# Case Presentation

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*Resolution on page 103.*

## Stress Fracture as a Differential Diagnosis for Bone Sarcomas

**ABSTRACT**
A 21-year-old woman presents with a two-month history of left knee pain, associated with walking distances greater than 10 km following a prior period of inactivity. The pain has an insidious onset, is mechanical in nature, and no significant findings are observed on physical examination. Initial radiographs reveal diffuse cortical thickening in the distal metaphysis of the left femur. Computed tomography demonstrates cortical reaction with an oblique fracture line, without involvement of the medullary cavity or soft tissues. Magnetic resonance imaging confirms diffuse bone marrow edema, cortical thickening, and laminar submuscular edema. Based on these findings, a core needle biopsy is performed for histopathological analysis.
**Keywords:** Stress fracture; biopsy; bone sarcoma.
**Level of Evidence:** IV

### Fractura por estrés como diagnóstico diferencial de sarcomas óseos

**RESUMEN**
Una mujer de 21 años consulta por gonalgia izquierda de 2 meses de evolución, relacionada con caminatas de más de 10 km, tras un período previo de sedentarismo. Tiene dolor de inicio insidioso, mecánico. No hay hallazgos relevantes en el examen físico. Las radiografías iniciales revelan un engrosamiento cortical difuso en la metáfisis distal femoral izquierda. La tomografía computarizada muestra una reacción cortical con solución de continuidad oblicua, sin compromiso medular ni de partes blandas. La resonancia magnética confirma un edema medular difuso, engrosamiento cortical y edema submuscular laminar. Ante estos hallazgos, se realiza una biopsia por punción para el análisis histopatológico.
**Palabras clave:** Fractura por estrés; biopsia; sarcoma óseo.
**Nivel de Evidencia:** IV

## INTRODUCTION

A 21-year-old woman with no relevant medical history consulted for left gonalgia with a two-month evolution. She reported an insidious onset of pain after abruptly beginning to walk more than 10 km, having previously led a sedentary lifestyle. She had not introduced any changes in her diet, and her clothing corresponded to conventional walking attire.

The pain had mechanical characteristics, increasing with activity and improving with rest but not resolving completely. She was taking conventional analgesics and experienced limitations in performing activities of daily living.

On physical examination, she had a full range of motion without pain but exhibited tenderness on palpation of the medial distal thigh region with mild edema.

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## FINDINGS AND INTERPRETATION OF IMAGING STUDIES

Anteroposterior and lateral radiographs of the left knee and femur were obtained, revealing cortical thickening with diffuse borders at the distal metaphyseal-diaphyseal level (Figure 1).

**Figure 1.** Anteroposterior and lateral radiographs of the left knee and femur. Medial cortical thickening with diffuse borders is observed at the metaphyseal-diaphyseal level. No alterations in the bone marrow pattern are evident, and no lytic or blastic lesions are seen in the distal femur.

A computed tomography (CT) scan and magnetic resonance imaging (MRI) without contrast were requested for better lesion characterization (Figures 2 and 3).

**Figure 2.** Computed tomography of the left femur (axial, coronal, and sagittal slices). The cortical reaction in the medial distal metaphysis is seen in greater detail, along with an oblique cortical discontinuity relative to the femoral axis. No involvement of the bone marrow or adjacent soft tissues is detected.

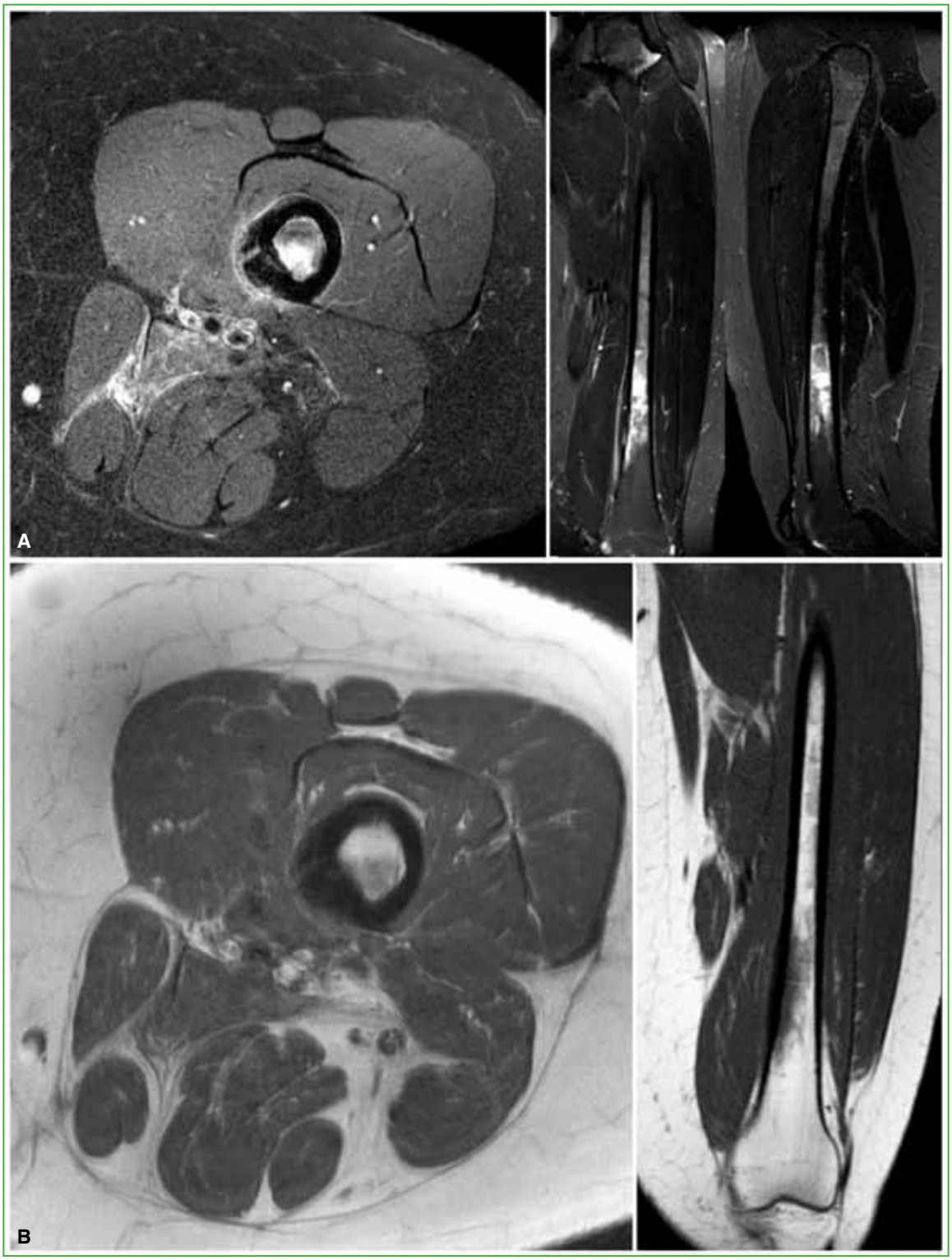


**Figure 3.** MRI of the distal region of the left femur (axial, coronal, and sagittal slices). **A.** STIR sequence: Diffuse bone marrow edema occupying almost the entire medullary cavity without cortical invasion, associated with medial distal cortical thickening and laminar edema in the submuscular plane. **B.** T1 sequence: The bone marrow edema presents the same diffuse pattern. No additional distal lesions are observed.

The CT scan demonstrated a cortical reaction in the medial distal metaphysis of the femur with an oblique cortical discontinuity, without involvement of the bone marrow or soft tissues. MRI revealed diffuse bone marrow edema occupying almost the entire width of the medullary cavity without cortical invasion, along with medial distal cortical thickening and lamellar submuscular edema.

Considering the clinical findings and imaging studies, a multidisciplinary meeting was held, and it was decided to perform a core needle biopsy of the lesion for histopathological analysis.

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