The International Journal of Medicine and Sciences **7** *(1) 2022 : 57-59*

Clinical Quiz

FLUORODEOXYGLUCOSE-AVID SOLITARY RETRO-AREOLAR BREAST LESION: A RARE ENCOUNTER

Ahmad Zaid Zanial* & Siti Zarina Amir Hassan

Nuclear Medicine Department, Hospital Kuala Lumpur, Jalan Pahang, 50586 Kuala Lumpur, Malaysia.

ARTICLE INFO

Corresponding author:
Dr. Ahmad Zaid Zanial

Email address:
ahmadzaidx@gmail.com

Received:
December 2022
Accepted for publication:
December 2022

Keywords:
FDG PET/CT;
breast lesion.

ABSTRACT

This clinical quiz highlights the utilisation and findings of fluorodeoxyglucose positron emission tomography/computerised tomography (FDG PET/CT) in the management of a rare breast lesion and further discusses issues related to the matter.

CASE PRESENTATION

A 67-year-old lady with underlying diabetes mellitus, hypertension and ischaemic heart disease had presented with left breast lump for the past six months duration. She denies having nipple discharge, constitutional symptoms, or any family history of malignancy. She was further investigated and underwent mammogram with complementary ultrasound of both breasts. No significant architectural distortion detected on mammogram and no suspicious malignant sonographic features seen on ultrasound. However, an indeterminate left breast lesion was noted at 3 o'clock position associated with heterogeneously dense fibroglandular breast parenchyma pattern.

She was subjected to left breast trucut biopsy that revealed high nuclear to cytoplasmic ratio with irregular nuclear borders, vascular chromatin and prominent nucleoli with benign ducts and mature adipocytes seen interspersed between tumour cells. The diagnosis of diffuse large B-cell lymphoma was made based on the microscopic findings supported with positive immunohistochemical analysis. Bone marrow aspiration showed no significant marrow involvement with no obvious abnormal lymphoid cells or excess of blasts noted.

A staging contrasted CT scan demonstrated only focal disease in the left breast. Chemotherapy with RCHOP regime was commenced and later completed for six cycles. A repeat contrasted CT scan showed partial resolution of the left breast lesion. However, breast mammogram did not provide much interval information. She was referred to our institution and underwent fluorodeoxyglucose positron emission tomography/ computerised tomography (FDG PET/CT) for response assessment after completion of chemotherapy. The known left breast lesion demonstrated abnormal intensely FDG avid increased uptake associated with no other FDG avid lesion seen elsewhere (Figure 1). The scan findings were suggestive of metabolically active residual lymphoma.

Question 1: Which of the following is not a possible preliminary differential clinical diagnosis for the breast lesion in this patient?

A. Breast cyst
B. Fibroadenoma
C. Galactocele
D. Invasive ductal carcinoma
E. Invasive lobular carcinoma

Question 2: Select the recommended assessment classification used in FDG PET/CT for lymphoma cases

A. TNM Staging
B. Ann-Arbor Staging
C. BIRADS Classification
D. Deauville Criteria
E. PERCIST Criteria

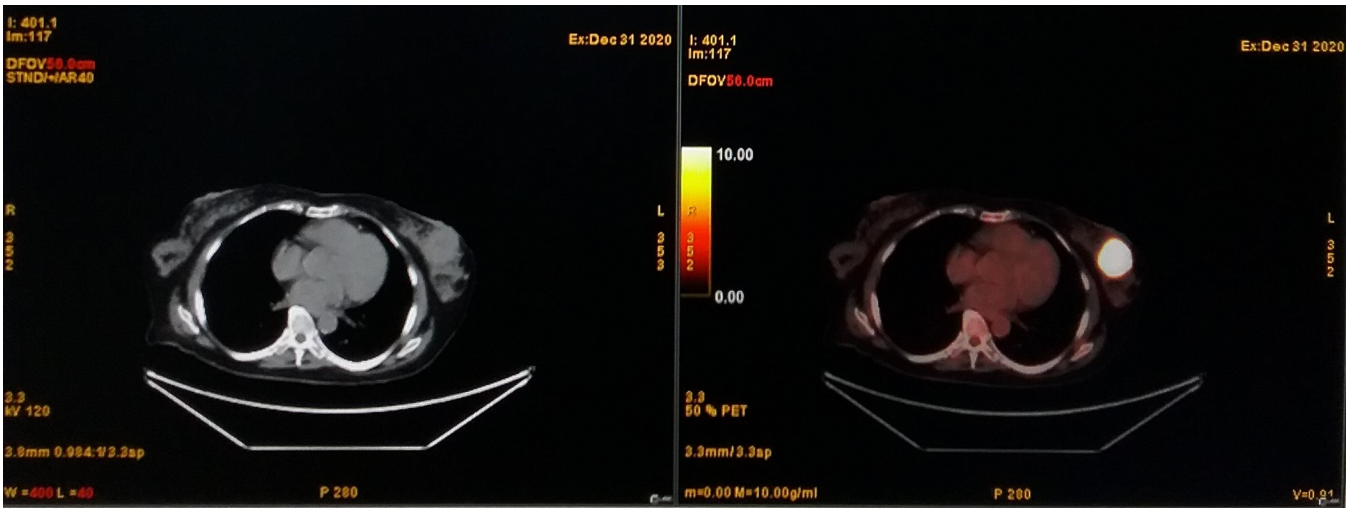

Figure 1: Axial PET/CT images demonstrate intensely FDG avid left breast lesion.

DISCUSSION

Differential diagnoses of breast lump include benign conditions such as fibroadenoma and cyst as well as malignant lesions such as invasive ductal and lobular carcinoma [1]. Although galactocele is the most common benign breast lesions during breast-feeding period that can mimic carcinoma, it is unlikely in this patient in view of her age and presentation. Following clinical evaluation, important investigations for a breast lump to rule out malignancy are imaging and pathology analysis. Imaging using mammography and ultrasound will enable the lesion to be further characterised. Subsequent fine needle aspiration cytology or core biopsy should be performed to ascertain the histopathological diagnosis.

Primary lymphomatous disease or secondary involvement of the breast is rare. It is reported that breast lymphoma accounts for about 0.5-1% of breast malignancies and approximately 2-3% of extra-nodal lymphomas [2-4]. Patient may only present with a breast lump without any other constitutional or B symptoms as highlighted in this case. Furthermore, first line treatment of breast lymphoma is mainly chemotherapy regime tailored to treating underlying histological type of the lymphoma such as R-CHOP regime consisting of rituximab, cyclophosphamide, doxorubicin hydrochloride, vincristine, and prednisone for non-Hodgkin lymphoma [5-7].

FDG PET/CT plays important role in lymphoma and breast cancer management. It is widely used in disease staging and treatment response assessment. FDG uptake has been reported in both benign and malignant lesion in the breast. Breast lymphoma can present as unilateral or bilateral involvement and unifocal, multifocal or diffuse activity with high-grade tumour exhibiting more intense FDG uptake [8-9]. A recommended reporting system to describe lymphomatous lesion in FDG PET/CT is the Lugano classification or Deauville scoring system [10-11]. Each lesion is rated independently with score 1 = no uptake or no residual uptake when used as interim, 2 = slight uptake but equal to or below mediastinal blood pool, 3 = uptake above mediastinal but below or equal to liver activity, 4 = uptake slightly to moderately higher than liver and 5 = markedly increased uptake or any new lesion when done for response evaluation. Scores of 4 and 5 are positive for active lymphomatous disease.

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