The value of PSA density in PI-RADS 3 lesions on multiparametric MRI – a strategy to avoid unnecessary prostate biopsies

Görtz M[1], Radtke JP[1,2,3], Hatiboglu G[1], Schütz V[1], Tosev G[1], Güttlein M[1], Leichsenring J[4], Stenzinger A[4], Bonekamp D[3], Schlemmer HP[3], Hohenfellner M[1], Nyarangi-Dix JN[1]

[1]Department of Urology, University Hospital Heidelberg, Heidelberg, Germany; [2]Department of Urology, University Hospital Essen, Essen, Germany; [3]Department of Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; [4]Institute of Pathology, University Heidelberg, Heidelberg, Germany

BACKGROUND & OBJECTIVE

- Multiparametric magnetic resonance imaging (mpMRI) has excellent sensitivity in detecting significant prostate cancer (sPC)
- Current recommendations are to pursue a prostate biopsy in patients with PI-RADS 3 lesions
- We analysed if PI-RADS 3 lesions in combination with clinical parameters, especially prostate specific antigen density (PSAD), can be used to exclude sPC
- The aim is to provide an easy-to-use risk-assessment tool to avoid prostate biopsies in patients with PI-RADS 3 lesions and a very low risk for sPC, without missing detection of sPC

MATERIALS & METHODS

- 101 consecutive biopsy-naïve patients with exclusively ≥1 PI-RADS 3 lesions on mpMRI underwent fusion guided transperineal prostate fusion-biopsy at our department between 03/2017 and 12/2018
- Univariate logistic regression analysis was performed to test different clinical factors as additional predictors of sPC in patients with PI-RADS 3 lesions

RESULTS

- In patients with PI-RADS 3 lesions, the parameters age, digital rectal examination (DRE), prostate specific antigen (PSA), prostate volume or multiple lesions on mpMRI were not statistically significant predictors for sPC (Table 1)
- PSAD (p=0.005) was a significant predictor of sPC in patients with PI-RADS 3 lesions
- The probability to exclude sPC in patients with PI-RADS 3 lesions was 85% (86/101) and increased to 98% (42/43) in combination with a PSAD <0.1 ng/ml/ml

Variable	p Value	Odds Ratio	CI 95%
Age	0.770	0.990	0.929 – 1.056
DRE	0.409	2.051	0.373 – 11.276
Multiple lesions on mpMRI	0.185	0.438	0.129 – 1.485
PSA	0.087	1.059	0.992 – 1.131
Prostate volume	0.197	0.989	0.974 – 1.006
PSAD	0.005	2.315	1.295 – 4.137

Table 1 - Univariate logistic regression analysis for sPC in patients with PI-RADS 3 lesions

CONCLUSIONS

- Immediate biopsies may be safely omitted for men with PI-RADS 3 lesions and a PSAD <0.1 ng/ml/ml
- Including a PSAD <0.1 ng/ml/ml in biopsy-naïve patients allows a reduction of prostate biopsies in 43% (43/101) of men with PI-RADS 3 lesions at the cost of missing a very small number (2%, 1/43) of intermediate-risk PC and no high-risk PC
- The decision to omit an immediate biopsy should be associated with close monitoring