Introduction & Objectives

Prostate cancer lacks a reliable diagnostic imaging technique, however a novel 29 MHz high resolution micro-ultrasound imaging system with 70 micron resolution appears promising. With the support of the evidence-based PRI-MUS™ (prostate risk Identification using micro-ultrasound) protocol, micro-ultrasound may provide a modality with improved targeting of prostate biopsies, and its improved negative predictive value may reduce over-diagnosis of prostate cancer in men with low risk factors.

Methods:

- This retrospective study includes the first 41 patients undergoing trans-rectal micro-ultrasound guided biopsy using the ExactVu™ micro-ultrasound system at IMQ urology clinic (Bilbao, Spain)
- A standard biopsy protocol (Figure 3) was followed, including identifying PRI-MUS scores for each sample. Benign PRI-MUS characteristics followed systematic biopsies and suspicious PRI-MUS scores were targeted. All scores were recorded in the patient file
- All biopsy samples were obtained under real-time micro-ultrasound guidance
- Negative Predictive Value (NPV) for patients with varying PSAD was evaluated through retrospective analysis

Results:

- Overall NPV at the biopsy sample level was 91.54% in this cohort
- The NPV increased to 94.17% when higher risk subjects (PSAD > 0.25 ng/mL cc, 17/41 subjects) were excluded (Figure 4)
- In even lower risk patients with a PSAD < 0.15 ng/mL cc (8/41), the NPV improved slightly to 94.29%

Conclusions

With a negative predictive value of over 94%, micro-ultrasound imaging may be able to safely avoid systematic biopsy in lower risk patients. In this analysis, over 50% of cases could safely have avoided systematic biopsy.