**INTRODUCTION:**
The low negative predictive value of conventional ultrasound leads to systematic biopsies, and a high rate of under-diagnosis. New recommendations include multi-parametric MRI (mpMRI) targeted biopsies. Here we compare the added diagnostic potential of mpMRI with new 29 MHz micro-ultrasound (micro-US), a novel technique enabling real-time targeting without the complexities, costs and challenges of performing MRI.

**METHODS:**
- Prospective database study including 51 subjects presenting with elevated PSA or abnormal DRE undergoing prostate biopsy using ExactVu® micro-ultrasound system (Exact Imaging, Markham, Canada).
- These subjects had also received mpMRI imaging which indicated targets for biopsy.
- Each case was analyzed to determine whether mpMRI and/or micro-US targeted samples identified the highest Grade Group (GG) detected for the subject by any technique.

**RESULTS:**
- Prostate cancer was identified in 27/51 (53%) subjects, and was clinically significant (GG 2) in 22/51 (43%).
- In 19/27 (70%) of all cancers and 16/22 (73%) GG 2 cancers, both micro-US and mpMRI targets identified the highest GG cancer.
- mpMRI alone detected 3/27 (11%, GG 1, 1.3) cancers which were not identified by micro-US.
- Micro-US alone detected 3/27 (11%, GG 2, 2.4) cancers which were not identified by mpMRI.
- Systematic biopsies detected the highest GG in 2/27 (7%) patients, although in each case both mpMRI and micro-US had identified a lower GG region.
- In patients without mpMRI, 2 had positive biopsies in areas identified by micro-US.

**CONCLUSIONS:**
- Image-based targeting of prostate biopsies added significant value with high rates of clinically significant cancer detection.
- With strong agreement between MRI and micro-US in most cases, micro-US may be a reasonable alternative to MRI for targeted biopsy.

**REFERENCES:**