68Ga-PSMA-11 PET-CT study in prostate cancer patients with biochemical recurrence and non-contributive 18F-Choline PET-CT : impact on therapeutic decision-making and biomarker changes

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Aim/Introduction: The aim of this retrospective study was to investigate the impact of 68Ga-PSMA-11 PET/CT on current management of recurrence prostate cancer patients with negative PET/CT F-Choline. **Materials and Methods:** Eighty-nine patients with previously negative 18F-Choline (FCH) were enrolled (PSA from 0.28 to 24.6 ng/mL). PET images were recorded 1 hour after injection of 150 MBq of 68Ga-PSMA. Referring patient physician was asked about the care before and after PSMA PET imaging to determine the influence of PSMA results on therapeutic strategy. Six months after the end of treatment, a PSA assay was requested to evaluate therapeutic efficacy. **Results:** Sixty-nine among the 89 patients (77,5%) had a positive PSMA PET/CT. Detection rates were 85.6% and 89.4% for serum PSA levels lower than 2 ng/ml, and > 2 ng/ml, respectively. Three hundred and one lesions were detected: 235/301 in lymph nodes (78.1%), 38/301 as metastatic sites (bone, mostly on axial skeleton, or lung) (12.6%) and 28/301 in the prostate bed (9.3%). The majority of lesions were detected in lymph nodes: in particular with 71.5% pelvic nodes, on the other hand with 17.9% of para-aortic nodes and 10.6% with sus diaphragmatic location. For the para-aortic and sub-diaphragmatic node locations, initial surgical management associated with pelvic salvage radiotherapy were the most common initial management which could explain the frequently

supra-pelvic node recurrence. The median number of lesions per patient was 2 [ranging from 0 to 67]. No particularity of the PSA serum level, doubling time or PSA velocity at the time of PSMA PET-CT could explain why 68Ga-PSMA PET-CT was unable to detect any suspicious tumor lesions in 20 patients. Thanks to PSMA PET/CT, therapeutic management changed in 59/69 patients (84.9%). With a follow-up of 5.7 ± 1.8 months, 62/89 (69.6%) PSA assays after treatment guided by PSMA PET-CT were collected. For 43.5% (27/62) of patients, the serum PSA level was lower than 0.2 ng/mL and a total PSA decrease of over 50% in 35 (56.5%) patients was obtained. **Conclusion:** Performing a PSMA PET-CT when FCH PET-CT was negative allows the recurrence localization in more 80% of patients and this had a major clinical impact, as it resulted in treatment change in more than 80% of patients as well as a significant decrease in PSA levels in more than 55% of them. **References:** None.