	49 (56)	22 (38)	**0.036**
PIRADS 4 and 5	47 (60)	43 (74)	**0.012**
Extracapsular Invasion on MRI, n (%)	2 (2.3)	5 (8.6)	0.08
SV Invasion on MRI, n (%)	0	1 (1.7)	0.2

Table 2. Multivariate analysis of predictors of clinically significant prostate cancer on targeted biopsy

Predictors	OR (95% CI)	p Value
PSAD		
PSAD <0.15 ng/ml^2	Reference	-
PSAD 0.15-0.2 ng/ml^2	3.65 (1.27-10.51)	**0.017**
PSAD 0.2-0.3 ng/ml^2	10.8 (2.59-45.11)	**0.001**
PSAD >0.3 ng/ml^2	9.79 (2.84-33.76)	**<0.001**
Biopsy Type		
TRUS True Fusion	Reference	-
TP Cognitive Fusion	1.96 (0.83-4.76)	0.13
PI-RADS score 3	1.02 (0.27-3.95)	0.97
PI-RADS score 4 or 5	3.06 (0.69-13.51)	0.14
Extracapsular Invasion on MRI	7.07 (0.61-81.73)	0.11

Source of Funding: None

MP58-12

ADDITIONAL SYSTEMATIC TO MRI-TARGETED BIOPSY IN PROSTATE CANCER DIAGNOSIS: A DOUBLE-EDGED SWORD

Rodrigo Suarez-Ibarrola, Cordula A. Jilg, Markus Grabbert, Christian Gratzke, August Sigle, Freiburg, Germany*

INTRODUCTION AND OBJECTIVE: Current guidelines recommend an additional systematic biopsy (SB) to complement MRI-targeted biopsy (TB) in order to address the limited sensitivity of TB alone. SB may be beneficial for diagnosing additional significant PCa (sPCa) but also harmful in terms of additional non-significant PCa (nsPCa). This study aimed to investigate selection criteria to identify men who might benefit from SB within this clinically relevant trade-off.

METHODS: A retrospective single-centre cohort of 1043 men underwent MRI-ultrasound fusion transperineal synchronous TB and SB according to the Ginsburg scheme with the ISRobot Mona Lisa biobot between 10/2015 – 05/2020. The median number of cores was 36 (range: 12-70). Univariate and multivariate logistic regression models were applied to identify predictors for the additional diagnosis of sPCa (ISUP 2 and higher) and insignificant PCa (ISUP 1).

RESULTS: The mean age and PSA were 67±7.5 years and 8.8±11.2 ng/ml, respectively. The overall cancer detection rate was 649/1043 (62.2%), with 521/1043 (50%) men harboring sPCa. Additional SB diagnosed sPCa in 98/1043 men (9.4%) and nsPCa in 71/1043 men (6.8%). Multivariate analysis showed that sPCa diagnosed by additional SB was significantly higher in patients with PI-RADS 2-4 lesions compared to PI-RADS 5 lesions ($p<0.01$; OR 4.4 (95% CI 1.50 – 17.8)), and significantly lower in patients with transitional zone lesions compared to peripheral zone lesions ($p=0.03$; OR 0.47 (95% CI 0.24 – 0.91)) as well as in patients with smaller prostates ($p=0.04$; OR 0.99 (95% CI 0.98 – 0.99)). Multivariate analysis showed that nsPCa diagnosis solely with SB was significantly higher in men with larger prostates ($p=<0.01$; OR 1.02 (95% CI 1.01 – 1.02)) and significantly lower in patients with PI-RADS 4 lesions compared to PI-RADS 5 ($p<0.01$; OR 0.04 (95% CI 0.01 – 0.38)). Omitting SB in men with PIRADS 5 lesions would have missed sPCa in 7 out of 246 men (2.8%). Lastly, no sPCa was missed when further restricting TB to patients with lesions localized in non-peripheral zones of the prostate.

CONCLUSIONS: An individualized biopsy strategy seems necessary to address the sPCa vs nsPCa trade-off. According to our data, patients harbouring a PI-RADS 5 lesion in a relatively small gland which is localized in the transitional zone could safely omit a SB.

Source of Funding: None

MP58-13

ATM MUTATIONS ARE ASSOCIATED WITH HIGH-RISK ARCHITECTURAL FEATURES IN MEN WITH FAMILIAL PROSTATE CANCER

Romy Mondschein, Bolton Damien, David Clouston, Declan Murphy, Prudence Scott, Renea Taylor, James Dowty, Heather Thorne, Melbourne, Australia*