EO3 Early lesion detection with 18F-PSMA (DCFPyL) PET/CT in 248 patients with biochemically recurrent prostate cancer

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Jansen B.H.E.[1], Wondergem M.[2], Van Der Zant F.M.[2], Van Der Sluis T.M.[3], Knol R.J.J.[2], Van Kalmthout L.W.M.[4], Hoekstra O.[1], Van Moorselaar R.J.A.[3], Oprea-Lager D.E.[1], Vis A.N.[3]

[1]Amsterdam University Medical Centers, VU University, Dept. of Radiology & Nuclear Medicine, Amsterdam, The Netherlands, [2]Noordwest Groep, Dept. of Nuclear Medicine, Alkmaar, The Netherlands, [3]Amsterdam University Medical Centers, VU University, Dept. of Urology, Amsterdam, The Netherlands, [4]Utrecht University Medical Center, Dept. of Radiology & Nuclear Medicine, Utrecht, The Netherlands

Introduction & Objectives: Prostate-Specific Membrane Antigen (PSMA) PET/CT is increasingly used in patients with biochemical recurrence (BCR) of prostate cancer (PCa), mostly using ^{68}Gallium labelled radiotracers (^{68}Ga-PSMA). Alternatively, ^{18}Fluorine labelled PSMA tracers are available, e.g. ^{18}F-DCFPyL, which offer enhanced image-quality and thus potentially increased detection of small metastases. Here, we evaluated the lesion detection efficacy of ^{18}F-DCFPyL PET in patients with BCR and determined the detection as a function of PSA level.

Materials & Methods: *N*=248 consecutive patients with BCR were included, scanned with ^{18}F-DCFPyL PET/CT between 2016 and 2018 in two hospitals in the Netherlands. Patients were examined after radical prostatectomy (52%), external-beam radiotherapy (42%) or brachytherapy (6%). Scans were interpreted by 4 experienced (>200 PCa scans) nuclear medicine physicians (dual-reading).

Results: In 214 out of 248 PET scans (86.3%) at least one lesion suggestive of PCa was detected ('positive scan'). Detection increased with higher PSA levels (Fig 1), but even at PSA <0.5 ng/mL PCa recurrences were detected in 17 of 29 patients (59%). Interestingly, suspicious lesions outside the prostatic fossa were detected in 39-50% of patients.

Fig 1 Detection efficacy of ^{18}F-DCFPyL PET/CT in patients with BCR

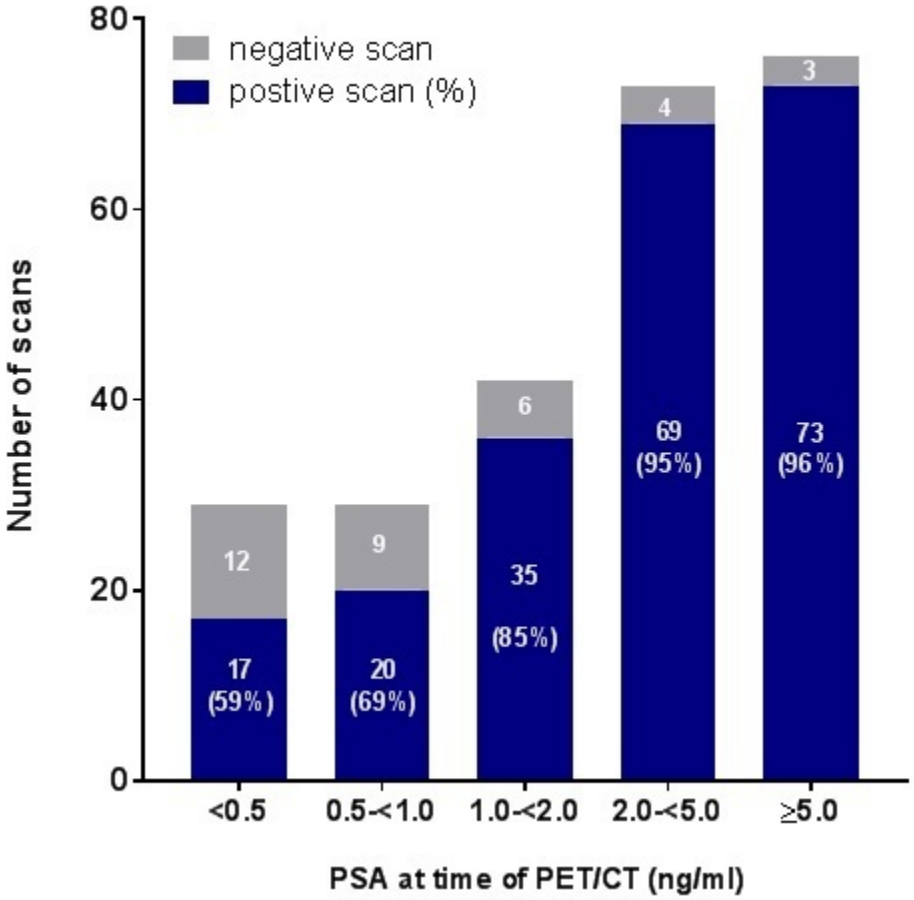
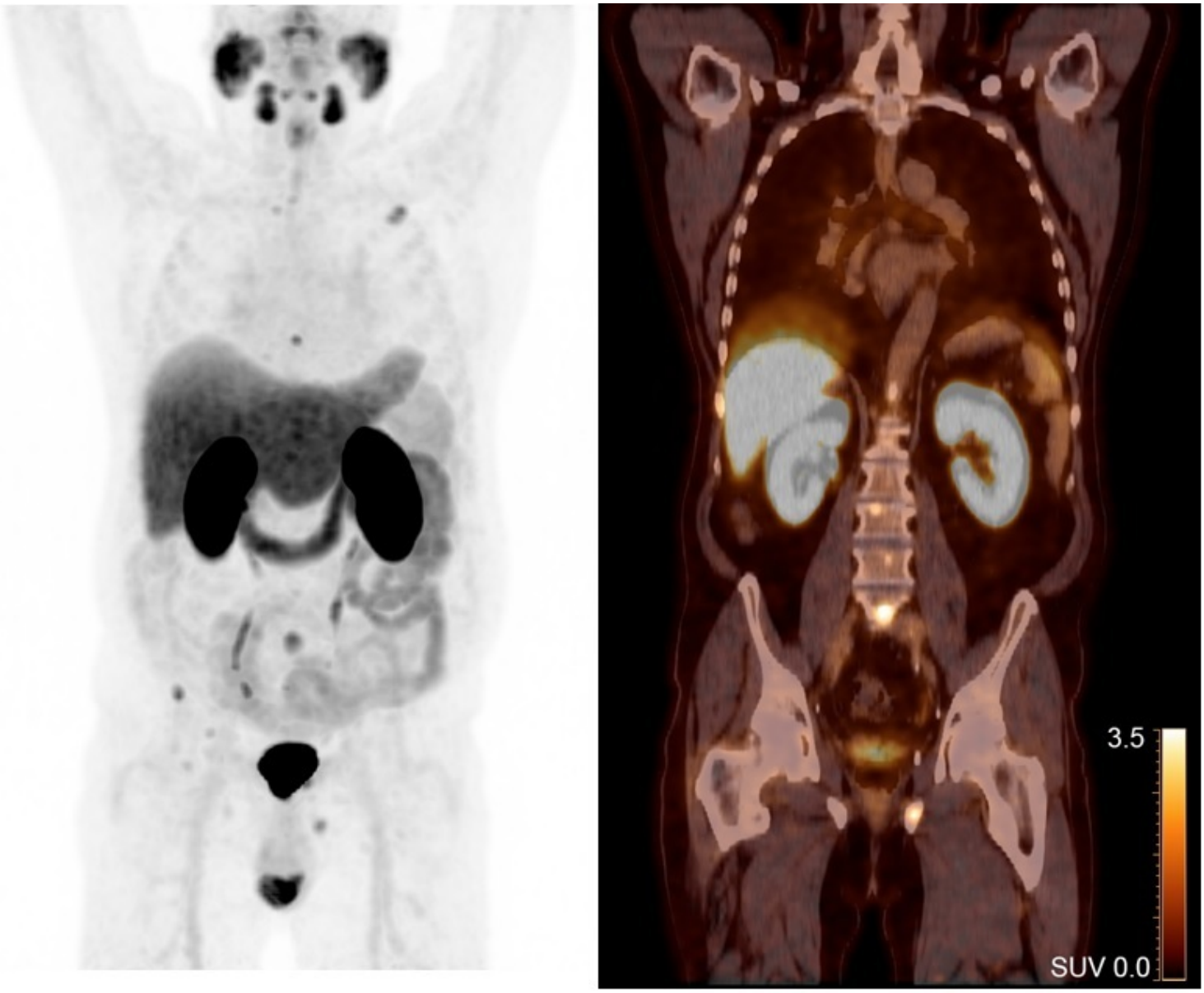


Fig 2 Detection of metastases in the lumbar spine and pelvis, in a BCR patient with low PSA value (0.7 ng/mL).



Conclusions: ^{18}F-DCFPyL PET/CT offers early detection of lesions in patients with BCR, even at PSA levels <0.5 ng/mL. These results show clear improvement to diagnostic outcomes with conventional imaging modalities. Compared to ^{68}Ga-PSMA PET, potentially increased detection efficacy is found in patients with a PSA <2 ng/mL. The earlier detection of lesions outside the prostatic fossa is clinically relevant as it allows adequate selection of salvage therapies.