A rare manifestation of gout at the wrist—a case report

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A 34-year-old right-handed gravedigger, with no known past medical history, had had chronic pain in his left wrist for 4 years, intermittent locking and dysesthesias affecting the thumb, index and middle fingers, but no acute episodes of pain. The pain, located over the dorsal aspect of the scaphoid, was not associated with swelling of the wrist. We found a moderate reduction in dorsal flexion and pronation. Tinel and Phalen signs were absent, and there were no objective signs of sensory or motor loss affecting the median nerve. Radiographs and CT scan revealed small cysts in the proximal pole of the scaphoid and lunate, and small calcifications in the radioscapholunate ligament (Figure 1). Scintigraphy showed moderate isotope uptake at the level of the scaphoid, and electroconduction studies a slight reduction in velocities along the median nerve at the carpal tunnel. These findings were initially interpreted as indicating scaphoid and lunate osteonecrosis, with a mild carpal tunnel syndrome, and the patient was started on splinting and nonsteroidal antiinflammatory medications. A diagnostic arthroscopy was later done because of persistent pain. A large (12 × 4 mm) white, soft, loose body, seen in the radiocarpal joint was removed with a small arthroscopic forceps (Figures 2 and 3). Other white deposits were found in the synovium and on the hyaline cartilage in the radiocarpal and midcarpal joints (Figure 4). The scapholunate ligament showed white degeneration, was ruptured, and its remnants were shaved. On histological and crystallographic examinations, deposits of urate crystals were found. The loose fragment corresponded to a large piece of synovium infiltrated by tophi. Fibrosis with partial cartilagenous transformation (chondroid metaplasia) was seen in the remnants of the scapholunate membrane. No urate deposits were found in this poorly vascularized tissue. Uricemia on the first postoperative day was higher than normal (10 mg/100 mL - normal: 2–7.5 mg/100 mL). The patient was given allopurinol and colchicine and the pain and dysesthesias had become less severe 6 months after surgery, and he had no recurrence of wrist locking.

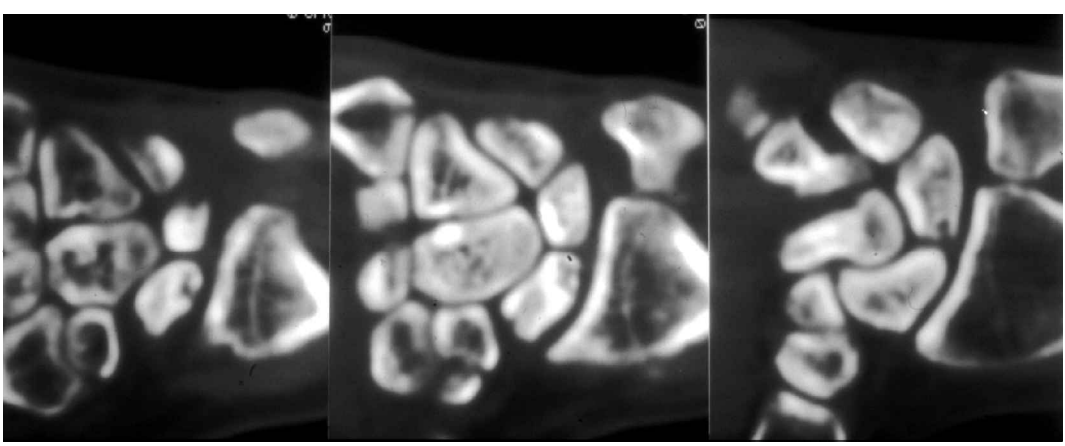

Figure 1. Preoperative CT of wrist showing small cysts in the proximal pole of the scaphoid and in the lunate.

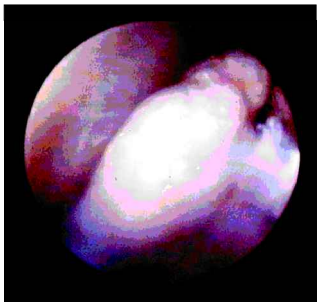

Figure 2. Radiocarpal arthroscopy showing a white loose body found to be a large piece of synovium infiltrated by tophi.

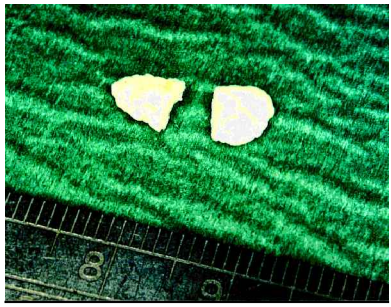

Figure 3. The loose body removed during arthroscopy.

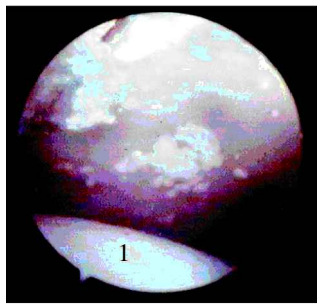

Figure 4. Midcarpal arthroscopy, showing white deposits in the synovium and hyaline cartilage (1 = head of the capitate).

Discussion

Gout is a metabolic disease affecting 0.3% of the population in Europe and North America. It is characterized by an elevated serum urate concentration, recurrent attacks of arthritis and monosodium urate crystals in synovial fluids. If the hyperuricemia is left untreated for many years, painless subcutaneous or bursal deposits of aggregated crystals of monosodium urate or tophi form, and the patient develops nephropathy and urolithiasis. The essential lesion of tophaceous gout is the deposition of crystals in cartilage, synovial membrane, periosteum, subchondral bone, bone marrow, tendons, ligaments, bursae, subcutaneous fat and skin (Grahame and Scott 1970, Nishioka and Mikanaga 1980, Nakayama et al. 1984, Resnick and Niwayama 1995). In the upper extremity, tophi are usually located in the subcutaneous tissues, more commonly around the elbow and proximal interphalangeal joints. Tophaceous deposits in the tendon's synovium may cause carpal tunnel syndrome, tendon entrapment or rupture.

The characteristic radiographic lesions of gout are cystic "punched out" subchondral lucencies at the joint margins, which frequently affect the finger joints in advanced cases (Jacoulet 1994, Resnick and Niwayama 1995, Watt and Middlemiss 1975). These lesions correspond to radiotransparent articular tophi. Associated fine calcifications are best seen on CT scan. The joint space is usually well preserved until late in the course of the disease when joint destruction and ankylosis develop (Case report of the Massachussetts General Hospital 1970, Watt and Middlemiss 1975, Resnick and Niwayama 1995).

Isolated involvement of the wrist, as in our case, is uncommon. The initial radiographic lesions, usually asymmetrical, are characterized by thickening of the soft tissues and large erosions, most frequently located in the ulnar dome, carpal bones, and the base of the metacarpals. The articular spaces are usually preserved for a long time, before destruction is caused by crystal deposits in the hyaline cartilage and synovial membrane, which lead to degeneration and ankylosis (Ludwig et al. 1938, Hughes et al. 1968, Case report of the Massachussetts General Hospital 1970, Larmon 1970, Watt and Middlemiss 1975, Good and Rapp 1978, Bardin and Fritz 1992, Cortet et al. 1994, Resnick et al. 1995). The initial carpal lesions may correspond to atraumatic aseptic osteonecrosis, initiated by osseous gouty deposits. This has been reported in the medulla of long bones in the hip (Castagnoli et al. 1981, Hunder et al. 1968, Jacobs 1978, Schabel et al. 1978), talus (Miskew and Goldflies 1980), lunate (Castagnoli et al. 1981), and in the capitate (Desmet et al. 1993). It seems unlikely that the bony lesions seen in the scaphoid and lunate bones in our case were due to osteonecrosis, although no biopsy was done to support this diagnosis. In some cases, the intraosseous calcification of urate deposits may have been incorrectly interpreted as sowing ischemic necrosis (Resnick and Niwayama 1995).

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