Case Report

Initial evaluation of inflammatory breast cancer with fluorodeoxyglucose positron emission tomography

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ABSTRACT

Inflammatory breast cancer (IBC) is the most aggressive form of locally advanced breast cancer. We present here ^{18}F FDG PET/CT findings of two patients with IBC. These patients were referred to the Nuclear Medicine department for staging of IBC. FDG PET/CT images showed diffuse infiltration of breasts with multiple lymph nodes and multiple metastases in whole-body PET/CT images. FDG PET provides additional information regarding lymph nodes or distant metastases in the initial evaluation of IBC.

Keywords: Fluorodeoxyglucose, inflammatory breast cancer, positron emission tomography

INTRODUCTION

Inflammatory breast cancer (IBC) is the most aggressive form of locally advanced breast cancer. Whole-body FDG-PET scans can characterize the extent of the pathologic involvement in IBC. The metabolic information from FDG PET is more sensitive than conventional imaging methods for the detection of loco-regional and distant metastases. We herein present two cases of ^{18}F FDG PET/CT imaging findings of IBC.

CASE REPORT

Case 1

A 32-year-old female presented with diffuse right breast enlargement, redness, and peau d'orange form of breast. ^{18}F FDG PET/CT whole-body imaging was performed after intravenously injection of 420 MBq (11,3 mCi) ^{18}F FDG. After 1 hour of waiting period in a silent room the patient was imaged using an integrated PET/CT camera, which consisted of a six-slice CT gantry, integrated with an LSO based fullring PET scanner (Siemens Biograph 6, IL, Chicago, USA). Maximum-intensity-projection (MIP) of the PET image showed intense hypermetabolic activity involving the right breast with a maximal standardized uptake value (SUV) of 22.6 and multiple mediastinum, bilateral subclaviculary-axillary lymph nodes, bilateral liver lobes, and multiple skeletal metastatic lesions. The axial PET image showed intense FDG uptake in the right breast [Figure 1]. After the right breast skin biopsy, pathology results showed IBC [Figure 2].

Case 2

A 51-year-old female patient referred to the Nuclear Medicine department for initial evaluation of bilateral IBC. Her sympyoms were bilateral breast enlargement, pain, and redness. Whole-body FDG PET/CT image was performed after intravenous injection of 510 MBq (13.7 mCi) ^{18}F FDG. FDG PET images showed bilateral intense breast uptake with a maximum standardized uptake value of 15.6 and bilateral supraclavicular lymph nodes, multiple skeletal FDG uptakes were seen [Figure 3].

DISCUSSION

IBC is a rare but extremely aggressive form of invasive breast cancer that comprises 1-6% of breast cancer cases.[1] It tends to be diagnosed in younger women compared to non IBC and often metastasizes before it is diagnosed.[2] The prognosis is generally not as good as like other types of breast cancer.

The combination of PET and computed tomography (PET/CT) allows the functional PET and anatomical CT images to be acquired under identical conditions and then they are rapidly coregistered.[3] The major roles for PET/CT in breast cancer are

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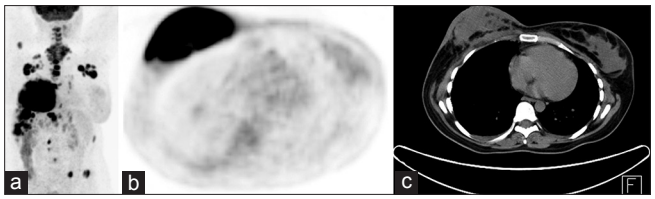

Figure 1: FDG PET/CT images of a 32-year-old female patient with a inflammatory breast cancer. (a) Maximum-intensity-projection (MIP) of PET image. (b) Axial PET image. (c) Axial CT image

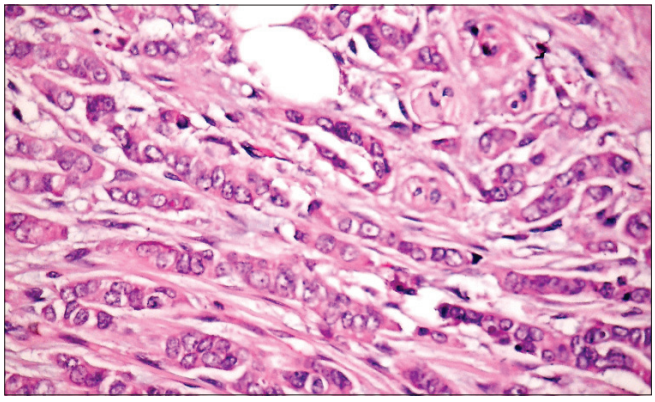

Figure 2: Pathology results showed infiltrative carcinoma cell (Hand E, ×200)

Figure 3: Whole-body FDG PET maximum-intensity-projection (MIP) of a 51-year-old female patient with an inflammatory breast cancer

detecting and localizing metastasis, monitoring the response to treatment, and early detection of recurrence.[4] FDG PET/CT imaging provides additional information regarding lymph node or distant metastases in IBC patients and should be considered in the initial staging.[5,6] Carkaci *et al.*, reported that among 41 patients with IBC, 7 of the 20 cases of distant metastases were unsuspected before PET/CT examination and Alberini *et al.*, reported that among 62 patients with IBC, 6 of 18 cases of distant metastases were unsuspected before PET/CT was performed.[7,8]

In this case report it can be seen that FDG PET/CT imaging helps us to see beyond the breast and revealed more extensive form of the disease. FDG PET/CT provides additional information or distant metastasis about disease and it should be considered in the initial staging of IBC. It is also important to distinguish IBC from other types of breast cancers because of major differences in its symptoms, prognosis, and treatment.[9,10]

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