MR-targeted High-frequency TRUS-guided Biopsies: an Alternative to Fusion Biopsy?
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INTRODUCTION:
Clinically significant prostate cancer (csPCa) detection rate is improved by pre-biopsy MRI. MRI/ultrasound fusion biopsy shows some limitations in terms of procedure duration and lack of precision. In-bore MR-guided biopsy is not widely available. Very high frequency transrectal ultrasound (micro-ultrasound, MUS) could therefore compensate for these limitations.

METHODS:

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<th>Patients</th>
<th>Age (years)</th>
<th>PSA (ng/mL)</th>
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<td>56</td>
<td>64 ±12</td>
<td>2-200, median 8</td>
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Table 1: Patient population

- Micro-ultrasound biopsy was performed using 29 MHz Micro-Ultrasound System ExactVu™ (Exact Imaging, Markham, Canada).
- MRI+/MUS+ lesions: MRI lesions visualized with micro-ultrasound, targeted by micro-ultrasound guidance, no fusion
- MRI+/MUS- lesions: MRI lesions not visualised with micro-ultrasound, targeted with fusion imaging
- MRI-/MUS+ lesions: Micro-ultrasound lesions not seen on MRI, targeted with micro-ultrasound guidance

Any cancer with Gleason score ≥ 7 or cancer length > 3mm was considered csPCA

RESULTS:
- 58 MRI lesions in 56 patients including 52/58 (90%) MRI+/MUS+ lesions
  - 19% (10/52): PI-RADS 3, 20% (2/10) csPCA
  - 60% (31/52): PI-RADS 4, 68% (21/31) csPCA
  - 21% (11/52): PI-RADS 5, 91% (10/11) csPCA
- 6 MRI+/MUS- lesions, 4 in peripheral zone, 5 PI-RADS 3
  - csPCA not found in the MRI+/MUS- group.
- 13 MRI-/MUS+ lesions
  - 31% (4/13) csPCA, including 1 contralateral extension of index lesion and 3 remote nodules

<table>
<thead>
<tr>
<th>Number of Lesions</th>
<th>Lesions with csPCA</th>
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<tr>
<td>MRI+/MUS+</td>
<td>52</td>
</tr>
<tr>
<td>MRI+/MUS-</td>
<td>6</td>
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<tr>
<td>MRI-/MUS+</td>
<td>13</td>
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Table 2: Number of lesions found, and number of lesions with clinically significant prostate cancer, according to MUS findings and PI-RADS score on MRI

CONCLUSIONS:
- Micro-ultrasound can localize PI-RADS>2 focal lesions, may be an alternative to MRI/US fusion
- Micro-ultrasound may aid in postponing biopsy for MRI+/MUS- PI-RADS 3 lesions (all negative for csPCA)

REFERENCES: