

## mpMRT and transrectal ultrasound- guided transperineal prostate biopsy in men with previous negative prostate biopsy: A single-center two years' experience

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**Introduction & Objectives:** To report the East Tallinn Central Hospital's two years' experience of diagnosis of prostate cancer (PCa) using a multiparametric MRI (mpMRI) in fusion with transrectal ultrasound (TRUS)-guided biopsy in men with one or more previous negative prostate biopsies and persistently elevated serum prostate-specific antigen (PSA) level.

**Materials & Methods:** From March 2017 to March 2019, men with one or more previous negative TRUS biopsies and elevated PSA levels underwent mpMRI investigation. In cases where Prostate Imaging Reporting and Data System (PI-RADS version 2) score 3-5 lesions were detected, the mpMRI-targeted and TRUS-guided prostate biopsy was performed transperineally using the BioJet system. In all cases targeted biopsy was combined with systematic biopsies.

We evaluated the detection rate of PCa from all patients with PI-RADS score 3-5 lesions; diagnosis rate of clinically significant PCa (csPCa, Gleason score $\geq$ 7) from all detected PCa patients in the targeted areas and by the systematic access; and proportion of PCa within the anterior zone of the prostate, which is generally not sampled on systematic biopsies.

**Results:** From the 189 studied men, in 103 men the lesions with PI-RADS score 3-5 were detected. A targeted biopsy was performed in 85 patients with the highest PI-RADS score 3 in 28, 4 in 35 and 5 in 22 cases. The median PSA values were 7.4, 11.3 and 12.6 ng/ml in the PI-RADS score 3, 4 and 5 groups respectively.

By targeted biopsy, PCa was histologically diagnosed in 52 patients; overall PCa detection rate by targeted biopsy was 61%. csPCa was diagnosed by targeted biopsy in 5/28, 13/35 and 15/22 patients with PI-RADS score 3, 4 and 5 lesions respectively yielding a csPCa diagnosis rate of 63%. PCa overall detection rate by systematic biopsy was 25% with PCa detected in 21 patients. Systematic biopsies confirmed csPCa in 8 cases. Of all diagnosed PCa cases, PCa was detected within the anterior zone of the prostate in 48% (25) of patients.

**Conclusions:** The high precision of mpMRI/TRUS-guided biopsy makes it a diagnostically valuable method for histologic evaluation of a suspected prostate lesion. In the current sample, diagnosis rate of csPCa from all detected PCa patients by the mpMRI/TRUS-guided targeted biopsy was 63%. The targeted biopsy should be used in combination with the systematic method hence the latter remains an important opportunity for detection of additional PCa cases in conventional biopsy negative patients. Transperineal approach is preferable for detecting PCa in the anterior part of the prostate.