

Case Report

Lung cancer metastasis mimicking fingertip osteomyelitis: An ^{18}F -fluorodeoxyglucose positron emission tomography–computed tomography study

ABSTRACT

Lung cancer commonly metastasizes to ipsilateral and contralateral lungs, to mediastinal lymph nodes, to skeletal level, to brain, and to adrenal gland. It is indeed very rare to find skeletal metastases at the extremities, especially at the onset of the disease. We share the case of a 53-year-old man with dyspnea and pain at the level of the first finger of the left hand under antibiotic treatment for suspected osteomyelitis. ^{18}F -fluorodeoxyglucose positron emission tomography–computed tomography showed the presence of a left lung lesion with multiple localizations at muscles and bones.

Keywords: ^{18}F -fluorodeoxyglucose, bone metastasis, lung cancer, osteoarthritis, positron emission tomography–computed tomography

INTRODUCTION

The skeleton is the most common site of metastasis in patients with lung cancer (about 10% of patients surgically treated in Stages 1 and 2). Early localization of metastatic bone lesions is crucial for improving patient prognosis and determining the therapeutic plan.^[1] Metastasis to the hand is extremely rare, with an incidence of 0.1% reported in the literature.^[2] It is associated with a poor prognosis with a median survival following the development of symptomatic hand metastasis reported about 6 months. Skeletal muscle metastases from non-small cell lung cancer are also rarely encountered in clinical practice.^[3] The role of ^{18}F -fluorodeoxyglucose (^{18}F -FDG) positron emission tomography–computed tomography (PET/CT) in the diagnosis, staging, and monitoring of lung cancer is well established. Today, the clinical utility of PET scan is expanding in the diagnosis of many inflammatory conditions, such as osteomyelitis, because of its ability to depict FDG uptake due to enhanced glycolytic metabolism in inflammatory cellular infiltrates.^[4] Here, we describe a case of occult lung cancer presenting as metastatic disease to the finger.

CASE REPORT

A 53-year-old right-handed man was admitted to our hospital with an intense pain on his distal phalanx of the left hand's first finger. His medical history revealed only diabetes mellitus. The finger was swollen, and hyperemic and radiographic evaluation showed a fracture of the distal phalanx with soft-tissue radiolucent areas related to osteomyelitis. After 2 months of unremitting finger pain treated with antibiotic and anti-inflammatory therapy, a tru-cut biopsy was performed. Poorly differentiated squamous carcinoma was

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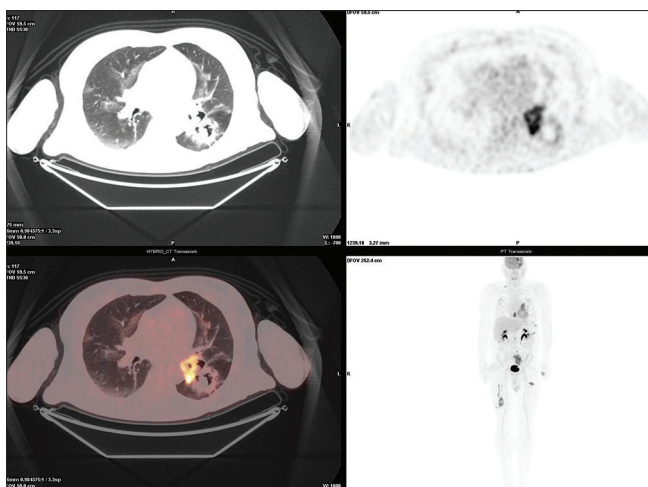


Figure 1: Transaxial positron emission tomography–computed tomography slice showing area of increased ^{18}F -fluorodeoxyglucose uptake of the left lower lobe lung mass without mediastinal adenopathy



Figure 2: Transaxial positron emission tomography–computed tomography images of the distal portion of the left hand showing hypermetabolic area of the distal phalanx of the first finger (red arrow)

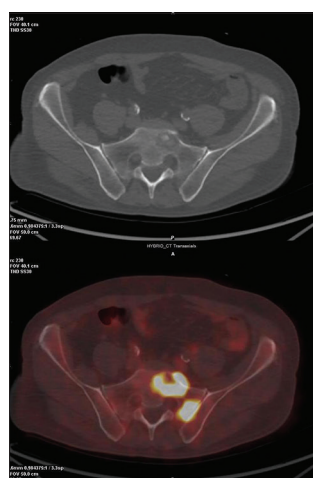


Figure 3: Positron emission tomography–computed tomography images showing sacral bone metastasis, with high-level glucose uptake

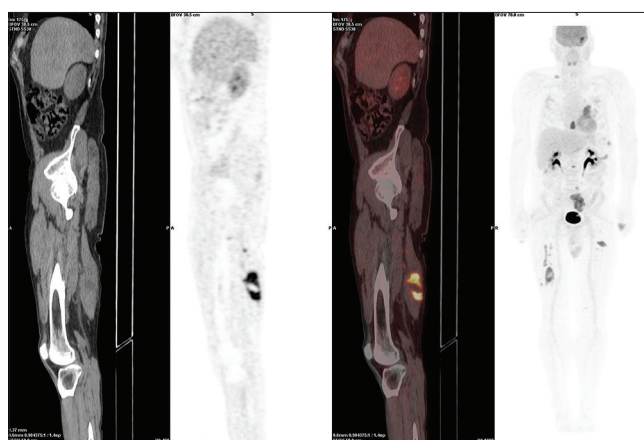


Figure 4: Sagittal positron emission tomography–computed tomography slices demonstrating areas of fluorodeoxyglucose focal uptake in some muscle bundles, like right trapezius muscles, intercostal muscles of the left hemithorax, left gluteus, and in several groups of posterior muscles of both thighs

determined with biopsy. Therefore, the patient underwent total body PET/CT and chest CT evaluations. PET/CT showed a hypermetabolic left lower lobe lung mass (SUVmax = 12.5) without mediastinal adenopathy [Figure 1]. Bone metastases were also revealed in the spine (SUVmax = 16.4), in the skull (SUVmax = 14.9), and in the distal phalanx of the left hand's first finger (SUVmax = 7.1) [Figures 2-3]. In addition, areas of FDG focal uptake have also been detected in some muscle bundles, such as right trapeze muscles, external and internal intercostal muscles of the left hemithorax, left gluteus, and in several groups, posterior muscle of both thighs, mostly right (SUVmax 12.5) Figure 4. These areas are suggestive for skeletal muscle metastases. High-resolution CT scan of the chest confirmed extensive thickening of the lung parenchyma in the left parahilary site and the absence of pathological lymph nodes affecting the chest. Only after these diagnostic evaluations, the patient presented

dyspnea and cough exacerbated by deep breathing. Biopsy during bronchoscopy confirmed the diagnosis of poorly differentiated squamous cell carcinoma. To exclude infectious or abscess areas, a magnetic resonance imaging (MRI) was also performed which confirmed the presence of bone lesions related to metastasis in the same locations of the spine and skull revealed by PET/CT. The patient was then subjected to finger surgery and chemotherapy associated with radiation therapy.

DISCUSSION

Acral metastasis is usually associated with advanced lung cancer and very rarely can be the first sign of the carcinoma.^[5,6] It is usually a poor prognostic sign and most commonly on the dominant hand and distal phalanx. Since in our case the

patient was right-handed and diabetic, the painful symptoms were underestimated due to microangiopathy and peripheral neuropathy but also due to the lower use compared to the contralateral hand. It can also mimic infection or inflammatory disease. According to literature data, ¹⁸F-FDG PET/CT is more accurate than MRI and bone scintigraphy for bone metastasis in patients with lung cancer, even in hand district, and in the skeletal muscle system. Surgical treatment on acral metastasis does not extend the expectancy of life, but it reduces the patient's pain during his terminal period.

CONCLUSION

It is now established that ¹⁸F-FDG PET/CT alone has better diagnostic value for diagnosing bone metastases from lung cancer than any other imaging method (high-resolution computed tomography, MRI, and X-rays).^[1] Our case shows that PET is able to provide a complete whole-body staging and has therefore been decisive in the diagnosis that the other methods have only been able to confirm targeted segments.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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