Osteonecrosis of the humeral head

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Received: 22 June 2011 / Revised: 11 August 2011 / Accepted: 17 August 2011 / Published online: 30 August 2011
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A 20-year-old man with a 5-year history of acute lymphoblastic leukemia (ALL) was admitted to our hospital for severe pains in his bilateral groin and right shoulder. He had experienced these pains for 16 months. He underwent allogeneic stem cell transplantation in his second complete remission 13 months prior to hospitalization. He had received corticosteroid therapy both for ALL and for graft versus host disease for a long period (more than 13 months in total), and the total dose of corticosteroids exceeded 20 g in prednisolone equivalent at the time of the hospitalization. X-ray films of the hip joints revealed collapse of bilateral femoral heads. In addition, a subarticular radiolucent line (“crescent sign”) was also observed in an X-ray film of the right shoulder joint (Fig. 1). He was diagnosed with osteonecrosis of the femoral and humeral heads. A magnetic resonance image (MRI) showed a geographical high-intensity area spread to diaphysis, suggesting necrotic changes affecting an extensive area (Fig. 2). He was treated with narcotics for pain. Corticosteroids were reduced as rapidly as possible and

maintained at a low dose to treat his adrenal insufficiency. However, his range of motion gradually decreased. Long-term corticosteroid use has been reported to be a risk factor for osteonecrosis of the humeral head, as well as the hip joint. The pathogenesis of steroid-induced osteonecrosis remains unclear, but ischemia from lipocyte hypertrophy or fat embolism has been postulated. The interval between corticosteroid administration and onset of symptom has been reported as between 6 and 18 months. Although the humeral head is the second most commonly affected site in osteonecrosis, it is often unrecognized, and its initial symptoms are often nonspecific. Removal of risk factors can reduce the risk of osteonecrosis to other joints. Thus,

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Fig. 1 X-ray film of right shoulder showing subarticular radiolucent line (arrows)

Fig. 2 MRI of right shoulder showing geographical high-intensity area spread to diaphysis (*arrows*) on T2-weighted image

the awareness of this complication is very important and imaging studies, including MRI, should be considered in corticosteroid-treated patients with shoulder pain.

Conflict of interest The authors declare no competing financial interests.