

Imaging of Pelvic Bone Metastasis from Malignant Phyllodes Breast Tumor

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The author reports a patient with a malignant phyllodes breast tumor, who then had a ten-year disease free interval before she developed a left pelvic bone metastasis and soft tissue invasion. Cross-sectional and radionuclide imaging of its musculoskeletal metastasis is presented. Literature concerning bone metastasis from phyllodes tumor is also briefly reviewed and discussed, along with its epidemiology.

Introduction

Phyllodes tumor, previously known as cystosarcoma phylloides, is a rare tumor accounting for less than 1% of all breast neoplasms. Its behavior is difficult to predict by tumor size or mammographic patterns. It may present with delayed, distant and isolated bone metastasis even after technically adequate initial breast surgery. Such a case in a 75-year-old woman is reported with magnetic resonance (MR), computed tomography (CT), bone scintigraphic and histopathologic correlation.

Case Report

A 75 year-old woman presented with two-week history of low back pain radiating to the left buttock, left posterolateral thigh and left lateral calf. Her clinical past was remarkable for previous right radical mastectomy for cystosarcoma phyllodes. She then had a ten-year disease-free interval before developing her current symptomatology. The patient complained of pain, exacerbated by coughing, sneezing, straining, weight-bearing and walking. She denied any lower extremity numbness or incontinence. Physical examination showed tenderness along the left

lumbar and paraspinous muscles, left sacrum and sciatic notch. Radionuclide bone scan detected lesions of the left iliac bone and left sacrum (Figure 1). MR imaging (Figure 2) and CT (Figure 3) showed a large 13-cm aggressive osteolytic lesion of the left iliac bone invading the left sacrum. Soft tissue extension was noted anteromedial and posterolateral to the left iliac bone, involving the iliacus and gluteus muscles. CT-guided biopsy of the left pelvic lesion showed stromal overgrowth (Figure 4). This finding was consistent with metastatic malignant cystosarcoma phyllodes, matching the histologic pattern of the initial breast specimen ob-

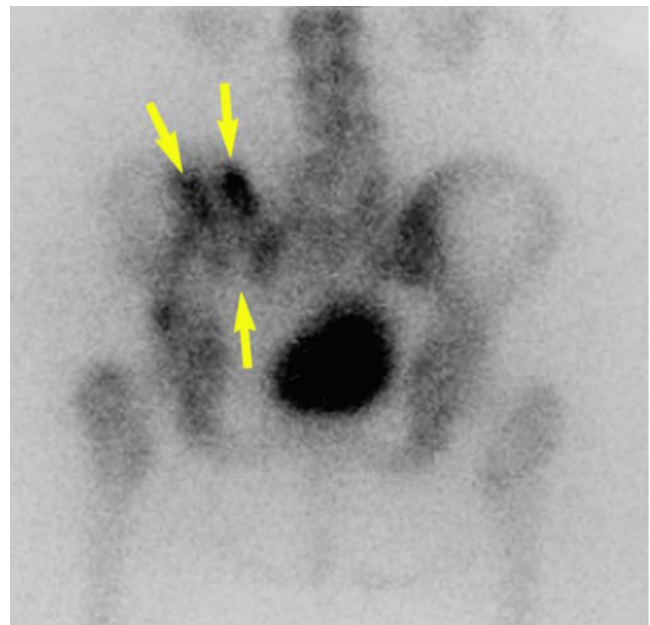


Figure 1. Radionuclide image of the posterior pelvis shows abnormal radiotracer uptake from metastases involving the left iliac bone and sacrum (arrows).

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Abbreviations: MR, magnetic resonance, CT, computed topography, PT, phyllodes tumor

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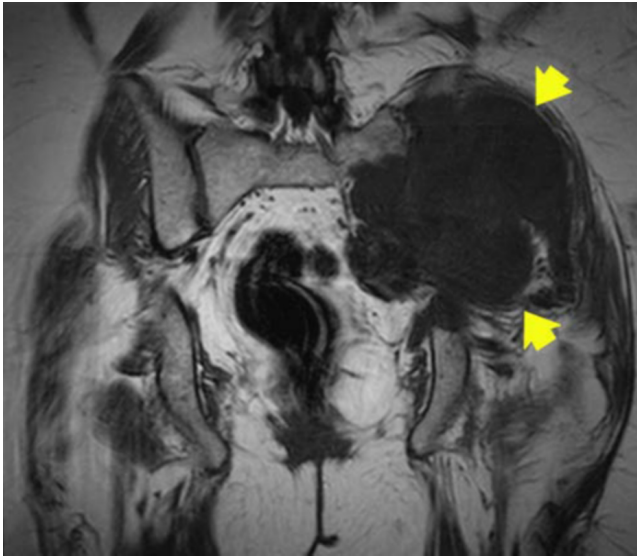


Figure 2. Coronal T1-weighted MR image of the pelvis shows a large destructive lesion of the left iliac bone and sacrum with extensive soft tissue invasion (arrows).

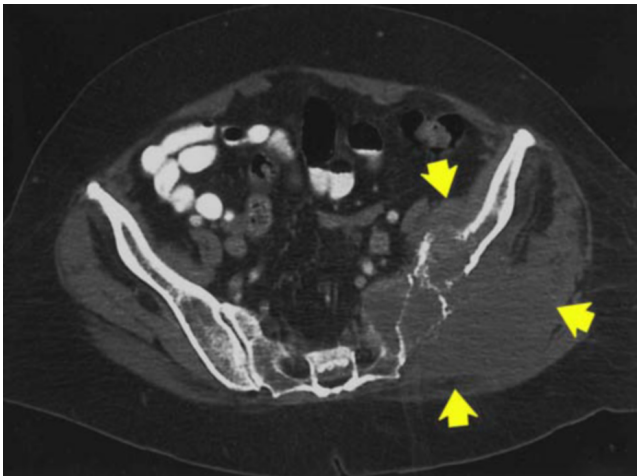


Figure 3. Axial CT image shows a large, lytic bone metastasis of the left pelvis with invasion of the left iliacus and gluteus muscles (arrows).

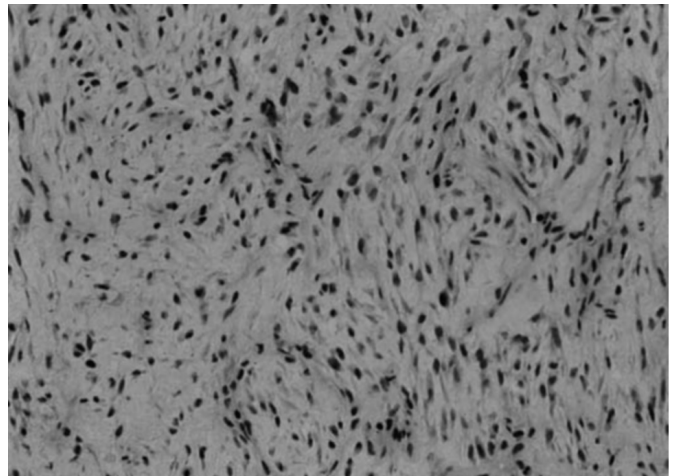


Figure 4. Histopathologic examination shows stromal proliferation matching the original pathologic specimen of phyllodes tumor of the patient's right breast (hematoxylin-eosin stain)

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tained from an outside institution. Tumor resection was not pursued due to the large size of the pelvic lesion and the likelihood of postoperative morbidity in this patient. She instead received radiotherapy with good response demonstrated on her most recent medical and imaging follow-up visit.

Discussion

Cystosarcoma phyllodes, most appropriately named phyllodes tumor (PT), is a rare fibroepithelial neoplasm accounting for less than 1% of all breast tumors [1]. First described by Johannes Muller in 1838, it owes the Greek-derived appellation to the leaf-like histologic pattern of associated epithelial and mesenchymal components. Its distribution is nearly exclusively female with an average age of 45 years at presentation, 20 years older than that for fibroadenoma [1]. Clinically, it appears as a fibroadenoma-like tumor growing alarmingly fast and frequently encountered at the upper outer quadrant of the breast. PT is mammographically similar to fibroadenoma, with well-defined smooth or lobulated contours, reaching occasionally 20 cm in diameter. It is characterized by a large spectrum of clinical behavior, ranging from benign to malignant. Size or radiographic patterns cannot accurately determine PT behavior: even a presumed benign lesion can metastasize. Consequently, all PT should be considered potentially malignant.

PT diagnosis is based on concomitant presence of epithelial and stromal components of the tumor. Histologic criteria such as tumor margins, stromal cellularity, mitotic rate and nuclear pleomorphism are helpful in predicting malignancy. Malignant lesions occur in 2% to 45% of all cases with the stromal component of the tumor mainly responsible for metastasis. Nodal metastasis is uncommon. Local recurrence rate, ranging between 10% and 40%, is mostly due to incomplete initial surgery. There is no relationship between local recurrence and distant spread. Distant metastases through hematogenous dissemination are seen in 10%-20% of all cases, with some instances occurring more than a decade after initial diagnosis and surgery -- similar to this case presentation [2]. In decreasing order, these metastases involve lung (66%), bone (28%) and liver (15%). Central nervous system metastasis is rare [2]. The five-year survival rate for malignant PT is 66%. The main treatment for PT is surgery [3]. To date, limited data shows PT to be radiosensitive [4].

Imaging of this case demonstrated its aggressive behavior with soft tissue invasion. However, this is a non-specific finding, and the different diagnosis includes a large variety of primary or secondary bone neoplasms. Due to the rarity of malignant PT and its related metastasis, it is difficult to make a presumptive diagnosis, particularly when it presents at a distant site and at a time distant from the initial presentation and surgery. Correct identification of the lesion in our case was reached only following histopathologic examination, which showed stromal proliferation correlating well with the breast specimen from initial surgery.

Only a few cases of PT metastatic to bone have been previously reported, including lesions in the skull, mandible, scapula, spine, rib, iliac bone, sacrum, femur and phalanx [5-11]. In our case, cross-sectional imaging with MR and CT well-demonstrated the extension of the tumor into bone and the adjacent soft tissues. This localization led to a conservative therapeutic decision in this 74-year-old patient, thus avoiding the possibility of major surgical morbidity.

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