Eur J Nucl Med Mol Imaging
DOI 10.1007/s00259-014-2766-y

IMAGE OF THE MONTH

^{68}Ga-PSMA PET/CT imaging of metastatic clear cell renal cell carcinoma

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Received: 7 January 2014 / Accepted: 26 March 2014
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Prostate-specific membrane antigen (PSMA) is a type II transmembrane protein with high expression in prostate carcinoma cells. Glu-NH-CO-NH-Lys-(Ahx)-[^{68}Ga(HBED-CC)] (^{68}Ga-PSMA) has been suggested as a novel tracer that can detect prostate carcinoma relapses and metastases with high contrast by targeting PSMA [1].

Besides prostate cancer, PSMA has been shown to be expressed in the neovasculature of various solid malignant tumours including clear cell renal cell carcinoma (ccRCC) [2, 3]. RCC is a potentially lethal cancer with aggressive behaviour, and has a propensity for distant metastatic spread. The common sites of metastases from ccRCC include lungs (33 – 72 %), intraabdominal lymph nodes (3 – 35 %) and brain (7 – 13 %) [4]. Bone metastases are also a frequent complication in patients with ccRCC [4]. We present to our knowledge the first reported case of a patient with a diagnosis of ccRCC with ^{68}Ga-PSMA uptake. A 65-year-old woman, status post-nephrectomy, underwent ^{68}Ga-PSMA (b) and ^{18}F-FDG (a) PET/CT for staging. ^{68}Ga-PSMA PET/CT showed multiple pathological bone lesions with intense uptake of the tracer in the seventh cervical vertebra and acromion of the left scapula (c, d, e; SUVmax=35 for PSMA, 7.2 for FDG), sternum (f, g, h; SUVmax=28.3 for PSMA, 5.15 for FDG), and right tuber ischiadicum (i, j, k; SUVmax 34.1 for PSMA, 5.3 for FDG). ^{18}F-FDG PET/CT provided lower visual detectability of the bone metastasis. This case indicates the clinical utility of ^{68}Ga-PSMA for the imaging of RCC.

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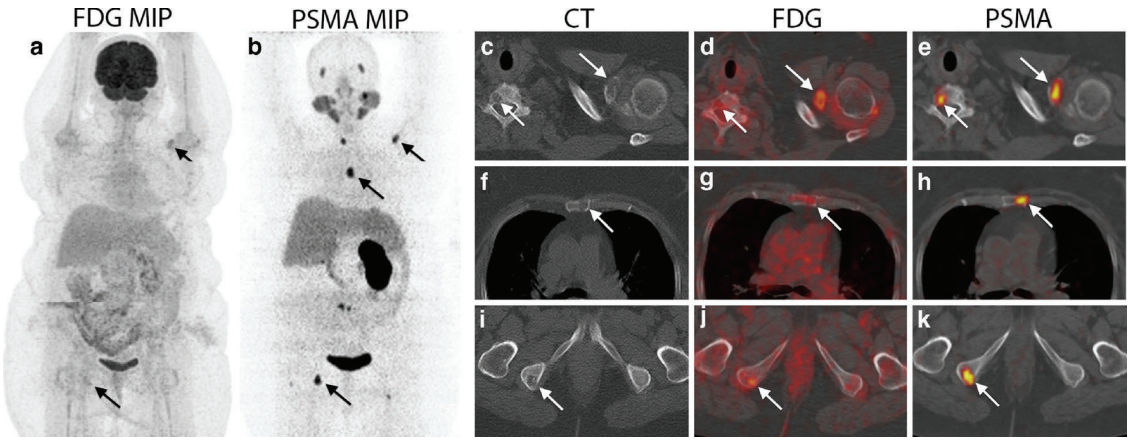
Published online: 23 April 2014

Curium US LLC, Exhibit 1007
IPR2025-01582



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