A 29-year-old African American woman presented with pain and swelling of the hand and wrist with a low-grade fever. She was on immunosuppressive therapy for systemic lupus erythematosus. Plain radiographs (Figure 1) revealed inflammatory arthritis related to lupus, with subluxations at the metacarpophalangeal joints and radial deviation of the fingers. Classically, the joint space was preserved, osseous erosions were absent, and bone density was near normal.

Magnetic resonance (MR) images (Figures 2–8) showed a large effusion of the flexor tendon sheaths of both the hand and wrist with thick, smoothly margimated peripheral enhancement. Inflammatory debris and rice bodies can be seen within the large effusion.

What is the most likely diagnosis?
DISCUSSION

The incidence of tuberculosis has been increasing steadily since the early 1990s, predominantly in poverty-stricken inner-city areas and in the immunocompromised. In 2004, the incidence of tuberculosis in the USA was approximately 4.9 active cases in 100,000. *Mycobacterium tuberculosis* remains a top-10 cause of death worldwide, with greater than 2 billion active cases occurring mostly in developing countries.

Tuberculosis is spread primarily by inhalation of infected droplets, resulting in pulmonary disease, although rare cases of gastrointestinal and transdermal spread have been reported. Approximately 1% to 3% of patients infected with tuberculosis demonstrate skeletal involvement, most often manifested as spondylitis, peripheral arthritis, or osteomyelitis. Approximately 50% of patients with musculoskeletal tuberculosis have concomitant pulmonary disease. Tuberculous tenosynovitis is a rare complication of the disease, typically resulting from direct extension from adjacent bone or joint infection, although hematogenous spread from a distant primary focus is also possible.

A well-known complication of tuberculous arthritis and tenosynovitis is the production of a “cold” abscess. The abscess is termed “cold” due to the lack of production of proteolytic enzymes, which results in cartilage destruction. Characteristic features of tuberculous arthritis include osseous erosions in the absence of subchondral marrow signal abnormality. The erosions result from profuse pannus formation and granulation tissue. Extra-articular extension of the infection results in a soft tissue mass that shows smooth margins with thin, homogeneous enhancement.

The onset of tuberculous tenosynovitis is gradual, with progressive swelling, pain, and diminished range of motion. Tendon sheaths of the hand and wrist are most frequently involved. The disease takes on three stages as it progresses: the earliest hygromatous form, a serofibrinous form, and a fungoid form, with considerable overlap of the three stages at presentation. The hygromatous form usually appears as a serous exudate indicating a nonspecific tenosynovitis is likely to be the only finding. The serofibrinous stage results in thickened synovium with low signal intensity material within the synovial fluid on T2 images. Tendon involvement manifested by tendon thinning, tethering, or disruption may be seen during this stage. Extension beyond the tendon sheath with enhancing soft tissue mass formation is characteristic of the fungoid stage.

The differential diagnosis for tuberculous tenosynovitis includes rheumatoid arthritis, pyogenic infection, gouty arthritis, giant cell tumor of the tendon sheath, and fungal tenosynovitis. Diagnosis of articular involvement depends on the isolation of the organism from synovial fluid or synovial biopsy. Prompt diagnosis is critical to preserve joint function and anatomy.

**General references**