Case Report

Follow-up ^{18}F-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography in Evaluation of a Torsion of Uterine Fibroid in an Elderly Female

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Abstract

Fibroids are rare in postmenopausal females. Torsion of pedunculated uterine fibroid is also a very rare occurrence in elderly females. We report a rare case of an 84-year-old multiparous, postmenopausal female, a treated case of non-Hodgkin's lymphoma, presenting with a large abdominal mass. The comparative positron emission tomography/computed tomography scan study of the patient revealed that a new mass in the abdomen and pelvis connected with the left adnexa with a pedicle and previously seen fibroid was not visualized on the present scan, thus raising suspicion of torsion of subserosal fibroid. Histopathology confirmed the diagnosis of fibroid.

Keywords: *Fluorodeoxyglucose positron emission tomography/computed tomography scan, non-Hodgkin's lymphoma, torsion of fibroid*

Introduction

Uterine fibroids, also known as leiomyomas, are prevalent in 20%–30% of women older than 35 years. They are noncancerous monoclonal tumors arising from the smooth muscle cells and fibroblasts of the myometrium. It also has been suggested that leiomyomas that are adherent to the broad ligament originate from hormonally sensitive smooth muscle elements of that ligament.[1] Most commonly, they arise in reproductive-age women and, when symptomatic, typically present with symptoms of abnormal uterine bleeding and/or pelvic pain/pressure. Extrauterine fibroids are rarer, and they present a greater diagnostic dilemma.[2] Here, we report a rare case of torsion of subserosal fibroid in an elderly female where follow-up positron emission tomography/computed tomography (PET/CT) scan helped in reaching the diagnosis.

Case Report

An 84-year-old multiparous postmenopausal female patient, a known treated case of non-Hodgkin's lymphoma (NHL), was referred for ^{18}F-fluorodeoxyglucose (^{18}F-FDG) PET/CT scan for the evaluation of abdominal mass. Clinically, the patient had a palpable abdominal mass with no pain or tenderness. Ultrasound scan of the abdomen was suggestive of large mass in the abdominal and pelvic region.^{18}F-FDG PET/CT [Figure 1d-f] scan showed a large lobulated non-FDG-avid hypodense mass in the abdomen and pelvis region, continuous with the left adnexa which appears to have twisted pedicle. Previous^{18} F-FDG PET/CT [Figure 1a-c], which thus acted as a baseline PET scan, done 6 months back, in view of evaluation of pyrexia of unknown origin, was suggestive of a large lobulated non-FDG-avid mass in the uterus, involving the anterior wall, likely fibroid. This uterine mass was no longer visualized in the pelvic region in the present scan. Thus, raising suspicion of torsion of fibroid, which was seen on previous PET/CT scan in pelvis and now non FDG avid mass was seen in the abdomen and pelvic region and there was no history of any surgery in between these 2 PET/CT scans. Histopathology report [Figure 2a and b] of the mass showed spindle cells arranged in bundles, focally positive for smooth muscle actin (SMA) and inhibin, confirming diagnosis of Fibroid.

Discussion

Uterine wall leiomyomas can be classified as intramural (70%), which grow into the

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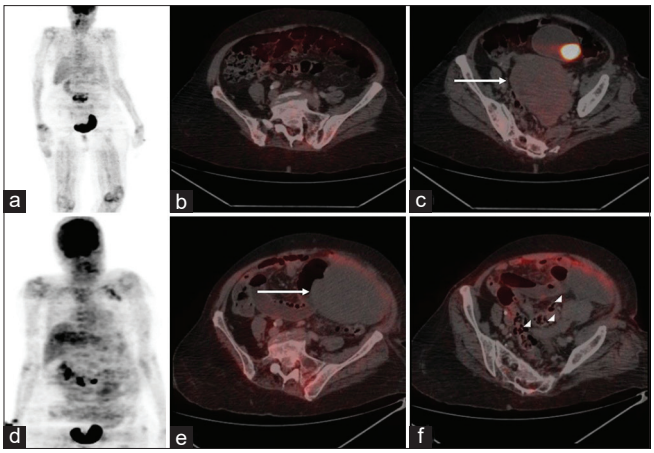

Figure 1: Maximal intensity projection (MIP) (a) of baseline fluorodeoxyglucose positron emission tomography/computed tomography scan. Axial fused (b and c) images showing nonfluorodeoxyglucose-avid mass in the pelvis (fibroid) and no mass in the abdominal region. MIP (d) of follow-up fluorodeoxyglucose positron emission tomography/computed tomography scan. Axial fused (e and f) images showing nonfluorodeoxyglucose-avid mass lesion in the abdominal and pelvic region, connected to the uterus with a pedicle (arrowhead). The comparison reveals that the previously noted mass involving the anterior wall of the uterus was not visualized on the present scan with evidence of nonfluorodeoxyglucose-avid mass in the abdominal and pelvic region

uterine cavity (10%) or grow outward from the uterus (20%) classified as cervical, subserous, intraligamentous, or pedunculated subserous fibroids.[3] Occasionally, leiomyomas become adherent to surrounding structures such as the broad ligament or omentum, develop an auxiliary blood supply, and lose their original attachment to the uterus becoming "parasitic."[1] Torsion of a pedunculated fibroid resulting in an acute abdomen requires immediate surgical intervention, as prolonged torsion can result in ischemic gangrene and resulting peritonitis.[4] Although uterine leiomyomas are exceedingly common, pedunculated uterine leiomyomas are uncommon and torsion of a pedunculated leiomyoma is very rare. Knowledge of unusual presentation of the benign fibroids is essential to the clinicians, which help in differentiating benign from malignant tumor entities.[2] Preoperative identification of feeding or draining vessels arising from the myometrium could be helpful in distinguishing an intraligamentary leiomyoma from a retroperitoneal tumor.[5] Leiomyomas can develop sarcomatous degeneration in approximately 0.1%–0.8% of cases. Hence, it is very important to correctly diagnose leiomyomas in view of torsion and malignant transformation. ^{18}F-FDG PET/CT, a hybrid technique, can be used for evaluation of these masses. With CT component, we can characterize these tumors and determine the site of origin. Malignant leiomyosarcomas show intense FDG uptake, and benign leiomyosarcomas show mild or no FDG uptake. However, 10% of benign leiomyosarcomas can also show mild increased FDG uptake.[6]

FDG is usually concentrated in malignant lesions with high glucose metabolism, but its uptake is also seen in normal

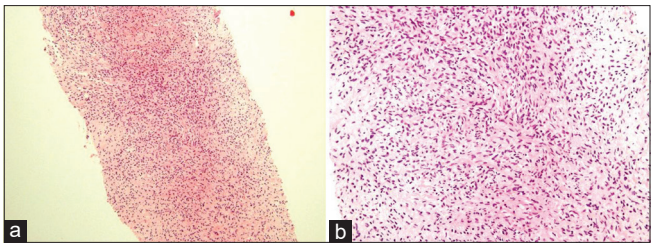

Figure 2: Histopathology images of the mass. Tumor composed of spindle cells arranged in bundles (H and E, ×100) (a) and the spindle cells showing bland nature without significant pleomorphism, mitosis, or necrosis (H and E, ×200) (b)

tissues, benign lesions, and inflammatory sites. Lee *et al*.[7] first reported FDG uptake in benign uterine fibroid. The mechanism of FDG uptake in benign fibroid might be due to hormone dependence, number of viable tumors, or growth factors expressions.[8] No significant FDG uptake excludes the possibility of malignant leiomyosarcoma of the uterus,[9] but FDG uptake has been observed in benign conditions also; thus, it becomes difficult to differentiate benign and malignant conditions. It has been observed that FDG uptake is more in premenopausal fibroids than postmenopausal ones and slightly more in the proliferation phase of menstrual cycle in comparison to other phases of the menstrual cycle.[10] Therefore, if high FDG uptake is observed in uterine fibroids in postmenopausal females, then possibility of malignancy should be considered.

Since our patient had a history of NHL, there was a suspicion of recurrence or another primary with metastatic malignant mass in the abdomen. The mass was non-FDG avid on our scan; thus, the lesion was likely benign and accurate history taking of no surgery between two PET/CT scans (baseline PET scan and follow-up scan after 6 months), and the comparative study helped us to reach diagnosis in our patient, which was later confirmed by histopathology. Hence, ^{18}F-FDG PET/CT can help in diagnosing origin and continuity of abdominal masses and can also help in assessing malignant potential.

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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Nil.

Conflicts of interest

There are no conflicts of interest.

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