

¹⁸F-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography Scan in an Unusual Case of Lymphoma with Secondary Involvement of Uterine Cervix Presenting as a Pathological Fracture

Abstract

A 48-year-old female presented with a pathological fracture of the right femur. ^{99m}Tc methylene diphosphonate bone scan revealed multiple areas of increased osteoblastic activity consistent with metastatic disease. Serum electrophoresis revealed monoclonal gammopathy. ¹⁸F-fluorodeoxyglucose positron emission tomography/computed tomography (¹⁸F-FDG PET/CT) scan revealed metabolically active lesions in bulky uterine cervix and osteolytic skeletal lesions. Unusual pattern of FDG uptake in uterine cervix and osteolytic skeletal lesions warranted a biopsy of the uterine cervix which revealed diffuse large B-cell lymphoma. ¹⁸F-FDG PET/CT scan helped in guiding the site of biopsy to reach a final diagnosis in this unusual case of lymphoma with a secondary involvement of uterine cervix presenting as a pathological fracture.

Keywords: ¹⁸F-fluorodeoxyglucose positron emission tomography/computed tomography, lymphoma, pathological fracture, uterine cervix

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Introduction

Lymphoma is one of the malignancies where the role of ¹⁸F-fluorodeoxyglucose positron emission tomography/computed tomography (¹⁸F-FDG PET/CT) scan is most extensively studied with a definitive role in initial staging, in the assessment of response to therapy, and in suspected relapse/recurrence in the treated cases. Unusual presentations in the cases of lymphoma can complicate clinical picture and can delay the diagnosis. ¹⁸F-FDG PET/CT scan is a powerful imaging tool in suspected malignancies which can identify the most useful site for targeted biopsy. It provides the advantage of identifying metabolically active disease sites, identifying the target tissue for biopsy as well as helps in prognostication.

Case Report

A 48-year-old female sustained a pathological fracture in the left femur. She underwent surgical fixation (intramedullary nailing) of the fracture and histopathology revealed only necrotic bone and inflammatory tissue. Nine months later,

she developed pain in the right thigh which progressively increased in severity over time. She presented with a pathological fracture in the neck of the right femur. ^{99m}Tc-methylene diphosphonate bone scan showed increased osteoblastic activity in the right humerus, iliac bones, sacrum, shaft of the right femur, and the scan findings were consistent with the diagnosis of metastatic disease. Concurrently, serum electrophoresis revealed monoclonal gammopathy. With the diagnostic possibilities of metastases from unknown primary site and myeloma, ¹⁸F-FDG PET/CT scan was done. ¹⁸F-FDG PET/CT scan revealed moderate-to-intense abnormal FDG uptake in the bulky uterine cervix with intensely FDG avid osteolytic skeletal lesions [Figure 1]. The possibility of carcinoma cervix was considered; however, extensive skeletal metastases with no lymph nodal involvement being unusual encouraged us to entertain other diagnostic possibilities. Hence, a biopsy from the uterine cervix was done which revealed diffuse large B-cell lymphoma (DLBCL). Further, the patient underwent surgical fixation of the pathological fracture of

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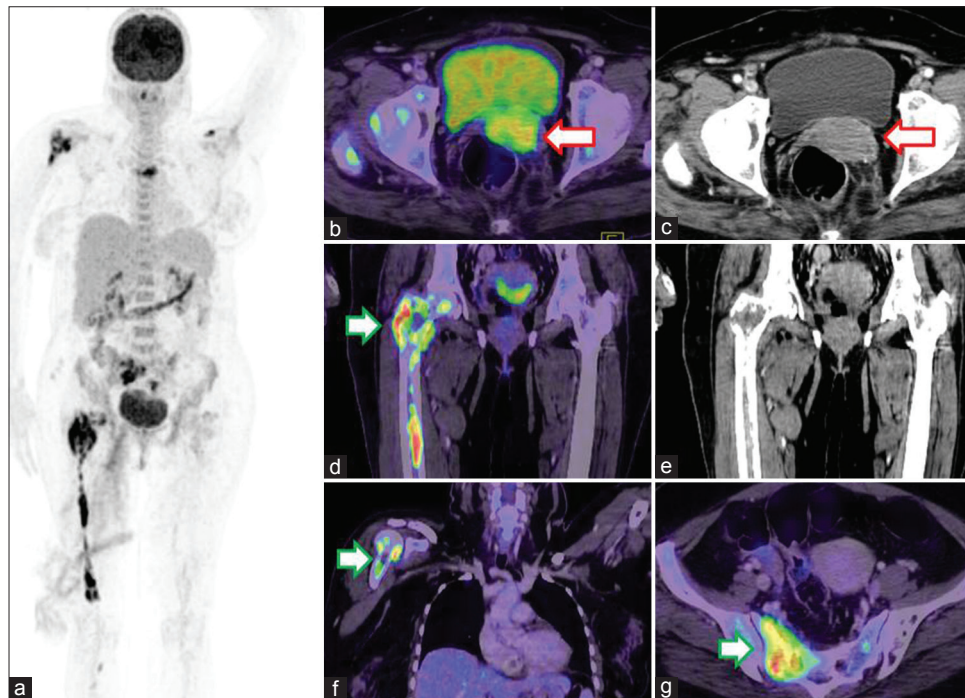


Figure 1: ^{18}F -fluorodeoxyglucose positron emission tomography/computed tomography scan (a) showing moderate-to-intense abnormal fluorodeoxyglucose uptake in the bulky uterine cervix (b and c: red arrows) with intensely fluorodeoxyglucose avid osteolytic skeletal lesions (d-f: yellow arrows)

the right femur, and histopathology from this fracture site again came as DLBCL. Thus, she was diagnosed as having extranodal lymphoma (DLBCL) with skeletal and uterine cervix involvement. She was then started on steroids and chemotherapy. Unusual pattern of involvement of uterine cervix and multiple osteolytic skeletal lesions in ^{18}F -FDG PET/CT scan triggered us to search for other differential diagnoses and also helped in guiding the site of biopsy to reach a final diagnosis and initiate the appropriate treatment.

Discussion

Lymphomatous involvement of uterine cervix can be secondary to lymphomatous involvement of other sites or as primary lymphoma of the uterine cervix. Primary lymphomas of the uterine cervix are mostly non-Hodgkin's lymphoma and usually affect premenopausal women.^[1] Primary DLBCL of the female genital tract is defined as a malignant lymphoma primarily occurring in the female genital tract in the absence of any previously diagnosed lymphoma. Secondary lymphomatous involvement of the female genital tract is mostly seen as a part of disseminated disease. About 1.5% of the extranodal lymphomas originate in the female genital tract.^[2] Any genital organ can be involved, however most lymphomas involve the cervix, uterine body, or ovary.^[3] Immunochemotherapy with/without radiotherapy is the most effective treatment and surgery is mostly avoided.^[4] Primary genital tract DLBCL cases are often associated with poor outcomes, high risk of central nervous system relapse, and short progression-free survival,^[5] hence it is important to identify whether

it is primary genital tract lymphoma or secondary to involvement of other sites, as in this case. The usefulness of ^{18}F -FDG PET/CT scan in uterine lymphomas is restricted to a few case reports.^[6,7] Rare cases of carcinoma cervix with coexistent lymphoma detected on ^{18}F -FDG PET/CT scan are also reported.^[8] This case was quite unusual with regard to clinical presentation (pathological fracture), bone scan findings mimicking skeletal metastases, and concurrent clinical picture confused by monoclonal gammopathy in electrophoresis. However, ^{18}F -FDG PET/CT scan helped in identifying the lesion in uterine cervix and biopsy which leads to the identification of lymphomatous involvement of the uterine cervix. In addition, ^{18}F -FDG PET/CT scan identified the sites of skeletal involvement, thus helping in staging and prognosticating the case.

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Conflicts of interest

There are no conflicts of interest.

References

1. Lagoo AS, Robboy SJ. Lymphoma of the female genital tract: Current status. *Int J Gynecol Pathol* 2006;25:1-21.
2. Agaoglu FY, Fayda M, Dizdar Y, Basaran M, Yazar A, Darendeliler E. Primary uterine lymphoma: Case report and literature review. *Aust N Z J Obstet Gynaecol* 2005;45:88-9.
3. Ganovska A, Kovachev S. Non-hodgkin's lymphoma of the female genital system – A literature review. *Akush Ginekol (Sofia)* 2015;54:17-23.
4. Mandato VD, Palermo R, Falbo A, Capodanno I, Capodanno F,

- Gelli MC, *et al.* Primary diffuse large B-cell lymphoma of the uterus: Case report and review. *Anticancer Res* 2014;34:4377-90.
5. Cao XX, Li J, Zhang W, Duan MH, Shen T, Zhou DB. Patients with primary diffuse large B-cell lymphoma of female genital tract have high risk of central nervous system relapse. *Ann Hematol* 2014;93:1001-5.
 6. Hashimoto A, Fujimi A, Kanisawa Y, Matsuno T, Okuda T, Minami S, *et al.* Primary diffuse large B-cell lymphoma of the uterine cervix successfully treated with rituximab plus cyclophosphamide, doxorubicin, vincristine, and prednisone chemotherapy-a case report. *Gan To Kagaku Ryoho* 2013;40:2589-92.
 7. Bural GG, Shriaknthan S, Houseni M, Alavi A. FDG-PET is useful in staging and follow-up of primary uterine cervical lymphoma. *Clin Nucl Med* 2007;32:748-50.
 8. Igdem S, Okkan S, Unalan B, Igdem A, Ferhanoglu B. Cervical cancer coexisting with small lymphocytic lymphoma detected during positron emission tomography/computed tomography simulation: A case report. *Eur J Gynaecol Oncol* 2008;29:405-7.