Critical evaluation of MRI-targeted TRUS-guided transperineal fusion biopsy for detection of prostate cancer.


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Abstract

PURPOSE: Diagnosis and precise risk stratification of prostate cancer (PC) is essential for individualized treatment decisions. MRI/TRUS fusion has shown encouraging results for detecting clinically significant prostate cancer. Here we critically evaluate MRI-targeted TRUS-guided transperineal fusion biopsy in routine clinical practice.

MATERIALS AND METHODS: 347 consecutive patients with suspicion of PC were prospectively included. The median age of patients was 65 years (range 42-84). Mean PSA level was 9.85ng/ml (0.5-104). 49% of men had previous negative TRUS-guided biopsies, 51% underwent primary biopsy. All patients underwent multiparametric (mp)-MRI at 3T and received systematic stereotactic prostate biopsies plus MRI-targeted TRUS-guided biopsies in case of MRI abnormalities. Imaging data and biopsy results were analyzed and a self-designed questionnaire was sent to all men regarding further clinical history and adverse effects of the biopsy.

RESULTS: 200 of 347 (58%) biopsy samples showed PC. 73.5% of biopsy proven PC was clinically relevant (NCCN criteria). On mp-MRI, 104 men were reported as highly suspicious for PC and, in these, the tumor detection rate was 82.6% (86/104) with 72% Gleason scores ≥7. Overall, targeted cores detected significantly more cancer than systematic biopsies (30% vs. 8.2%). In patients without cancer-suspicious MRI-lesions, 11.7% (11/94) were diagnosed with intermediate risk disease. Regarding adverse effects, 50.6% of patients (152/300) reported mild hematuria, 26% temporary erectile dysfunction and 2.6% needed short-term catheterization after biopsy. In three patients (1%) non-septic febrile urinary tract infection occurred.

CONCLUSIONS: MRI-targeted TRUS-guided transperineal fusion biopsy provides high detection rates of clinically significant tumors. mp-MRI still has some limitations, and therefore systematic biopsies should currently not be omitted. The morbidity of the transperineal saturation approach is reasonable and mainly self-limiting.

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