11 Use of 68Ga-PSMA-11 PET/MRI for MRI/TRUS fusion software-based targeted biopsy of prostate

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Introduction & Objectives: Detection of prostate cancer using state-of-the-art investigative methods. Can the 68Ga-PSMA-11 PET/MRI improve the primary diagnostics of prostate cancer?

Materials & Methods: From 1/2018 to 12/2018 11 patients underwent 68Ga-PSMA-11 PET/MRI. The including criteria were as followed, based on one of the risk parameters: patients with rising PSA and PHI and previously negative biopsy of prostate, patients with PSA above 20 ng/ml or PHI over 100 in the primary staging prior to histological verification of prostate cancer. Targeted prostate biopsy was performed by MRI/TRUS software-based fusion aiming into suspected sites of increased 68Ga-PSMA-11 accumulation. MRI/TRUS fusion software-based targeted biopsy was performed using BiopSee2®™ Medcom Darmstadt Germany combined with Sonography BK Medical FlexFocus 800®™ + biplane sonda 8808e. Median PSA was 29,67 ng/ml and median PHI was 115. Six patients had positive digital rectal examination.

Results: In total 11 patients, prostate cancer was bioptically verified in 7 of them (63,6%). In 3 of them GS 6 3+3 (ISUP grade 1) was detected, in two patients was found GS 7 4+3 (ISUP grade 3), in one patient GS 8 4+4 (ISUP grade 4) was bioptically verified and in last patient the GS 9 4+5 (ISUP grade 5) was identified. In 5 cases it was re-biopsy and in 6 remaining patients primobiopsy was performed. In 4 patients (36,3%) biopsy of prostate was negative. It was always rebiopsy and suspected lesions with low radiotracer uptake (average SUVmax 5,4).

Conclusions: The implementation of 68Ga-PSMA PET/MRI as a part of a comprehensive primary diagnostics of prostate cancer prior to histological verification appears to be beneficial, especially for a precise performance of targeted prostate biopsy in patients with clinically and laboratory suspicion of prostate cancer, which leads to early decision of the treatment. Whereas this approach does not improve diagnostics in patients with negative prior biopsy and rising PSA. Further study is needed to validate this finding.