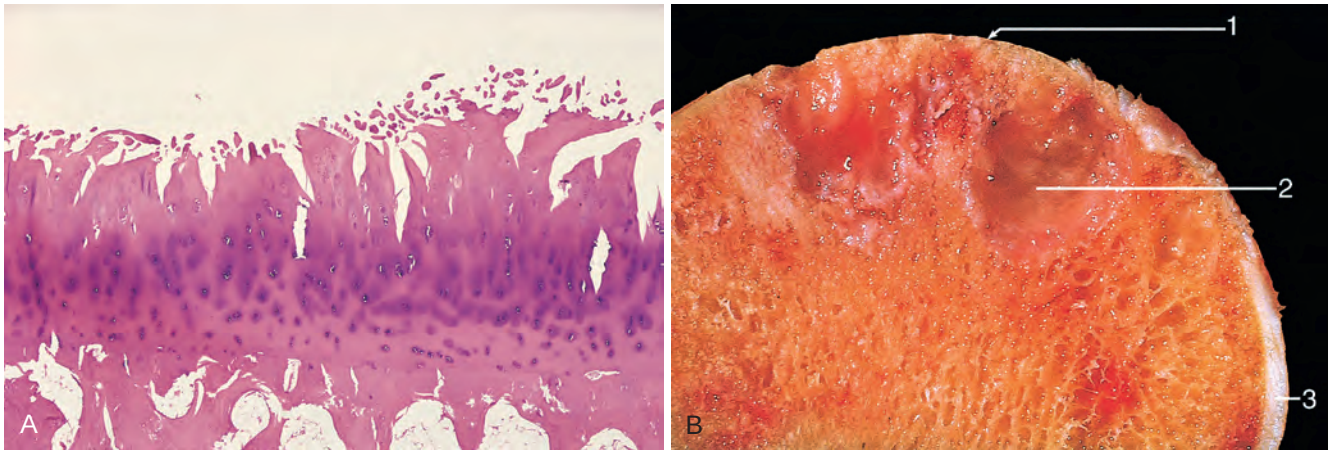

Figure 26-39 Osteoarthritis. **A,** Histologic demonstration of the characteristic fibrillation of the articular cartilage. **B,** Eburnated articular surface exposing subchondral bone (1), subchondral cyst (2) and residual articular cartilage (3).

spasms, muscle atrophy, and neurologic deficits. Typically, only one or a few joints are involved except in the uncommon generalized variant. The joints commonly involved include the hips (Fig. 26-40), knees, lower lumbar and cervical vertebrae, proximal and distal interphalangeal joints of the fingers, first carpometacarpal joints, and first tarsometatarsal joints. *Heberden nodes*, prominent osteophytes at the distal interphalangeal joints, are common in women (but not men). The wrists, elbows, and shoulders are usually spared. With time, joint deformity can occur, but unlike rheumatoid arthritis (discussed next), fusion does not take place (Fig. 26-41). The level of disease severity detected radiographically, however, does not correlate well with pain and disability. There are still no satisfactory means of preventing primary osteoarthritis, and there are no effective methods of halting its progression. Therapy includes management of pain, activity modification and, for severe cases, arthroplasty.

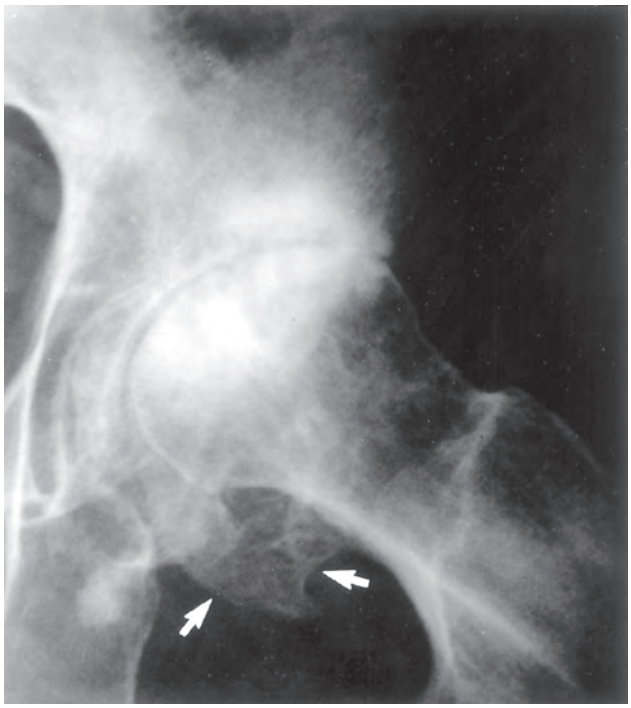

Figure 26-40 Severe osteoarthritis of the hip. The joint space is narrowed, and there is subchondral sclerosis with scattered oval radiolucent cysts and peripheral osteophyte lipping *(arrows)*.

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a chronic inflammatory disorder of autoimmune origin that may affect many tissues and organs but principally attacks the joints, producing a nonsuppurative proliferative and inflammatory synovitis. RA often progresses to destruction of the articular cartilage and ankylosis of the joints. Extraarticular lesions may involve skin, heart, blood vessels and lungs and, therefore, the clinical manifestations can resemble other systemic autoimmune disorders such as systemic lupus erythematosus or scleroderma. The prevalence in the United States is approximately 1%. The disease peaks in the second to fourth decades and is three times more common in women than men.

Pathogenesis. As in other autoimmune diseases, genetic predisposition and environmental factors contribute to the development, progression, and chronicity of the disease. The pathologic changes are mediated by antibodies against self-antigens and cytokine-mediated inflammation, predominantly secreted by CD4+ T-cells (Fig. 26-42).

CD4+ T helper (T_H) cells may initiate the autoimmune response in RA by reacting with an arthritogenic agent, perhaps microbial or a self-antigen. The T cells produce cytokines that stimulate other inflammatory cells to effect tissue injury. Although a large number of cytokines can be isolated from inflamed joints, the most important ones include:

- IFN-γ from T_H1 cells activates macrophages and resident synovial cells.
- IL-17 from T_H17 cells recruits neutrophils and monocytes.
- TNF and IL-1 from macrophages stimulates resident synovial cells to secrete proteases that destroy hyaline cartilage.
- RANKL expressed on activated T cells stimulates bone resorption.