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PET/CT of delayed uterine leiomyoma metastasizing to lung and femur

Huynh KN
Nguyen BD

Department of Radiology, Mayo Clinic Arizona

Address of Correspondence:
Ba D. Nguyen, M.D.
Department of Radiology
Mayo Clinic, Arizona
13400 East Shea Blvd.
Scottsdale, Arizona, 85259
Phone 480 3420988
Fax:480 3014303
Email: Nguyen.ba@mayo.edu

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ABSTRACT

Benign metastasizing leiomyomas are benign disseminated extra-uterine tumors in patients with prior history of uterine leiomyomas and may occur years after hysterectomy. The lung is mostly affected, with less common occurrence in the brain, heart, spine, retroperitoneum, and bone. The authors present the role of ^{18}F-FDG PET/CT in the metabolic staging and post-surgical monitoring of a patient with lung and femoral involvement.

KEY WORDS

Uterine leiomyoma; metastasis; thorax; femur; positron emission tomography.

CASE REPORT

A 76-year-old woman had a six-month history of right hip pain with MRI detection of a right femoral diaphyseal intramedullary lesion. Further CT imaging showed a left hemithoracic mass with chest wall and rib invasion. Contemporary ^{18}F-FDG PET-CT (Figure 1) showed borderline hypermetabolic left lung mass (SUV 4.2) and right femoral lesion (SUV 3.4). Subsequent CT-guided biopsy of both lesions showed spindle cell features considered as synchronous metastatic smooth cell neoplasm, with immunostains positive for desmin, estrogen receptor, and progesterone receptor, and negative for pancytokeratin, CK5/6, S100, CD117, and CD10. Her clinical history was remarkable for a total abdominal hysterectomy and bilateral salpingo-oophorectomy for uterine leiomyoma 15 years prior to the present event. These lesions were consistent with benign metastasizing leiomyoma (Figure 2). The patient underwent the left thoracic and right femoral tumor resection with right hip arthroplasty. No residual or recurrent tumor was detected during the subsequent 6-year PET/CT surveillance.

DISCUSSION

Benign metastasizing leiomyoma (BML) is a rare disease characterized by histologically benign extra-uterine smooth cell metastatic tumors in patients with prior history of uterine leiomyomas. BML may occur years after hysterectomy for benign uterine leiomyomas, however few cases have been reported in women without previous uterine surgery *(1).* The lung is the mostly targeted site with rare involvement of the brain,

heart, spine, retroperitoneum, and bone *(1-3).* While several theories detail the route of metastasis, the etiology and pathogenesis of BML still remain unclear. A few theories suggest a metaplastic process or hematological spread of uterine leiomyomatous tissue at time of hysterectomy *(1).* Even though MR and CT depicted well the femoral and chest tumors in our patient, ^{18}F-FDG PET/CT provided the metabolic characteristics of these lesions, the whole-body assessment for potential additional lesions/metastasis and the post-surgical surveillance of BML. Leiomyosarcomas are 18F-FDG-avid, whereas BML typically lacks tracer uptake. However, a small proportion of BML may exhibit mild-borderline tracer uptake as seen in our case *(2).* The use of 16α-^{18}F-fluoro-17ß-oestradiol (FES) PET/CT may provide useful information about BML estrogen receptor expression with option for anti-hormonal therapy *(4).* Histologically, the absence of cellular atypia and low mitotic activity favor a diagnosis of BML. However, low grade and slow-growing leiomyosarcoma cannot be totally excluded from the differential diagnosis even with benign histologic features.

CONCLUSION

Benign metastasizing leiomyoma is of rare occurrence. PET/CT is a useful functional imaging modality for a comprehensive evaluation and post-therapeutic surveillance of this potentially multifocal disease.

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Figure 1: Anterior PET MIP image shows the borderline hypermetabolic lesions of the left thorax and right proximal femur (A, arrows). Corresponding axial, sagittal and coronal fused PET/CT of the mass of the left lung and chest wall (B, C & D, arrows), and of the proximal right femur (E, F & G, bone window, arrows).

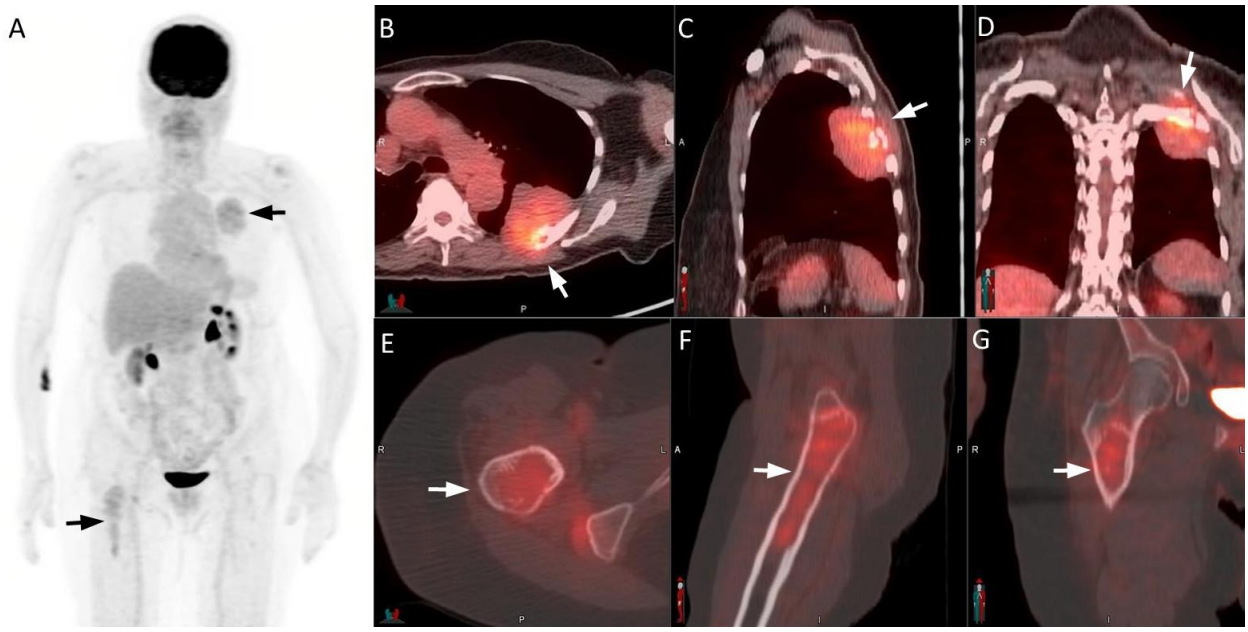

Figure 2: Corresponding radiograph (A), coronal contrast enhanced MR image (B), photograph of the surgical specimen (C), and radiograph of the surgical specimen (D) of the proximal femoral lesion.