

PET/CT Findings for Bone Marrow Carcinosis Because of Lung Adenocarcinoma

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A 72-year-old man was referred to our department because of lung mass shadow revealed by chest radiograph findings. Chest computed tomography (CT) findings revealed a 7-cm mass in left upper lobe. Carcinoembryonic antigen, sialyl Lewis-x antigen, and cytokeratin 19 fragments were elevated to 116.8 ng/ml, 270.6 U/ml, and 159.1 ng/ml, respectively. He was suspected to have lung cancer, and bronchoscopic biopsy of the left lung mass showed adenocarcinoma, therefore he was diagnosed with lung adenocarcinoma. Brain magnetic resonance imaging demonstrated no metastasis but 2-deoxy-2-[¹⁸F]fluoro-D-glucose positron emission tomography (PET)/CT showed multiple bone metastasis including bone marrow (Fig. 1). He was planned to receive chemotherapy, but because of anemia and thrombocytopenia he was admitted to our hospital. On admission, laboratory test revealed that he had thrombocytopenia (30,000/ μ l), anemia (10.3 mg/dl), high levels of lactate dehydrogenase (1842 U/ml), and alkaline phosphatase (2556 U/ml). With results of PET/CT, bone marrow carcinosis was suspected to be the cause of anemia and thrombocytopenia. Other possible diseases that cause such clinical conditions were excluded by clinical and laboratory findings. Bone marrow aspiration of the iliac bone showed adenocarcinoma cells (Fig. 2) and bone marrow carcinosis was diagnosed. He died of disease progression 10 days after admission.

Lung cancer is the leading cause of cancer death in the world. It is estimated that 1.4 million people die from lung cancer in 2008¹. Lung cancers can metastasize systemically, but bone marrow carcinosis is rare, except small cell lung cancer. To our knowledge, this is the first case report describing bone marrow carcinosis of lung adenocarcinoma. Nuclear medicine bone scan and bone marrow biopsy are needed to establish the diagnosis of bone marrow carcinosis.² But, the specificity of bone scintigraphy to detect bone marrow metastasis in breast cancer patients is not satisfactory.³ However, PET/CT is useful in detecting bone marrow involvement in lymphoma patients with

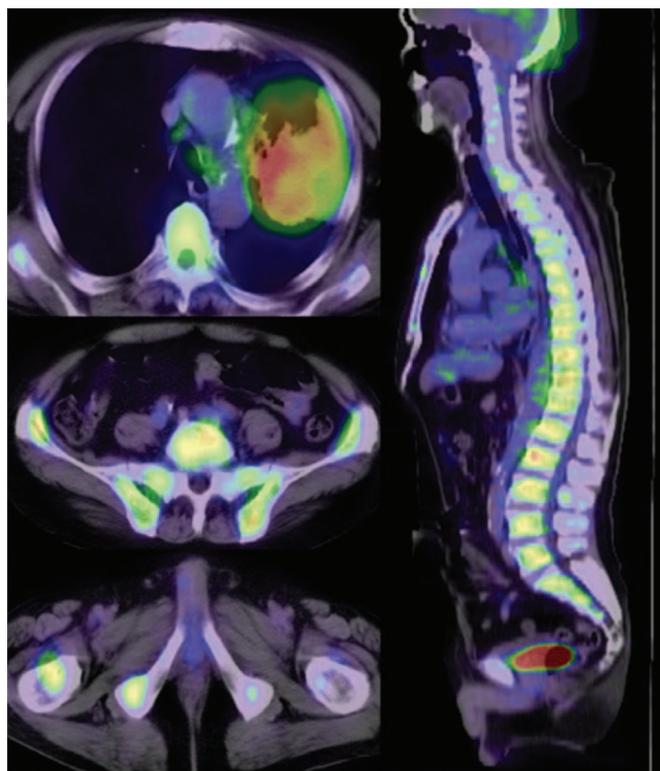


FIGURE 1. Positron emission tomography/computed tomography revealed systemic multiple uptakes in bone including bone marrow.

high specificity.⁴ In the present case, we used PET/CT to evaluate metastasis, and it showed uptakes in multiple bone marrow before the onset of thrombocytopenia. Thus, it is possible that PET/CT is more useful than bone scintigraphy in detecting bone marrow metastasis in lung cancer patients, and clinicians should pay attention to the onset of bone marrow carcinosis in non-small-cell lung cancer

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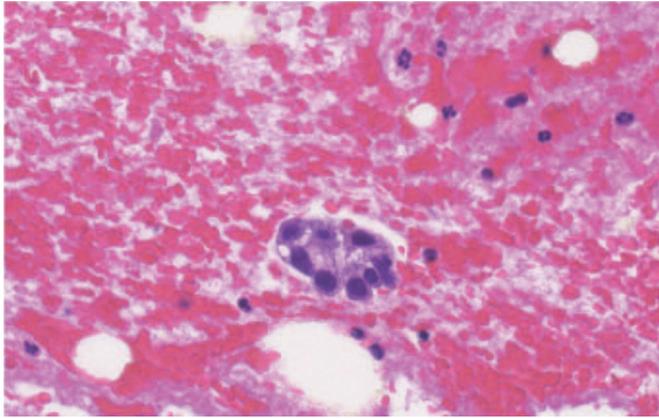


FIGURE 2. Bone marrow aspiration of the iliac bone showed adenocarcinoma cells, leading to the diagnosis of bone marrow carcinosis.

patients whose PET/CT shows uptakes in multiple bone marrow. Also, clinicians should consider bone marrow carcinosis in non–small-cell lung cancer patients with unexplained cytopenias.

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