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Introduction & Objectives: Following the proPSMA study, metastatic screening using prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT) is increasingly being adopted in urological practice. PSMA PET/CT has been shown to be of diagnostic added value in men with International Society of Urological Pathology (ISUP) grade group (GG) 4 and 5 prostate cancer (PCa), however, this has still not been demonstrated for men with ISUP GG 3 PCa without any high-risk factors. This study aims to determine the diagnostic added value of PSMA PET/CT within this subgroup of newly diagnosed PCa patients.

Materials & Methods: Patients with newly diagnosed biopsy ISUP GG 3 PCa, without any high-risk factors (meaning, a prostate specific antigen (PSA)-level <20 ng/ml and a clinical T1 or -2 stage), in whom a PSMA PET/CT was performed as a primary staging modality, were retrospectively included. PSMA PET/CT scans were performed and/or reported within two high-volume PCa centers. To identify potential predictive variables for the presence of PSMA-expressing locoregional lymph node and/or distant metastases, a multivariate logistic regression analysis was performed.

Results: In total, 396 men with newly diagnosed ISUP GG 3 PCa were included in the analysis. PSMA-expressing metastases were observed in 40/396 (10.1%) men, of whom 31/396 (7.8%) had locoregional lymph node metastases and 17/396 (4.3%) distant metastases (4/17 distant lymph node metastases and 14/17 bone metastases). Predictive of the presence of PSMA-expressing locoregional lymph node and/or distant metastases were the percentage of positive needle biopsy cores (odds ratio (OR): 1.024 [95% confidence interval (CI): 1.009-1.039], p=0.002) and the presence of a radiological T3 stage on MRI (OR: 2.248 [95% CI]: 1.059-4.773], p=0.035) (Table 1).

Table 1. Detection of PSMA-expressing locoregional lymph node and/or distant metastases on PET/CT - multivariate logistic regression analysis

	Odds ratio [95% confidence interval (CI)]	p-value
Percentage of positive needle biopsy cores (%)	1.024 [1.009 - 1.039]	0.002
Radiological T stage (mT)		
mT1-2	reference	-
mT3	2.248 [1.059 - 4.773]	0.035

PSMA prostate specific membrane antigen; PET/CT positron emission tomography/computed tomography; T-stage tumor stage

Conclusions: PSMA PET/CT is of diagnostic added value in men with newly diagnosed ISUP GG 3 PCa without the presence of any high-risk factors; for finding one PSMA-expressing metastasis, a number needed to scan (NNS) of 10 is observed. Taking into account both the radiological T-stage and the percentage of positive needle biopsy cores, before performing metastatic screening, could aid in avoiding overdiagnosics within this vast patient population.