Article published online: 2022-05-23

Case report

F-18 Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography in a Rare Case of Recurrent Malignant Mixed Mullerian Tumor

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Abstract

We report a case of 66-year-old female with previous history of histopathologically proven. Malignant mixed mullerain tumor of the uterus in whom positron emission tomography/computed tomography (CT) done for characterization of soft tissue lesion in pelvis noticed on CT, showed extensive recurrent disease in the pelvis with pulmonary metastases.

Keywords: Computed tomography, F-18 fluorodeoxyglucose, malignant mixed mullerian tumor recurrence, positron emission tomography/computed tomography, uterine carcinosarcoma

Introduction

Malignant mixed mullerian tumors (MMMTs) or uterine carcinosarcomas are very uncommon and most lethal neoplasms.[1] They occur in postmenopausal women and comprise only 1-2% of uterine cancers and 3-5% of all uterine malignancies.[2] Clinical presentation usually consists of abdominal pain, distension, and atypical bleeding. Though common in the uterus, these tumors may also arise in the ovaries, fallopian tubes and vagina.[1-5] MMMT is composed of both epithelial (carcinoma) and mesenchymal (sarcoma) elements but the component responsible for its aggressive biological behavior remains unclear.[6,7] Survival rates for Stages I-III are dismal ranging from 33% to 39%, respectively.[8] Conventional imaging modalities, such as computed tomography (CT) and/or magnetic resonance imaging (MRI), have limited sensitivity in evaluation of recurrences, especially in asymptomatic patients.[9] Positron emission tomography/CT (PET/CT) may be a useful modality in the diagnosis of uterine sarcoma and recurrent disease.

Access this article online

Quick Response Code:

Website: www.wjnm.org

DOI: 10.4103/1450-1147.138578

Case Report

The case we present here is about a 66-year-old female with histopathologically proven carcinosarcoma of the uterus presented with the loss of appetite and generalized weakness. Patient had been previously treated with neo-adjuvant chemotherapy followed by total abdominal hysterectomy and bilateral salphingo-oopherectomy. Six cycles of adjuvant chemotherapy were also given. CT scan of the abdomen and pelvis showed a small soft tissue lesion in the region of the right adenxa. PET/CT performed for characterization of the soft tissue lesion and restaging of disease showed extensive recurrence in the pelvis extending to rectal sheath [Figure 1a-c] and pulmonary nodules indicative of metastases [Figure 1d and e].

Discussion

Uterine sarcomas are regarded as rare malignancies accounting for approximately 8% of uterine cancers, leiomyosarcoma and carcinosarcoma being the most common types.[1] Uterine carcinosarcomas, also known as MMMTs, are rare neoplasms and are associated with a dismal prognosis.[8] Worldwide roughly eight new cases/

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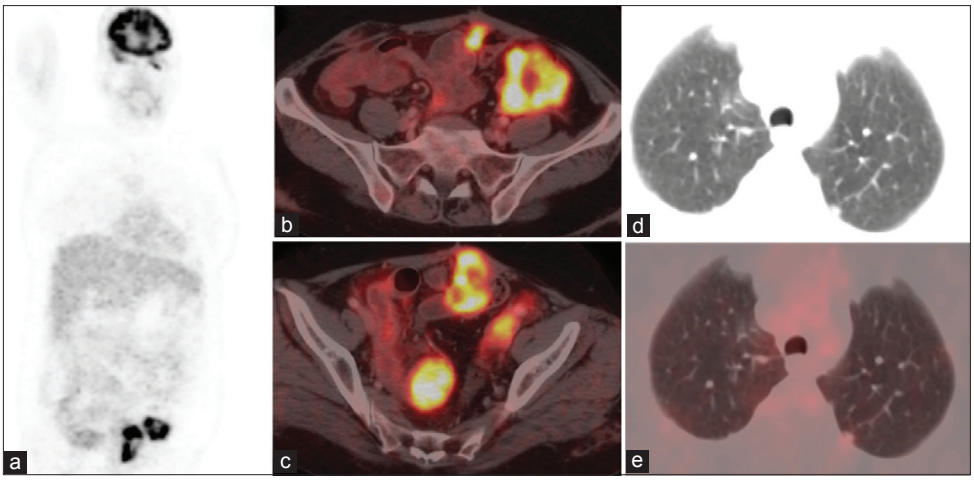

Figure 1: (a-c) F-18 fluorodeoxyglucose (FDG) positron emission tomography/computed tomography images showing extensive FDG avidity in a soft tissue lesion in the pelvis extending to rectal sheath and (d and e) pulmonary nodules indicative of metastases

million women are reported every year.[10] Histologically, they contain both malignant epithelial and nonepithelial or sarcomatous components.[10] At 5-year survival data remain dismal for Stages I-III MMMT with several studies demonstrating survival rates ranging from 33% to 39%[8] with none reported in Stage IV.[11] MMMTs account for 16.4% of the deaths attributable to uterine malignancies.[8,12] Gynecologic Oncology Group study found that positive lymph nodes were a significant prognostic indicator in patients with uterine carcinosarcoma, but there is no consensus on the benefit of pelvic lymphadenectomy and the reported incidence of lymph node involvement varies widely.[8] Current surveillance strategy, consisting of physical examinations and conventional imaging modalities, such as CT and/or MRI, has limited sensitivity and cannot detect recurrences consistently, especially in asymptomatic patients.[9] PET/CT may be used for the diagnosis of uterine sarcoma and the differentiation of malignant and benign lesions.

Positron emission tomography/CT has shown high sensitivity of 87.5% and specificity of 97.5% for detecting disease in asymptomatic patients, and 92.9% and 100%, respectively for patients suspected of recurrence on CT.[9] PET imaging distinguishes true recurrence from postradiation alterations and morphologic changes not containing viable tumor cells, which may be interpreted as recurrence on conventional CT.[9] PET/CT has also been used to detect a uterine carcinosarcoma arising from an endometrial polyp.[13] Several studies have demonstrated that the sarcoma fluorodeoxyglucose (FDG) uptake level can be used to evaluate tumor response to treatment as FDG uptake is related to disease recurrence and to survival of patients with sarcomas.[14] The use of PET for uterine sarcoma can be extended with the use of other tracers such as C-11 choline, C-11 methionine, C-11 tyrosine, F-18 fluorotyrosine and F-18 fluorothymidine, all of which characterize tumor biology other than glucose metabolism.[9] C-11 choline has also been shown to be a good radiotracer for uterine carcinosarcoma.[15] PET is beneficial in excluding falsely inoperable disease as staged by MRI or CT and in making a decision on palliation for better quality-of-life.[16] It could be a useful modality for unexpected distant metastasis and followup tool in patients with MMMT.

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How to cite this article: Bhoil A, Kashyap R, Bhattacharya A, Mittal BR. F-18 Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography in a Rare Case of Recurrent Malignant Mixed Mullerian Tumor. World J Nucl Med 2014;13:64-6.

Source of Support: Nil. **Conflict of Interest:** None declared.