Deep Pelvic Floor Mass

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Case Presentation

An 83-year-old woman presented with urinary frequency, generalized abdominal pain, and constipation. Initial physical examination and laboratory workup was unrevealing and contrast-enhanced computed tomography (CT) of the abdomen and pelvis was performed (Figure 1).

![Figure 1. Axial (A and B) and coronal reformatted (C) contrast-enhanced computed tomography (CT) images of the abdomen and pelvis demonstrate a large (15.3 x 10.0 x 9.7-cm) well-circumscribed, bulky dumbbell-shaped heterogeneous mass with regions of enhancement in the left posterior pelvis extending through the sciatic notch in the left gluteus. There is mass effect on adjacent organs including the uterus, bladder, and rectum without CT evidence of invasion. However, there was suggestion of finger-like extension into the deep fat of the left ischiorectal fossa (arrow). Additional coronal reformatted contrast-enhanced CT image (D) shows a few mildly enlarged para-aortic and left iliac chain lymph nodes (arrow).]
Key Imaging Finding(s)
Deep pelvic mass

Differential Diagnoses
Soft-tissue sarcoma
Lymphoma
Metastasis
Solitary fibrous tumor
Extraterine (parasitic) leiomyoma

Discussion
Tumors in the deep pelvic floor present a unique challenge to the radiologist, who plays an important role in treatment planning. Pelvic floor masses tend to be large at diagnosis, as they often present clinically or are detected later in their course. Many patients cannot be treated with single surgical resection due to the extent of local spread. Imaging helps guide treatment planning by determining the origin and extent of tumor spread and involvement of key anatomic structures. At the time of imaging evaluation, biopsy may not have been performed, which presents a challenging opportunity for the radiologist to provide a useful differential diagnosis. In the case presented, clean fat planes were between the mass and the uterus, ovaries, bladder, and rectum, from which most pelvic masses arise. In light of this, malignant primary tumors that arise from these organs were essentially excluded from the differential diagnosis, which allowed for more rare tumors to be thoughtfully considered.

Soft-tissue sarcoma
Soft-tissue sarcomas (STS) account for approximately 1% of all malignant tumors and vary widely in their site of origin, histology and prognosis. Most occur in the extremities, but up to 20% occur in the viscera and 15% in the retroperitoneum.1 STS present as solitary solid masses that generally respect fascial borders until late in their course. As they grow, fibrous connective tissue forms a pseudocapsule around them leaving relatively well-defined margins.2 A type of soft sarcoma, a malignant peripheral nerve sheath tumor (MPNST), accounts for 10% of soft-tissue sarcomas with 40% to 60% occurring in patients with neurofibromatosis type 1. Malignant peripheral nerve sheath tumors usually occur in the deep soft tissues close to a nerve trunk, most commonly at the sciatic nerve, brachial plexus, or sacral plexus. Given that the pelvic mass appeared to involve the sciatic notch in this patient, MPNST in particular was considered. These tumors present as well-defined, smooth or lobulated masses and usually enlarge rapidly. Pain is the most distinguishing classic symptom at presentation. The affected nerve proximal and distal to the mass may be thickened due to local spread.3

Lymphoma
Lymphoma is part of the differential diagnosis for most tumors throughout the body. Non-Hodgkin lymphoma (NHL) accounts for 4% of all cancers. Most patients with NHL have abdominal involvement at time of presentation, with para-aortic lymphadenopathy as the most common finding. At diagnosis, NHL can be isolated to one or more lymph node groups, a solid organ, or be widely disseminated. Lymphoma in the abdomen or pelvis, particularly when it involves the mesentery, can range from small to bulky well-circumscribed, mildly enhancing, homogeneous masses. Generally, lymphoma will displace, but not invade, local structures, which distinguishes it from carcinomas.4

Metastasis
Metastasis is nearly always included in the differential diagnosis of a deep pelvic mass. The more common tumors to metastasize to the deep pelvic space include breast, lung, endometrial and renal cell cancers.5 In this case, there was no history of prior cancer diagnosis. A few mildly enlarged para-aortic lymph nodes were identified.

Solitary fibrous tumor
Solitary fibrous tumors (SFTs) are mesenchymal tumors of fibroblastic origin, with both pleural and extrapleural distribution, and account for < 2% of all soft-tissue tumors. Extrapleural SFTs occur in middle-aged patients and are generally large at diagnosis given their asymptomatic and slow-growing nature. SFTs are well-circumscribed, hypervascular, heterogeneous masses with variable degrees of enhancement, necrosis or hemorrhage.6

Extraterine leiomyoma
Extraterine leiomyomas are histologically benign tumors of smooth muscle cells that usually arise from the genitourinary tract, but can arise from nearly any anatomic site. Although benign, they can be aggressive with unusual growth patterns.3 In this case, a subtype of extraterine leiomyomas, parasitic leiomyoma, can be considered. Parasitic leiomyomas are so-named as they are thought to originally arise from the uterus, adhere to surrounding structures (broad ligament, omentum, etc.), develop an auxiliary vascular supply, and then lose their original attachment to the uterus. They usually present as single or multiple pelvic or retroperitoneal masses. Extraterine leiomyomas typically appear as homogenous solid tumors that are well-circumscribed and hypervascular. The presence of uterine leiomyomas or history of hysterectomy can support this diagnosis.7 This patient did not appear to have uterine leiomyomas.

Diagnosis
Non-Hodgkin lymphoma

Summary
Although most primary pelvic masses are of gynecologic, urologic or gastrointestinal origin, when these structures are spared, metastases and other solid soft-tissue tumors should be considered, including soft-tissue sarcomas, fibrous tumors, and lymphoma. Imaging is vital to treatment planning in determining the origin and extent of tumor spread and involvement of adjacent and key anatomical structures.
Treatment planning is guided based on a thorough description of the imaging characteristics and pelvic anatomy involvement.

REFERENCES