EP008 Does the diagnostic accuracy of micro-ultrasound vary with prostate location?

EUR Urol Suppl 2019;18(10):e3393

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Introduction & Objectives: The PRI-MUS™ (Prostate Risk Identification for Micro-Ultrasound) protocol was developed in 2016[1] to identify suspicious areas seen by the ExactVu™ micro-ultrasound imaging platform. While this protocol was developed for the peripheral zone, it is unclear whether the accuracy to predict clinically significant cancer is uniform throughout the gland.

Materials & Methods: 399 prostate biopsies were performed in 372 patients using the ExactVu micro-ultrasound system (Exact Imaging, Markham, Canada) from January 2018 to May 2019 at the Ordensklinikum Linz (Linz, Austria). Subjects had a median PSA of 6.7 (IQR 4.5-11.2) ng/mL and 30% had positive DRE. Suspicious areas were assessed in real-time using PRI-MUS and a TRUS biopsy was performed in the same session under micro-ultrasound guidance. Biopsies were carried out by 5 providers and results from pathology were then compared with the image findings.

Results: Biopsy pathology confirmed a cancer diagnosis in 60% of patients, with 42% of patients harboring Grade Group (GG) > 1 cancer. The PRI-MUS protocol had an area under the receiver-operator characteristic (AUC) of 0.76 for predicting GG>1 cancer in the peripheral zone. This accuracy varied between 0.68-0.83 depending on prostate region, with highest accuracy in the prostate apex and lowest accuracy in the base. Anterior targets were sampled but generally not assigned a PRI-MUS score as the system is currently only validated in the peripheral zone, still, in the 33/737 anterior samples assigned a PRI-MUS score AUC was 0.80.

Conclusions: Micro-ultrasound and the PRI-MUS protocol are useful tools to detect cancer and appear to maintain strong diagnostic value throughout the prostate. This technology holds promise for reducing the high false-negative rate of prostate biopsy, without relying on multi-modality, multi-specialty solutions like mpMRI.

References:

1. Ghai S, Eure G, Fradet V, et al. Assessing Cancer Risk on Novel 29 MHz Micro-Ultrasound Images of the Prostate: Creation of the Micro-Ultrasound Protocol for Prostate Risk Identification. J Urol. 2016;196(2):562-569. doi:10.1016/j.juro.2015.12.093