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Introduction & Objectives: Ultrasound-guided transrectal prostate biopsy represents the current standard for diagnosing prostate cancer. This method has significant shortcomings. Software-based multiparametric magnetic resonance imaging-ultrasound (mMRI-US) fusion targeted biopsy in the new tool in diagnosing prostate cancer. The aim of this study is to evaluate the results of MRI fusion prostate biopsy.

Materials & Methods: Between August 2017 and January 2019, 69 patients underwent mMRI-US fusion prostate biopsy due to suspicion of prostate cancer based on elevation of PSA levels and the detection of a lesion with PI-RADS score 3 or more on mMRI. Of them, 25 patients had negative primary biopsies. 2-4 cores were taken from each MRI suspected lesion (PI-RADS score 3 or more) by targeted fusion MRI biopsy then systematic biopsy was performed and 12 to 24 cores were taken. We evaluated the overall detection rate of prostate cancer and clinically significant prostate cancer, and detection rate of MRI fusion targeted biopsy and systematic biopsies respectively.

Results: The mean age of patients was 60,7 years; mean PSA level was 6,89 ng/ml and the mean free-PSA/PSA ratio was 14,1%. PI-RADS score was 3 in 21 cases, 4 in 35 cases and 5 in 13 cases. The overall detection rate was 44,92%. Detection rate of fusion targeted biopsy and systematic biopsy was 40,57% and 26,08%. Detection rate in the case of a positive MRI with presence of lesion PIRADS 3, 4 and 5 was 23,8%, 42,85% and 84,61% for PCa, respectively 9,52%, 31,42% and 76,92% for CSPPCa. In the group of repeated biopsy overall detection rate was 32%, and 52,27% in the group of first biopsy.

Conclusions: Sensitivity of mMRI-US fusion biopsy is higher than random sampling biopsy. However, in addition to fusion biopsy random sampling biopsy is still necessary.