

^{68}Ga –Prostate-Specific Membrane Antigen Uptake in a Malignant Pleural Effusion From Metastatic Prostate Cancer After Pleurodesis

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Abstract: A 76-year-old man with metastatic adenocarcinoma of the prostate presented with increasing dyspnea. After being treated initially with drainage and afterwards with pleurodesis, he was referred for ^{68}Ga –prostate-specific membrane antigen 11 PET/CT imaging for restaging purposes. PET/CT demonstrated extensive ^{68}Ga –prostate-specific membrane antigen 11 uptake in the right pleura. Histopathology confirmed the rare case of malignant pleural effusion from metastatic prostate cancer.

Key Words: ^{68}Ga -PSMA-11 PET/CT, pleural metastases, prostate cancer (*Clin Nucl Med* 2019;00: 00–00)

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FIGURE 1. A 76-year-old patient with a history of metastatic adenocarcinoma of the prostate (Gleason score 9) initially treated with radical prostatectomy, lymphadenectomy, and local irradiation presented with increasing dyspnea. At the time of admission, he was under androgen deprivation therapy with goserelin, and his plasma PSA level was 24.7 ng/mL. CT revealed a marked pleural effusion, which was initially treated with drainage. Afterward, he underwent pleural biopsy and pleurodesis via thoracoscopy. For restaging purposes, the patient was examined with ^{68}Ga -prostate-specific membrane antigen 11 (PSMA-11) PET/CT. The scans showed a diffuse, intensive tracer accumulation in the pleura, as well as multiple retroperitoneal, mediastinal, and supraclavicular PSMA-avid lymph node metastases as well as an osseous metastasis in the 12th thoracic vertebra. Histopathologic results from the pleura revealed malignant effusion from metastatic prostate adenocarcinoma. Prostate cancer most frequently metastasizes to regional lymph nodes and bones. Pulmonary metastases appear with a low incidence.¹ Moreover, pleural malignant effusions represent a very rare manifestation of the disease²; therefore, the gathered experience concerning pleural metastases depicted with PSMA-ligand PET is necessarily limited. The role of pleurodesis in the pleural PSMA-ligand uptake in this patient cannot be determined. Although the main indication of PSMA-ligand PET/CT lies in the assessment of prostate cancer in the biochemical relapse setting, the modality is increasingly gaining importance also in the initial staging of the intermediate- and high-risk disease as well as in the restaging of metastatic disease.^{3–7} It is estimated that PSMA-ligand PET/CT can dictate a change in therapeutic management of up to 54% of prostate cancer patients.⁸ The patient presented here showed disease progression under goserelin with pleural, lymph node, and osseous metastases depicted on PET/CT. As a consequence, his treatment was stopped and was changed to enzalutamide.