Unsuspected Intramedullary Spinal Cord Metastasis Detected by FDG PET/CT

Abstract

Intramedullary spinal cord metastases (SCMs) are extremely rare. Here, we report a case of a 60-year-old man with a history of right nonsmall cell lung cancer treated by concomitant radiochemotherapy who complained, 9 months after treatment completion, of chest pain, breath shortness, and more recently back pain. An ^{18}F-FDG PET/CT was performed as part of the restaging process and showed a hypermetabolic mass of the right lung in addition to ipsilateral mediastinal hypermetabolic lymph nodes. There was also an FDG avid lesion of thoracic spinal cord at the T11–T12 level consistent with SCM as confirmed by MRI.

Keywords: *^{18}F-FDG, intramedullary spinal cord metastasis, lung cancer, PET/CT*

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A 60-year-old man with a locally advanced right nonsmall cell lung cancer was treated in 2018 with concomitant radiochemotherapy. He had partial remission and remained under surveillance. Nine months after completion of treatment, he complained of chest pain, breath shortness, and more recently back pain. As a disease progression was suspected, an ^{18}F-FDG PET/CT was performed for restaging [Figure 1]. MIP (a) and coronal (b) PET images showed a gross hypermetabolic mass of the right lung, associated with ipsilateral mediastinal hypermetabolic pathologic lymph nodes, in addition to an intense and diffuse uptake in bowel consistent with metformin use for type 2 of diabetes.

Sagittal fused TEP (c), axial CT (d), corresponding PET (e), and fused (f) images revealed an intense FDG avid lesion of the thoracic spinal cord (white arrow) along T11–T12 with SUVmax of 22.9, which was highly suspicious for spinal cord metastasis (SCM).

Gadolinium-enhanced medullary MRI was performed. Sagittal (a), coronal (b), and axial (c) fat saturated T1 images showed an intramedullary lesion having contrast enhancement in the spine at the level of 11th and 12th thoracic vertebrae [Figure 2]. Differential diagnosis was made with astrocytoma, ependymoma, and hemangioblastoma.

Intramedullary SCMs are devastating neurological complications of cancer. They are extremely rare constituting only about 3%–5% of myelopathies in cancer patients and 1%–3% of all intramedullary spinal metastatic lesions.[1,2] Most of them originate from lung cancer (50%), especially small cell carcinoma, followed by breast cancer (11%), kidney cancer (10%), melanoma (8%), lymphoma (4%), and colorectal cancer (3%).[3-5] Metastatic lesions are usually solitary but may be multifocal.[6] Early diagnosis can prevent paralysis and improve the patient's prognosis and quality of life. Most intramedullary metastases are diagnosed with gadolinium-enhanced MRI. In our case, metastasis was discovered by PET/CT imaging and confirmed by spinal MRI. ^{18}F-FDG PET has a sensitivity of 96% and a specificity of 50% for SCMs in patients with cancer.[7,8] Mostardi *et al*. in a study with the purpose to evaluate the visibility of intramedullary SCMs on PET and to correlate PET and MRI features showed that most intramedullary SCMs can be detected on PET when performed near the time of MRI.[9] The authors concluded that spinal cord should be specifically and carefully assessed on PET for the evidence of intramedullary SCMs to provide timely diagnosis. As such, FDG PET/CT represents a promising tool for early diagnosis of SCMs, leading to appropriate treatment.

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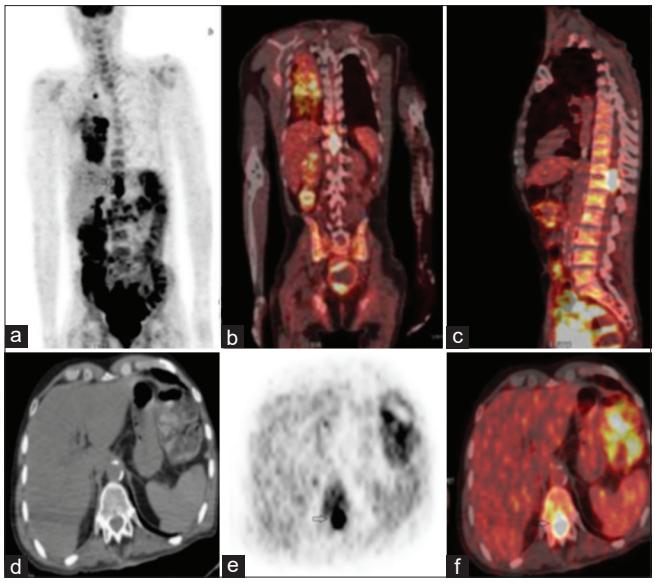

Figure 1: 18F-FDG PET/CT: MIP (a) and coronal (b) PET images showing a gross hypermetabolic mass of the right lung associated with ipsilateral mediastinal hypermetabolic pathologic lymph nodes, in addition to an intense and diffuse uptake on bowel consistent with metformin use. Sagittal fused TEP (c), axial CT (d), corresponding PET (e), and fused (f) images showing an intense FDG avid lesion of the thoracic spinal cord along T11–T12

Figure 2: Gadolinium-enhanced medullary MRI: sagittal (a), coronal (b), and axial (c) fat-saturated T1 images showing an enhancing intramedullary lesion in the spine at the level of 11th and 12th thoracic vertebrae (white arrow)

Declaration of patient consent

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

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Conflicts of interest

There are no conflicts of interest.

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