Invasive Aspergillosis Mimicking Stage IIIA Non–Small-Cell Lung Cancer on FDG Positron Emission Tomography


A 65-year-old man, with a 40–pack-year smoking history, was examined initially for fever, malaise, and pain in the region of the right scapula. Computed tomography (CT) showed a soft tissue mass involving the apical segment of the right lower lobe and adjacent pleura. A whole-body F-18 fluorodeoxyglucose (FDG) positron emission tomography (PET) scan was performed to stage presumed non–small-cell lung cancer (NSCLC) before surgery. PET imaging revealed the lung lesion and separate lesions in the right hilar, subcarinal, and paratracheal nodal regions consistent with stage IIIA NSCLC. The patient underwent a right lower lobectomy and regional lymph node resection. The pathologic diagnosis was aspergillosis, with reactive changes in the lymph nodes. This case highlights the importance of a preoperative tissue diagnosis in patients with possible NSCLC because infective processes can produce false-positive results in lung parenchyma and regional lymph nodes on PET.

Key Words: F-18 Fluorodeoxyglucose, Invasive Aspergillosis, Positron Emission Tomography, Non–Small-Cell Lung Cancer.

References

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Fig. 1. A transaxial chest CT image shows an irregularly shaped 3 x 4 cm soft tissue mass in the apical segment of the right lower lobe (arrow). The cavitating mass appears to abut the paravertebral pleura. The lung fields show evidence of chronic obstructive pulmonary disease. There was no evidence of mediastinal lymphadenopathy.
Fig. 2. FDG-PET images were obtained approximately 45 minutes after intravenous injection of 472 MBq (12.7 mCi) F-18 FDG, after the patient had fasted for 6 hours. The PET scan was performed 1 month after the CT scan, at which time the patient’s body weight had decreased by 10 kg. (A) A coronal image shows the large, centrally necrotic, markedly glucose-avid lesion in the midzone of the right lung. FDG uptake extends inferolaterally along the pleura, and a smaller tongue of uptake is present inferomedially, also involving pleura. In addition diffuse uptake of FDG is present in the bone marrow of the thoracic vertebral bodies. (B) A coronal image shows marked focal FDG uptake in the right hilar and subcarinal lymph node regions. There was also involvement (not shown) of the right lower paratracheal nodes. Note also the large liver (double arrow) and spleen (single arrow), which, along with evidence of FDG uptake into marrow, was initially thought to be indicative of an underlying myeloproliferative disorder, but in retrospect was a result of the patient’s infective illness. (C) A transaxial image shows both the centrally necrotic lesion abutting the posterior pleura and mediastinal nodal involvement.

PET plays an important role in the accurate preoperative staging of NSCLC, but this case highlights the importance of obtaining a tissue diagnosis. Findings of anatomic imaging and the clinical presentation were consistent with NSCLC, but invasive aspergillosis was found at surgery. Infection is a well-known cause of false-positive FDG uptake, and aspergillosis is not an exception (1–5). However, the marked regional lymph node FDG uptake has not been reported previously. Although surgery has been advocated as a treatment for invasive aspergillosis (6–8), a tissue diagnosis would have altered management in this case because of the patient’s borderline respiratory function. The patient required ventilatory support after operation and died several days later. We believe that a tissue diagnosis that confirms NSCLC is essential for the appropriate treatment of patients with possible NSCLC revealed by FDG-PET imaging.