ORIGINAL RESEARCH PAPER

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OSGOOD-SCHLATTER DISEASE MIMICKING SKELETAL METASTASIS ON BONE SCINTIGRAPHY IN A BREAST CANCER SURVIVOR: A CASE REPORT

KEY WORDS: Osgood-Schlatter Disease; Bone Scintigraphy; Breast Carcinoma; Skeletal Metastasis; Tibial Tuberosity

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ABSTRACT

Bone scintigraphy is widely used to detect skeletal metastases in breast carcinoma, but a focal area of increased tracer uptake is not always malignant. We describe a 41-year-old woman with invasive ductal carcinoma of the right breast (grade 2, T2N1M0), treated with breast-conserving surgery, chemotherapy, and radiotherapy, who developed a new focus of increased Tc-99m MDP uptake at the right tibial tuberosity on a routine six-month surveillance bone scan. She reported mild right knee pain, but examination, plain radiographs, and tumor marker and metabolic bone panels were unremarkable. The finding was attributed to Osgood-Schlatter disease, a benign traction apophysitis seldom recognized in adults, and she improved with physiotherapy and NSAIDs, remaining free of skeletal metastasis on further follow-up. This case illustrates the importance of correlating clinical, radiographic, and laboratory findings before an isolated tibial tuberosity focus is labeled metastatic, so that unnecessary invasive work-up and patient distress can be avoided.

INTRODUCTION

Bone is the most common site of distant spread in breast carcinoma, and technetium-99m methylene diphosphonate (Tc-99m MDP) bone scintigraphy remains a mainstay for detecting skeletal metastases during surveillance[1,2]. Increased tracer uptake is not specific for malignancy, however; trauma, infection, degenerative change, and developmental disorders can produce a similar appearance and must be excluded on clinical and radiographic grounds[3,4]. Osgood-Schlatter disease, a traction apophysitis of the tibial tuberosity typically seen in adolescents, is rarely recognized in adults and can closely mimic metastatic disease on a bone scan[5,6]. We report such a case, identified incidentally during routine oncologic surveillance.

Case Presentation

A 41-year-old woman was diagnosed with invasive ductal carcinoma of the right breast in January 2024; a baseline Tc-99m MDP bone scan at diagnosis showed no evidence of skeletal metastasis. She underwent breast-conserving surgery with axillary lymph node dissection, with histopathology confirming grade 2, T2N1M0 disease, followed by adjuvant chemotherapy (three cycles of epirubicin-cyclophosphamide and three cycles of docetaxel, completed in August 2024) and external beam radiotherapy (40 Gy in 15 fractions with a 13.5 Gy boost in 5 fractions, delivered November 2024 to January 2025), after which hormonal therapy was started.

At six months after completing radiotherapy, routine surveillance bone scintigraphy incidentally revealed a new focal area of increased tracer uptake at the right tibial tuberosity, with no other abnormal focus (Figure 1). On direct questioning, she reported mild right knee pain of recent onset; examination showed mild tenderness over the tibial tuberosity without swelling, erythema, or restriction of knee movement. Radiographs of the right knee were unremarkable (Figure 2), and serum calcium, phosphate, alkaline phosphatase, and the tumor marker CA 15-3 were within normal limits. Correlating the clinical, radiographic, and biochemical findings, the lesion was attributed to Osgood-Schlatter disease rather than metastasis. She was managed conservatively with physiotherapy and NSAIDs, improved symptomatically, and has remained free of skeletal metastasis on follow-up extending to 18 months (Table 1).

DISCUSSION

A new focus of tracer uptake on a surveillance bone scan in a cancer patient understandably raises concern for metastasis, particularly when accompanied by localized symptoms, as in this patient. Benign entities, including trauma, infection, degenerative disease, and inflammatory or developmental conditions, must nonetheless be actively considered before invasive investigation is pursued[3,4,9].

Osgood-Schlatter disease results from repetitive traction stress at the tibial tuberosity apophysis during growth and is classically a disease of adolescence[5]. In adults it is uncommon and usually reflects persistence of subclinical adolescent disease or, less often, a de novo overuse phenomenon[6,7]. Radiographs in adults, as in this patient, may be entirely normal, whereas bone scintigraphy remains sensitive to the associated inflammatory and remodeling activity and can appear indistinguishable from a metastatic focus on planar imaging[6]. SPECT/CT and correlative radiography can help characterize such lesions and avoid their misclassification as metastatic disease[8,9].

This case underscores the need to integrate clinical history, targeted examination, radiographic correlation, and laboratory parameters when interpreting an unexpected focus of tracer uptake during cancer surveillance. Recognizing a benign cause such as Osgood-Schlatter disease avoids unnecessary biopsy, additional cross-sectional imaging, treatment delay, and patient anxiety; management in adults is typically conservative, with activity modification, physiotherapy, and NSAIDs yielding a favorable outcome[10]. Our patient was reassured once informed of the benign nature of the lesion and has remained well on subsequent follow-up.

In summary, not every focus of increased tracer uptake on a surveillance bone scan represents metastatic disease. Osgood-Schlatter disease, though rare in adults, warrants consideration in the differential diagnosis of focal tibial tuberosity uptake, particularly when radiographs are unremarkable and clinical findings are mild and localized.

Table 1. Timeline of Diagnosis, Treatment, and Follow-up

Date	Event	Details
January 2024	Diagnosis	Invasive ductal carcinoma, right breast; baseline bone scan negative for metastasis

February 2024	Surgery	Breast-conserving surgery with axillary lymph node dissection; grade 2, T2N1M0
Feb–Aug 2024	Chemotherapy	Epirubicin-cyclophosphamide × 3 cycles, then docetaxel × 3 cycles
Nov 2024 – Jan 2025	Radiotherapy	40 Gy/15 fractions with 13.5 Gy boost/5 fractions
From Jan 2025	Hormonal therapy	Initiated after radiotherapy; ongoing
6 months post-RT	Surveillance	Incidental focal tibial tuberosity uptake on bone scan; mild knee pain
Same visit	Evaluation	Knee radiograph and labs (calcium, phosphate, ALP, CA 15-3) unremarkable
December 2025	Follow up	Asymptomatic
June 2026	Outcome	Asymptomatic; no evidence of skeletal metastasis

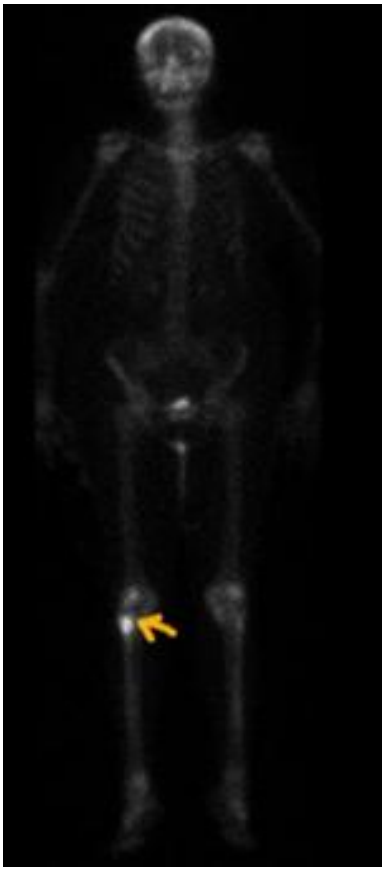


Figure 1: Follow-up Whole-body Tc-99m MDP Bone Scintigraphy Obtained Approximately Three Months After Completion of Radiotherapy, Showing a New Focal Area of Increased Tracer Uptake at the Right Tibial Tuberosity (Arrow), Incidentally Detected During Routine Metastatic Surveillance.



Figure 2: Anteroposterior and Lateral Radiographs of the Right Knee Obtained at the Same Follow-up Visit, Showing no Cortical Irregularity, Fragmentation, or Soft-tissue Abnormality at the Tibial Tuberosity.

Declaration of Patient Consent

Written informed consent obtained from the patient for publication of this case report and the accompanying clinical images. The patient understands that her name and initials will not be published, and due efforts will be made to conceal her identity.

Conflicts of Interest

There are no conflicts of interest.

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