^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography imaging of leiomyomatosis peritonealis disseminata

ABSTRACT

Leiomyomatosis peritonealis disseminata (LPD) is a rare benign condition characterized by multiple smooth muscle implants in the peritoneal cavity. The clinical presentation is usually nonspecific abdominal discomfort and nontender abdominal mass. Preoperative imaging usually points to suggests malignancy due to its unusual location, but the diagnosis can only be confirmed by histopathological examination. We share ^{18}F-Fluorodeoxyglucose positron emission tomography-computed tomography images of a 43-year-old woman diagnosed with LPD and briefly discuss the clinical aspects of this disease.

Keywords: ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography, fibroid, leiomyomatosis peritonealis disseminate, morcellation, peritoneum, smooth muscle

A 43-year-old multiparous woman with insignificant medical history other than laparoscopic myomectomy for uterine fibroid 4 years ago presented with vague abdominal discomfort and nontender subcutaneous mass in the left iliac fossa. Abdominal computed tomography (CT) imaging showed a subcutaneous nodule in the left iliac fossa and multiple peritoneal nodules at the right hypochondrium and left pelvic region. The largest peritoneal lesion (4.5 cm × 7.4 cm × 7.9 cm) showed central hypodensities with septation. Her tumor markers including CA125 were normal. ^{18}F-Fluoro-2-deoxyglucose (FDG) positron emission tomography (PET)-CT was performed for further assessment of the disease and preoperative staging. Figure 1a shows the maximal intensity projection of the subcutaneous lesion in the left iliac fossa (green arrow) and the peritoneal soft-tissue lesions in the abdomen and pelvis (red arrows). Figure 1b and c shows the fused ^{18}F-FDG PET-CT axial images of the subcutaneous lesion in the left iliac fossa (green arrow) and the soft-tissue lesions in abdomen and pelvis (red arrows). The lesions show low ^{18}F-FDG avidity with the highest measured at SUVmax 2.9. She proceeded to have surgical resection of all the visualized tumors which were subsequently confirmed to be leiomyomatosis peritonealis disseminata (LPD). This benign smooth muscle disease originating from the metaplasia of submesothelial multipotent mesenchymal cells affects premenopausal women and is associated with lower threshold of smooth muscles to estrogen as well as the increased levels of circulating estrogen. Laparoscopic myomectomy and morcellation have been linked to the dispersion of the myoma debris within the peritoneum. The subcutaneous lesion found at the previous laparoscopy site in the left iliac fossa in this case supports the notion that LPD is due to dissemination of morcellated myoma debris.[1,2] Metastatic gastrointestinal stromal tumor may present similarly with multiple peritoneal nodules with no significant nodal involvement on imaging.[3] Thus obtaining good clinical history is vital to formulating the

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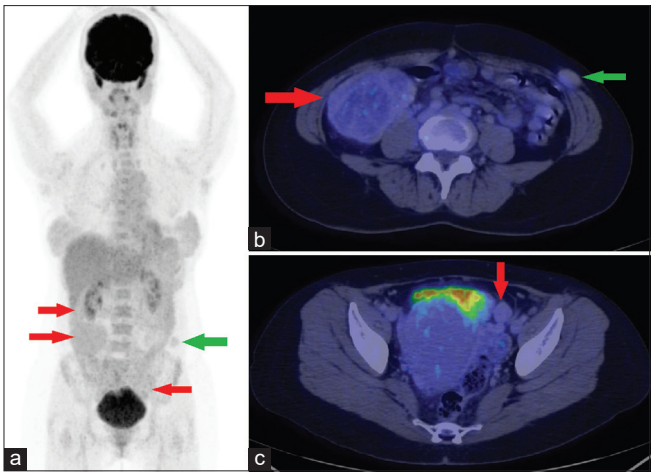

Figure 1: (a) Shows the maximal intensity projection of the subcutaneous lesion in the left iliac fossa (green arrow), and the peritoneal soft-tissue lesions in the abdomen and pelvis (red arrows). (b and c) Shows the fused ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography axial images of the subcutaneous lesion in the left iliac fossa (green arrow), and the soft-tissue lesions in the abdomen and pelvis (red arrows)

diagnosis of LPD. Uterine leiomyomas have variable ^{18}F-FDG avidity but majority show mild uptake. There is a cyclical pattern to the uptake of ^{18}F-FDG within leiomyoma with higher uptake seen during the luteal phase compared to other menstrual phases.[4,5] Limited data on ^{18}F-FDG PET-CT imaging in LPD can be found in the literature. The tumors as seen in this case and in other reported cases of LPD where ^{18}F-FDG PET-CT is performed have low ^{18}F-FDG avidity.[6] Malignant transformation of LPD into leiomyosarcoma are rare and have been shown to occur in postmenopausal women with incompletely resected LPD.[7] Uterine leiomyoma usually have lower ^{18}F-FDG avidity and rarely high ^{18}F-FDG avidity, whereas it is the contrary for leiomyosarcoma. Nonetheless, the avidity of the lesions cannot be used to distinguish leiomyoma from leiomyosarcoma.[8,9] There are no clear treatment guidelines due to the rarity of the disease and treatment has to be personalized.

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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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Conflicts of interest

There are no conflicts of interest.

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