O1

Determining the predictive value of a pre-operative negative PSMA PET/CT in candidates for radical prostatectomy and extended pelvic lymph node dissection

European Urology Open Science 2020;21(Suppl 3):S87

Meijer D.[1], De Barros H.[2], Bodar Y.J.L.[1], Van Leeuwen P.J.[2], Jansen B.H.E.[1], Van Der Sluis T.M.[1], Van Der Poel H.G.[2], Nieuwenhuijzen J.A.[1], Oprea-Lager D.E.[3], Vis A.N.[1]

[1]Amsterdam UMC, VUmc, Dept. of Urology, Amsterdam, The Netherlands, [2]The Netherlands Cancer Institute, Dept. of Urology, Amsterdam, The Netherlands, [3]Amsterdam UMC, VUmc, Dept. of Radiology and Nuclear Medicine, Amsterdam, The Netherlands

Introduction & Objectives: An extended pelvic lymph node dissection (ePLND) is a diagnostic procedure of which the therapeutic impact remains unknown. For now, ePLND is the gold standard for staging of lymph node status in prostate cancer (PCa). The EAU-guidelines recommend performing a ePLND when the risk of having nodal metastases (using pre-operative nomograms) exceeds 5%, whereas the Dutch national guidelines recommend an ePLND when this percentage exceeds 10%. At present, PSMA PET/CT imaging is used more often to stage patients before surgery, particularly in those with intermediate and high risk disease. Despite the finding that this new imaging modality has limited accuracy, a pre-operative PSMA PET/CT that shows no evidence of lymph node metastatic disease may reduce the likelihood of histopathological lymph node metastases after ePLND. The aim of the present study was to evaluate if a subgroup of patients could be identified that, based on preoperative prognostic variables and a negative for metastases PSMA PET/CT, could be safely withheld ePLND.

Materials & Methods: A total of 435 patients who underwent a pre-operative PSMA PET/CT, prior to robot-assisted radical prostatectomy (RARP) and ePLND was retrospectively analyzed. Pre-operative variables (e.g. clinical tumor stage, serum-PSA, biopsy ISUP group) were assessed, as were pathological parameters (e.g. histopathological lymph node status (pN0/pN1)). The diagnostic accuracy of PSMA PET/CT in primary staging was assessed for different prognostic subgroups. Particular interest was paid to those with a negative for metastases PSMA PET/CT prior to RARP and ePLND.

Results: In total, 56/435 PSMA PET/CT scans (12.9%) were suggestive for pelvic lymph node metastases, whereas on histopathological evaluation, 94 out of 435 patients (21.6%) had at least one pelvic lymph node metastasis (pN1). Overall sensitivity, specificity, positive predictive value and negative predictive value (NPV) were 38.3%, 94.1%, 64.3% and 84.7%, respectively. The NPV of PSMA PET/CT in patients with intermediate risk (IR) PCa was 91.6%, compared to 81.9% in patients with high risk (HR) PCa. NPV for biopsy ISUP 1-2, ISUP 3 and ISUP 4-5 were 85.1%, 87.9% and 82.9%, respectively. When combining these variables, the NPV of PSMA PET/CT in patients with biopsy ISUP 3, and IR PCa was 94.1% (95%CI 90-100%).

Conclusions: Withholding an ePLND is not oncologically safe in all patients who have a ‘negative for metastases’ pre-operative staging PSMA PET/CT scan, as a large subset of patients have a more than 10% chance of positive for cancer lymph node metastases (NPV above 90%). In the present large cohort of patients with a PSMA PET/CT showing no evidence of lymph node metastases, those with a biopsy ISUP 3, and intermediate risk features are potential candidates to withheld ePLND as their risk of having histopathological metastases is only 5.9%.