P076 The utility of 29 MHz high resolution micro-ultrasound and mpMRI in the management of Gleason six prostate cancer with active surveillance

EUR Urol Suppl 2019;18(11):e3502

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Introduction & Objectives: The introduction of the PSA test to screen men for prostate cancer (PCa) has led to an increase in the over-diagnosis of indolent PCa that can remain asymptomatic during a patient's lifetime. Active Surveillance (AS) is the recommended management strategy for men with low-risk prostate cancer. Here, we assess the role of different imaging modalities namely, micro-ultrasound and multiparametric MRI (mpMRI) in monitoring the progression of prostate cancer in men on AS according to the Prostate Cancer Research International: Active Surveillance (PRIAS) criteria.

Materials & Methods: 44 Consecutive patients enrolled in PRIAS from our prospective biopsy database from November 2017 to April 2019 with biopsy proven prostate cancer (Gleason score (GS) = 3+3). 34 Patients underwent follow-up prostate mpMRI scans which were evaluated under Pi-RADS v2. All patients were scanned and biopsied with the ExactVu^{TM} (Markham, Canada) high resolution micro-ultrasound system where suspicious areas were identified and targeted according to the PRI-MUS scale. Biopsy samples were labeled according to their location. Pathology results were then matched with the location of the reported micro-ultrasound or mpMRI targets to assess the correlation between the performance of micro-ultrasound and mpMRI imaging in monitoring the progression of PCa.

Results: Overall cancer sensitivity was 84% and 72% for micro-ultrasound and mpMRI, respectively. 6/34 (17.6%) subjects were diagnosed with clinically significant PCa (Gleason Score (GS) 3+4 or higher). Micro-ultrasound and mpMRI were suspicious in 6/6 (100%) cases diagnosed with csPCa and targeted biopsy alone was sufficient to diagnose csPCa in all but one case. 19/34 (55.9%) of patients were diagnosed with GS 6 (Gleason score (GS) 3+3) PCa where micro-ultrasound was suspicious in 15/19 (78.9%) cases, 13 of which were confirmed by targeted biopsy samples. mpMRI identified suspicious targets in 12/19 (63.2%) cases, 9 of which were confirmed by histopathology results. Micro-ultrasound and mpMRI targets found similar lesions in 8 cases.
The remaining for 9/34 (26.5%) patients had benign findings and micro-ultrasound and mpMRI would have eliminated the need for a repeat biopsy in 5 of these patients (3 separately and 5 combined).

Conclusions: Micro-ultrasound and mpMRI evaluations performed similarly in the detection of clinically significant cancer (Gleason Score (GS) 3+4 or higher), while micro-ultrasound detected more GS 6 (Gleason Score (GS) 3+3) PCa. Incorporating imaging modalities such as micro-ultrasound or mpMRI in the AS protocol could reduce the number of unnecessary repeat biopsies either by eliminating the need for biopsy in patients with benign findings or by increasing the yield of clinically significant cancer detection in others with fewer biopsies.