Case Report

Contiguous Multilevel Vertebral Metastasis in Carcinoma Breast Mimicking Spondylodiscitis

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Abstract

A 59-year old female presented with a lump in the right breast for 6 months. She developed progressively increasing backache for 3 months. Magnetic resonance imaging spine was suggestive of hypointense heterogeneous signal intensity in multiple dorsal vertebrae (D3–D8) and suggestive of Pott's spine. Sonomammography suggested a lesion with irregular margin in the retro-areolar region. Fine-needle aspiration cytology was infiltrating duct carcinoma. Fluorodeoxyglucose (FDG) positron-emission tomography–computed tomography revealed mass in the right breast with axillary lymph node. FDG-avid lytic destructive contiguous lesion was noted in mid-dorsal vertebrae. Apart from it, FDG-avid lytic lesion was also noted in the right iliac bone. The patient underwent vertebral lesion biopsy consistent with metastatic breast carcinoma. This case report demonstrates rare contiguous involvement of multiple vertebrae masquerading Pott's spine.

Keywords: *Carcinoma breast, fluorodeoxyglucose positron-emission tomography/computed tomography, multilevel vertebral metastasis, spondylodiscitis, tuberculosis, mimicking*

Introduction

Carcinoma Breast is the most common malignancy of females. It commonly metastasis to the skeletal system. The diagnosis of bone metastasis on the anatomical or functional imaging is more specific when there is non-contiguous involvement of multiple bones. Tuberculosis is an endemic disease in many developing nations. The differentiation of the various inflammatory pathologies and malignancy sometimes becomes difficult. FDG PET/CT is a whole-body hybrid functional modality, which discloses the other sites of disease involvement and helps in narrowing the differential diagnosis. We report a case of a 59-year-old female who presented with carcinoma breast along with contiguous involvement of dorsal vertebrae. FDG PET/CT helps to evaluate the metastatic burden of the disease.

Case Report

A 59-year old female presented with a lump in the right breast for 6 months. She had progressively increasing backache for 3 months. The patient ignored breast mass and consulted an orthopedics for backache. She had a history of pulmonary tuberculosis treatment in the past. Magnetic resonance imaging (MRI) of the spine suggested hypointense heterogeneous signal intensity in multiple dorsal vertebrae (D3–D8). MRI findings were in favor of infectious spondylitis, likely tubercular (Pott's spine). Sonomammography suggested a heterogeneous lesion with an irregular margin in the retro-areolar region. FDG PET/CT was done for metastatic work-up. It revealed primary breast mass and axillary lymph node. Multiple lytic destructive lesions were noted in the dorsal vertebrae along with right iliac bone lesion [Figure 1-2]. Fine-needle aspiration cytology was infiltrating duct carcinoma. Due to the primary breast mass, a possibility of atypical vertebral metastases was considered. The skeleton is the most frequent site of distant metastasis in breast cancer.[1] Bone metastasis develops in over 70% of metastatic breast cancer.[2] Despite skeletal metastasis-related morbidities (pain, fractures, hypercalcemia, and spinal cord compression), the survival of patients with bone metastases alone is relatively longer than with visceral disease.[3] Therefore, an appropriate evaluation of the metastatic burden is vital. In carcinoma breast patients presented with skeletal pain,

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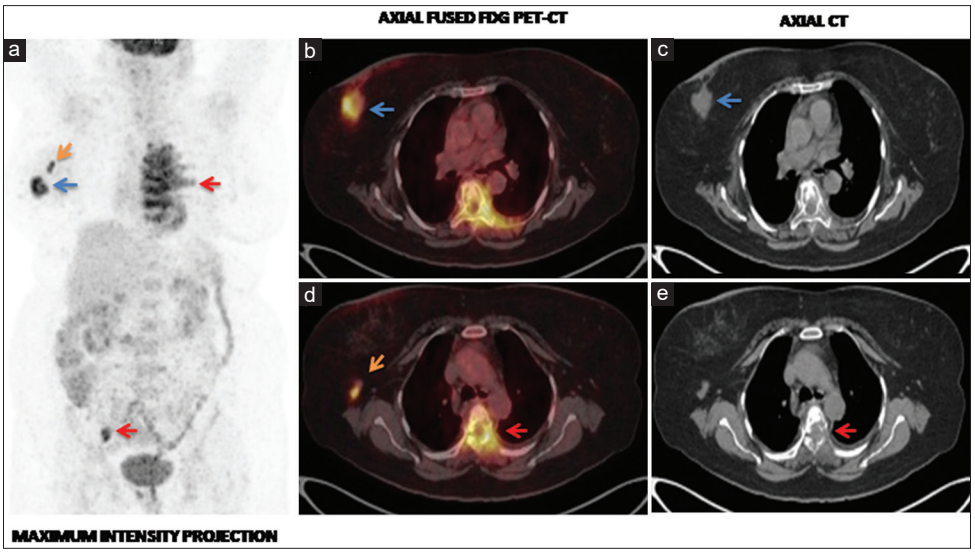

Figure 1: (a) FDG-PET, MIP image show FDG- avid lesions on the right breast (blue arrow), right axillae (yellow arrow), contiguous multiple dorsal vertebral involvements, and focal uptake in the right iliac bone (red arrows), (b and c) Image of the thorax showed lobulated soft-tissue density mass lesion in the breast (SUV_{max} 7.4), (d and e) Images at axillary region revealed solitary right axillary lymph node (yellow arrow). FDG-avid lytic destructive lesion is noted in dorsal vertebra involving both anterior and posterior elements. There are paravertebral and intracanalicular soft-tissue components (red arrow). FDG-PET: Fluorodeoxyglucose positron-emission tomography, SUV_{max}: Maximum standardized uptake value, MIP: Maximum intensity projection

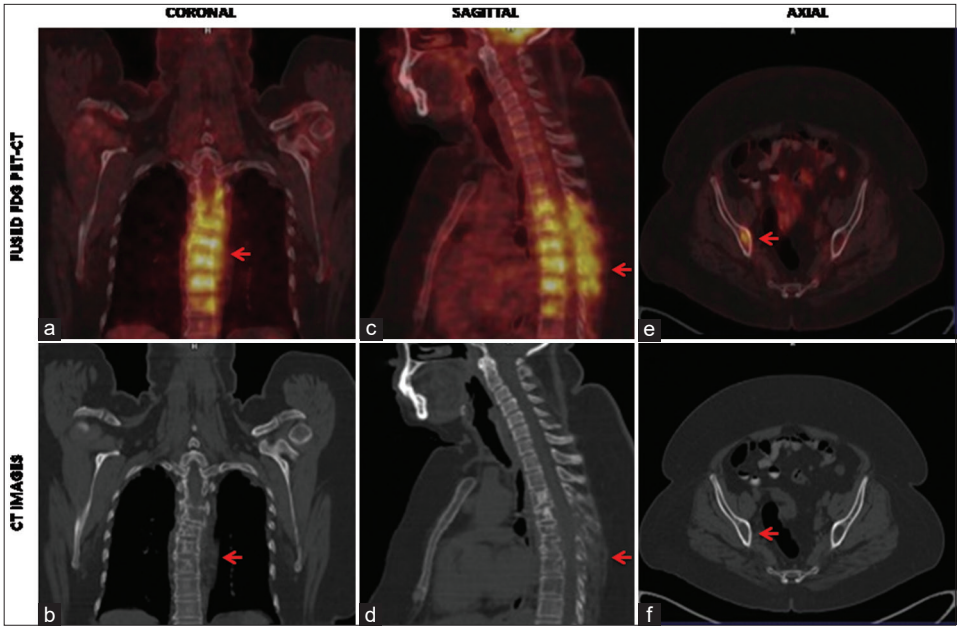

Figure 2: (a and b) FDG PET/CT images of the thorax showed FDG-avid lytic destructive lesion involving multiple dorsal vertebral with paravertebral soft-tissue components. (c and d) Images reveal the same finding and involvement of intervertebral disc and partial collapse of few vertebrae, (e and f) A lytic lesion in the right iliac bone. Red arrows represent all skeletal lesions. FDG PET/CT: Fluorodeoxyglucose positron-emission tomography/computed tomography

bone scintigraphy or CT scan is done. In osteoblastic lesions, bone scintigraphy had a similar performance with fluorodeoxyglucose positron-emission tomography/computed tomography (FDG PET/CT). However, in lytic or mixed lesions, ^{18}F-FDG PET/CT's sensitivity is better.[4]

CT provides excellent resolution of cortical and trabecular bone. CT has higher sensitivity to plain radiography in detecting both osteolytic and osteosclerotic metastases.[5] Due to its excellent soft-tissue resolution, MRI is the imaging modality of choice for assessing metastatic spread in the marrow, the extension of tumor from marrow, and involvement of surrounding structures.[6] MRI is the technique of choice in suspected cord compression from vertebral body fracture.[7]

Differential diagnosis between spinal metastasis and infectious spondylodiscitis is one of the daily clinical practice challenges, especially in developing nations. Continuous vertebral body involvement with skip lesions

may be present in TB and malignancy. Tuberculosis infection in the bones and lungs may mimic primary or secondary involvement of malignancy.[8] In this case, MRI showed destructive lesion, diffuse bone marrow infiltrations with paraspinal soft tissue in contiguous dorsal vertebrae. It made difficult to differentiate between metastasis and spondylodiscitis. Tuberculous spondylodiscitis was regarded as the more appropriate diagnosis. FDG PET CT could unveil previously unidentified pelvis metastases, which lead to a diagnosis of multiple skeletal metastases. A CT-guided biopsy confirmed a final diagnosis of metastasis. This study highlights the importance of whole-body FDG PET CT imaging in the malignancy and rare contiguous involvement of the vertebra in breast malignancy.

Conclusion

It is not uncommon to encounter a cancer patient who had a history of tuberculosis now referred for FDG PET/CT. It is crucial to perceive that the FDG could be positive in both inflammatory and malignant lesions. However, the pattern of the disease spread should warrant a biopsy site so that one could avoid misdiagnosis. This case highlights the importance of molecular imaging that led to change in the management of a disease.

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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