

• CLINICAL IMAGES •

Atypical Subtrochanteric Fractures Associated with Long-term Use of Bisphosphonates

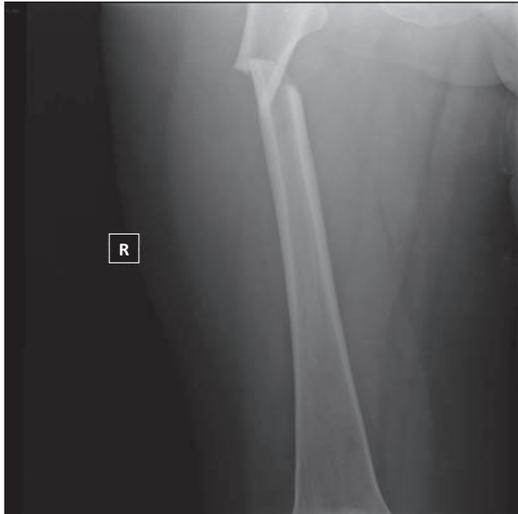


Figure 1. Plain radiograph shows transverse oblique fracture in the proximal shaft of right femur.

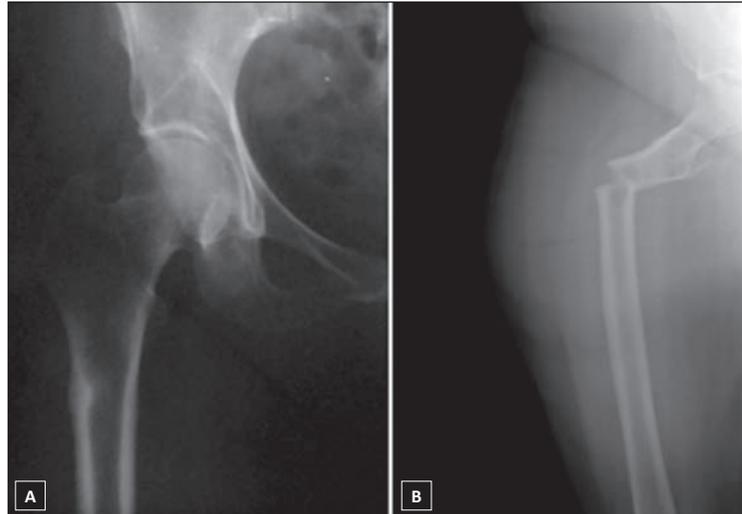


Figure 2. (A) Plain radiograph shows cortical hypertrophy in the right subtrochanteric region. (B) Right femur with subtrochanteric fracture at the same site in which bone hypertrophy was seen before.

The association of subtrochanteric femur fractures with the long-term use of bisphosphonates has been recently recognized (1-4). Herein, we present the imaging studies of two patients that suffered these rare events. The first patient is a 68-year-old Hispanic woman with long-standing rheumatoid arthritis (RA) and osteoporosis treated with low-dose prednisone, sulfasalazine, hydroxychloroquine, alendronate (for 10 years), calcium and vitamin D supplements who had a non traumatic right femur fracture when she was getting out of her vehicle (Figure 1). Eight months prior to the event, she developed an insidious pain and weakness of the affected limb. The second patient is a 68-year-old Hispanic woman with long-standing RA and osteoporosis treated with methotrexate, alendronate, calcium and vitamin D supplements who presented a dull and persistent pain in the right thigh. Radiographs of the right hip showed cortical hypertrophy of the subtrochanteric/diaphyseal area (Figure 2A). One year later, she had a spontaneous subtrochanteric fracture of the right femur (Figure 2B). Bisphosphonates-induced fractures are usually spontaneous or caused by low-impact trauma. They are frequently localized in the femoral shaft or subtrochanteric area (1). Most patients have simple transverse or oblique fracture, unicortical beak, and diffuse cortical thickening on radiographic studies (2, 3). Anterior or lateral thigh pain is a common symptom that may precede

the fracture (3, 4). A possible pathogenic mechanism for these fractures could be related to the long-term effect of bisphosphonates resulting in suppression of bone turnover, and consequently compromising the bone quality (4). Physicians should be aware of the long-term adverse effects of bisphosphonates, although the risk of these atypical fractures is very small compared to the benefits of these agents for the treatment of osteoporosis.

References

1. Lenart BA, Neviaser AS, Lyman S, et al. Association of low-energy femoral fractures with prolonged bisphosphonate use: a case control study. *Osteoporosis Int* 2009;20:1353-1362.
2. Kwek EB, Goh SK, Koh JS, Png MA, Howe TS. An emerging pattern of subtrochanteric stress fractures: a long-term complication of alendronate therapy? *Int J Care Injured* 2008;39:224-231.
3. Neviaser AS, Lane JM, Lenart BA, Edobor-Usula F, Lorich DG. Low energy femoral shaft fractures associated with alendronate use. *J Orthop Trauma* 2008;22:346-350.
4. Odvina CV, Levy S, Rao S, Zerwekh JE, Rao DS. Unusual mid-shaft fractures during long-term bisphosphonate therapy. *Clin Endocrinol* 2010;72:161-168.

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