The Radiographic Scars of Glucocorticoid Treatment in Systemic Lupus Erythematosus

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A 22-year-old African American woman presented with worsening left hip pain precluding ambulation. Seven years earlier, systemic lupus erythematosus (SLE) was diagnosed in the setting of fatigue, malar rash, polyarthritis, and photosensitivity, with antinuclear antibody, ds-DNA, Smith, ribonucleoprotein, Ro, and La seropositivity. Subsequent manifestations included aseptic meningitis, cutaneous vasculitis, and diffuse proliferative glomerulonephritis. Therapy included cyclophosphamide, prednisone, mycophenolate mofetil, and hydroxychloroquine. Average prednisone dose over 4 years was 20 mg daily.

Two years before presentation, she first developed bilateral hip pain. Radiographs showed flattening of the right femoral head (arrow, Figure 1A), which was preserved on the left side. Magnetic resonance imaging (MRI) revealed bilateral avascular necrosis (AVN) or osteonecrosis. Right total hip replacement and left core decompression surgery were performed, with substantial symptomatic and functional improvement. Nevertheless, 1 year postoperatively, she developed recurrent left hip pain and new left (greater than right) shoulder pain. A pelvis radiograph showed a right total arthroplasty, left core decompression (arrowheads, Figure 1B), and new sclerosis with deformity of the left femoral head (arrow, Figure 1B). Pelvis and shoulder MRI scans showed characteristic "double-line sign"[1] of the left femoral head (arrow, Figure 1C) and left humeral head (arrow, Figure 1D), respectively. The "double-line sign" is observed on T2-weighted MR images in AVN and represents hypervascular tissue in the necrotic region surrounding a fibrosed and sclerotic zone.

This instructive case illustrates the clinical and radiographic course of a young woman with SLE, and the disease and treatment-related complications. AVN results from bone ischemia, an unintended consequence of glucocorticoid therapy[2]. Patients with SLE, especially those with higher disease activity, are susceptible to develop osteonecrosis[3]. The most significant risk factor is treatment with ≥ 20 mg daily prednisone[4]. It is essential to recognize possible steroid-associated toxicity, including the progressive musculoskeletal damage illustrated in this case.

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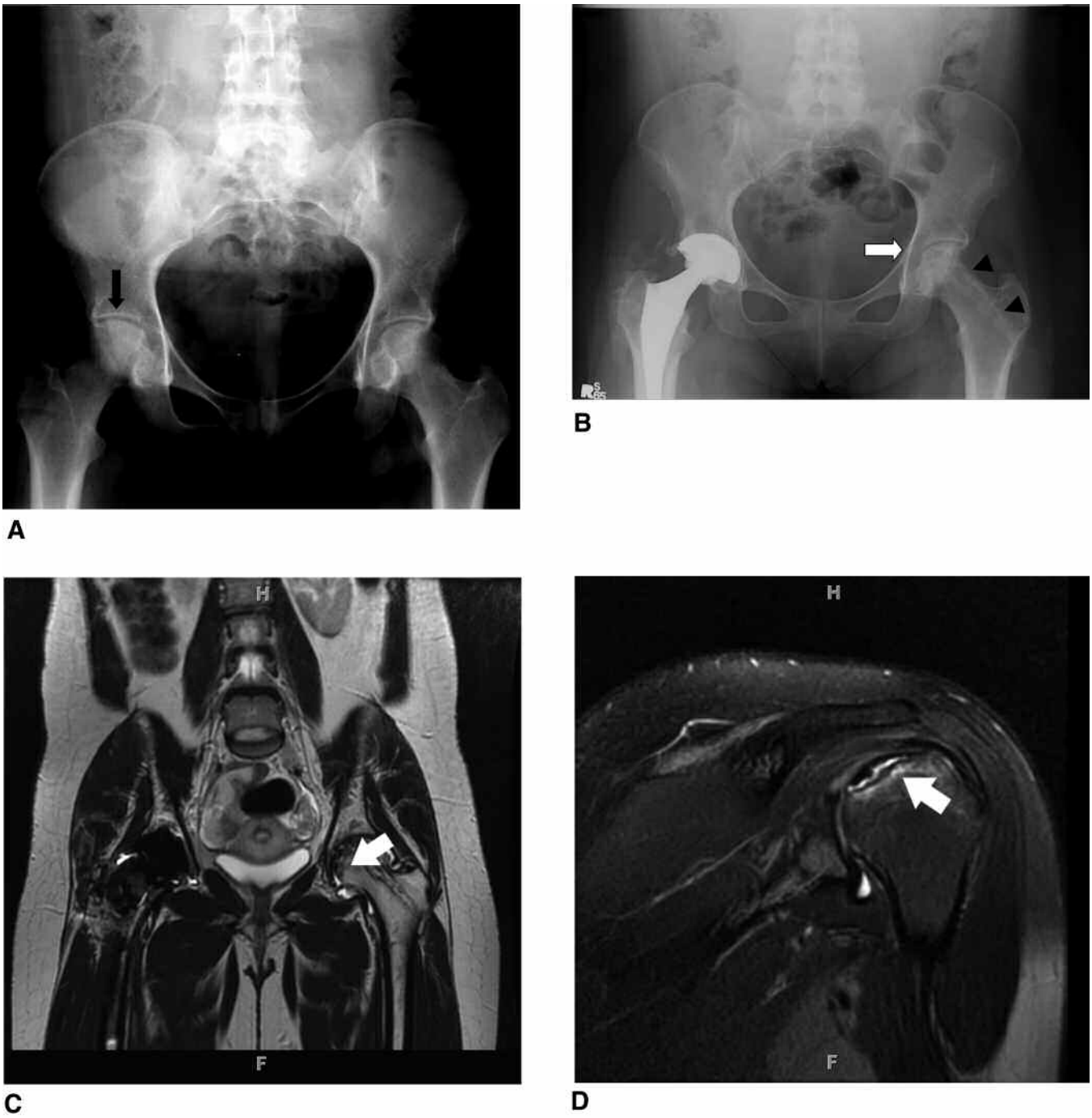

Figure 1. A. Radiograph shows flattening of the right femoral head (arrow). B. Pelvis radiograph shows a right total arthroplasty, left core decompression (arrowheads), and new sclerosis with deformity of the left femoral head (arrow). Pelvis and shoulder MRI scans show characteristic "double-line sign" of the left femoral head (arrow, C) and left humeral head (arrow, D) that represents hypervascular tissue in the necrotic region surrounding a fibrosed and sclerotic zone in AVN.