EP007 The utility of high-frequency micro-ultrasound in performing MRI-ultrasound fusion targeted biopsy

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Introduction & Objectives: MRI-US fusion targeted biopsy is recommended in any men with MRI visible lesions. Its diagnostic performance might be limited in case of MRI non visible lesions or inaccurate fusion as standard transrectal US is a poor test to detect prostate cancer lesions. We aimed to evaluate the performance of a novel transrectal microUS using high-frequency at 29 MHz (ExactVu®) with an embedded software-fusion.

Materials & Methods: Retrospective analysis of consecutive men undergoing MRI-microUS fusion targeted biopsy from May 2018 to March 2019. The biopsy was performed by a transrectal or a transperineal approach under local or general anesthesia, respectively. All MRI were reviewed in a MR-dedicated meeting. Standard US and microUS acquisition was performed; suspicious lesions were noted in a standardised sheet. MRI-microUS fusion targeted biopsy were performed followed by microUS targeted biopsy and finally by random biopsy, as clinically indicated. Clinically significant disease was defined as any grade 4 and/or total cancer length >/= 10mm.

Results: After excluding 19 men who had incomplete imaging or previous treatment, we included 148 men with median age of 67 years (IQR 60-71) and median PSA of 7 ng/ml (4.6-10.4). 82 (55%) were biopsy-naïve, 24 (16%) had previous negative biopsy, 34 (23%) were on active surveillance and 8 (5%) underwent accurate stratification. PIRADS score was 1-2 in 38 (26%), 3 in 6 (4%), 4-5 in 104 (70%). A mean of 0.94 (± 0.72) and 0.93 (± 0.66) lesions were detected at MRI and microUS, respectively. Needles were deployed through the rectum in 43 (29%); through the perineum in 105 (71%). Deploying a median of 15 needles (12-21), the median number of positive cores was 2 (0-6) for a maximum cancer core length at 6mm (4-9) and a total cancer core length at 20mm (12-35). Significant disease was detected in 79 (53%), insignificant disease was detected in 14 (10%), no disease was detected in 55 (37%). Of the 88 posterior lesions PIRADS >/= 3, 66 (75%) were visible on microUS. 36 MRI non-visible lesions were detected on microUS: 9 (25%) harboured significant, 8 (22%) harboured insignificant disease and 19 (53%) were false positive.

Conclusions: Our study suggests that combining microUS with MRI fusion targeted biopsy might enhance the detection rate of significant disease. Indeed, few additional lesions are detected, and most lesions are visible on microUS; therefore, the missing rate related to incorrect fusion should be minimised.