>> EMERGENCY IMAGING

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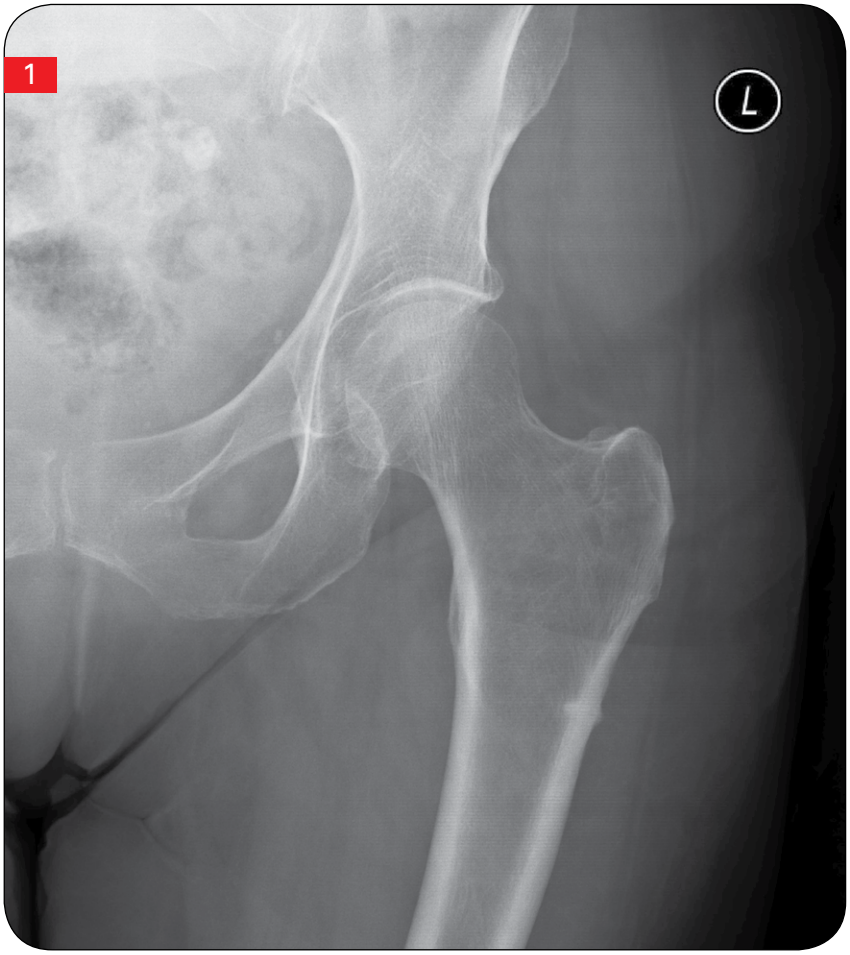
PROBLEM

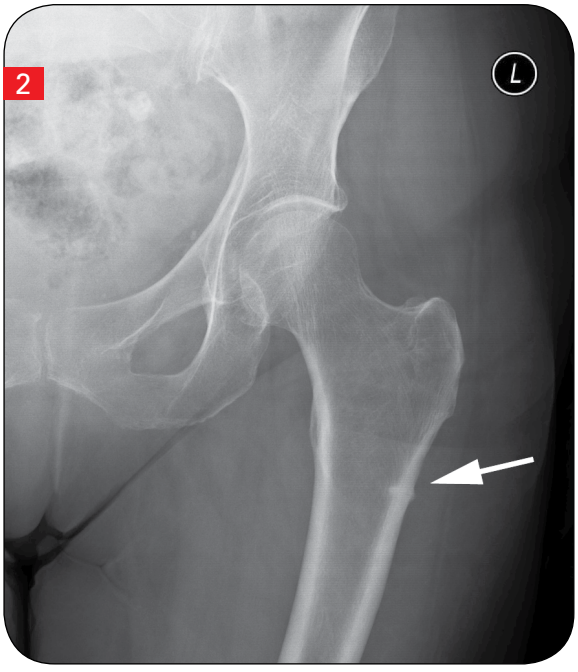


>> A 70-year-old woman presents to the ED with worsening left hip pain. She is able to ambulate with difficulty. A radiograph of the left hip is obtained (Figure 1).

What is your diagnosis, and which medication is the patient likely taking?

Turn page for answer >>

ANSWER



>> The anteroposterior view of the hip reveals a linear band of sclerosis within the lateral cortex of the proximal femoral diaphysis (white arrow, Figure 2). This is consistent with a stress fracture. Figure 3 is a coronal image from an edema-sensitive sequence of an MRI examination of the left hip. It confirms the presence and acuity of the stress fracture with increased signal (which appears bright on these images) both within the intramedullary space (white arrow) and the periosteum (red arrow).

Diaphysis fractures of the femur are typically the result of high-energy trauma. However, there have been multiple case studies suggesting the association of low-energy-injury/atypical fractures of the femur with extended use of bisphosphonates for treatment of osteoporosis.[1] Bone biopsies in patients with such fractures have demonstrated substantially impaired bone turnover and delayed or absent fracture healing.[2] It is postulated that this lack of bone turnover allows repetitive damage to accumulate, resulting in stress reaction, stress fractures, and ultimately, displaced fractures. The patient in this case presented prior to the development of a displaced fracture. However, since there is high risk of displaced fracture with the type of stress fracture documented on the imaging examination, she underwent prophylactic internal fixation of the proximal left femur with a trochanteric femoral nail (Figure 4).

Radiographs of patients with hip pain, especially those with a history of bisphosphonate use, must be examined carefully for the subtle cortical thicken-

ANSWER

ing that was demonstrated in this case. This finding may often be bilateral. If radiographs are negative but the patient reports persistent pain, follow-up with MRI may be useful. In patients with pacing devices or other contraindications to MRI, a nuclear medicine bone scan may be useful to detect early stress injury. Failure to diagnose such injuries may result in development of complete fractures with minimal trauma.

REFERENCES

1. Giusti A, Hamdy NA, Papapoulos SE. Atypical fractures of the femur and bisphosphonate therapy: a systematic review of case/case series studies. *Bone.* 2010;47(2):169-180.
2. Lenart BA, Lorich D, Lane JM. Atypical fractures of the femoral diaphysis in postmenopausal women taking alendronate. *N Engl J Med.* 2008;358(12):1304-1306.

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