12 | **Prospective comparison of 4-core targeted MRI-TRUS fusion versus systematic 12-core TRUS prostate biopsy for the diagnosis of prostate cancer**

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Introduction & Objectives: To assess the interobserver variability of the PI-RADS classification and the prostate cancer (PC) detection rate of targeted multiparametric magnetic resonance imaging (mpMRI)/transrectal ultrasound (TRUS) fusion guided prostate biopsy (TB) vs transrectal systematic (SB) biopsy.

Materials & Methods: 256 patients were referred with suspicious mpMRI, elevated prostate-specific antigen (PSA) or abnormal digital rectal examination results between 2017 and 2018. PI-RADS (V2) classification was centrally reviewed by one dedicated radiologist blinded for the extramural score. Patients received TB and concomitant SB. TB was performed with the UroNav device (Invivo).

Results: Median patient age, PSA, tumor volume and core number were 66a, 7.1 ng/ml, 0.92ml, as well as 4 and 12, respectively. Overall, 36% of patients were biopsy naive and 64% had ≥ 1 previous negative TRUS-guided biopsy.
We observed PI-RADS agreement, up- and downgrading in 58%, 18% und 24% respectively. In addition, compared to extramural PI-RADS reports 42% of PI-RADS 3 and 93% of PI-RADS 2 scores represented intramural downgrading. In contrast, an up-grading was observed in 44% of PI-RADS 5, 15% of PI-RADS 4 and 4% of PI-RADS 3 reports, respectively.
TB&SB vs. TB alone verified cs PC in 42% vs. 37% of the total cohort, respectively. Extramural and intramural PI-RADS 3-5 results did not significantly differ in cs PC detection when associated with TB&SB or TB-alone (p=0,08 and p=0,16).
Furthermore, csPC detection by TB&SB or TB alone in association with the intramural PI-RADS 2-5 was observed in 10% (n=3), 22% (n=15), 51%(n=44) and 63%(n=45) or 50%(n=2), 77%(n=10), 90%(n=38) und 94%(n=44), respectively.
In total, 49% of biopsy naive and 37% of rebiopsy patients experienced cs PC (p=0,5).
In contrast, 9% (n = 10) and 20% (n = 21) of csPCs were missed by TB and SB, respectively.
TB- or SB alone diagnosed cs PC in 91% or 80%, respectively (p=0,048).
Insignificant PC was detected in 20% (n=27) of prostate cancer patients, whereas 67% (n=18) were solely proved by SB.
71% of csPCs were simultaneously detected by TB and SB, both demonstrating the equally highest Gleason score in 63%. TB Gleason Score was upgraded by SB in 12% (n=16) to cs PC or more aggressive PC.
PC negative TB was associated with Prostatitis, Prostatische intraepitheliale Neoplasie (PIN) oder Atypische Small Acinary Proliferation (ASAP) in 21% (n=54), which did not correlate with any PI-RADS-Score (p=0.5).

Conclusions: PIRADS V2 interpretation by a dedicated radiologist plus indicating TB in ≥ PI-RADS 3 reports could increase the accuracy of csPC detection. TB detected more cs PC than SB but avoiding SB misses nearly 10% of cs PC. PI-RADS could not differ between insuspect prostate tissue, prostatitis, PIN or ASAP in negative TB.