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A Rheumatoid Nodule on the Extensor Tendon of the Wrist

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Rheumatoid nodules have been high specificity in the diagnosis of rheumatoid arthritis. This presence is associated with more severe, seropositive erosive disease. Nodules usually develop at sites subject to shear stress, such as the subcutaneous tissue over the extensor aspects of the elbow regions. Although nodules have rarely been reported within the tenosynovium of the flexor profundus tendons, as far as we know they have not been observed previously in the tenosynovium of the extensor tendon of the wrist. We are reporting a case who had a large rheumatoid nodule originated from the extensor tendon. Ultrasonic tomographies, MR images and tenography were all useful to make the diagnosis. Finally we emphasized that one must consider a diagnosis of a rheumatoid nodule in the patient who has rheumatoid arthritis and has a soft tissue mass that is near a joint.

Key Words

Rheumatoid nodule,
Extensor tendon,
Wrist Joint,
MR images,
Ultrasonic tomography.

Introduction

Although subcutaneous rheumatoid nodules are frequently found in patients who have extensive polyarthritis and strongly positive results of serological test¹⁻⁴, rheumatoid nodules originated from flexor or extensor tendons of the wrist are rare⁵⁻⁸. Also, although rheumatoid nodules of the flexor tendons in the palm

causing triggering at the fibrous flexor sheath have been demonstrated⁵⁻⁷, as far as we know they have not been observed previously on the extensor tendon of the wrist. We are reporting the case of a patient who had a large rheumatoid nodule originated from extensor tendon of the wrist.

Case Report

A seventy-eight-year-old man was seen in the orthopaedic clinic on August 15, 1998 with a two months history of pain, swelling and redness of the dorsal aspect of the right wrist joint. With increased movement of the wrist, the pain worsened and swelling was noted. There was no history of trauma in the right wrist joint. Limitation of range of motion of the right wrist joint was noted; ie, dorsi flexion was limited only 30° (70° in left wrist).

On physical examination there was no

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arthritic region except right wrist. Palpation of the dorsal aspect of the wrist revealed tenderness over a large soft mass (2.5 cm × 2.0 cm × 1.2 cm). This tumor like mass was movable with the extensor tendon of the ring finger.

Laboratory examinations included CRP 0.6 mg/dl, GOT 23 IU/l, GPT 16 IU/l, BUN 17 mg/dl, Hg 13.5 mg/dl, total protein 6.85 g/dl, erythrocyte sedimentation rate 25 mm/hr. (Westergren), normal haemograms and rheumatoid factor was positive, although the patient has not been suffering from polyarthritis.

Roentgenograms of the right wrist showed slight narrowing of the joint space, however it was not shown any bony erosion around the wrist joint and metacarpophalangeal and interphalangeal joints which is characteristic in rheumatoid arthritis (Figure 1). In addition, a soft tissue mass was seen in lateral



Figure 1. A roentgenogram of right hand.

roentgenogram (Figure 2). Ultrasonic tomogram showed solid a soft tissue mass originating from extensor tendon (Figure 3). Smooth peripheral margin of the mass was clearly demarcated. Magnetic resonance imaging (MRI) of the right wrist showed a soft tissue mass at the dorsal aspect of the radius which seemed to be originating from the extensor tendon (Figure 4). MRI appearance of this mass demonstrated low signal intensity on a T1-weighted and slightly high signal intensity on a T2-weighted image.

During tenography of the extensor tendon, using Urografin, there was prompt extravasation of injected contrast medium into the area of a soft tissue mass demonstrated by MRI (Figure 5). To prevent a pathological rupture of the extensor tendon, resection of the soft tissue mass was carried out. During the procedure, we found that tenosynovium of the extensor digitorum was thickened, and villous. A large mass was resected and tenosynovectomy was carried out (Figure 6).

Histological Findings

The synovial membrane of the extensor tendon had the typical thickening and marked perivascular infiltrations that are characteristic of the active stage of chronic rheumatoid arthritis⁹. The soft



Figure 2. Soft tissue mass (arrows) was seen in lateral view of the right hand.

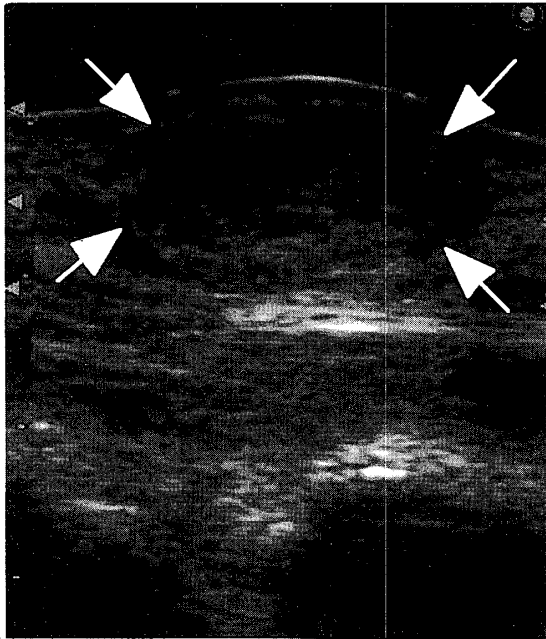


Figure 3. Ultrasonic tomogram of the right hand showed solid soft tissue mass (arrows).



Figure 5. A tenography of the extensor tendon.

tissue mass contained a central area of fibrinoid degeneration that was surrounded by a zone of histiocytic cells and fibroblasts in palisade formation (Figure 7). This histologic feature is compatible with the rheumatoid nodule¹⁾.

The outermost layer consisted of granulation tissue in which chronic inflammatory cells were present.

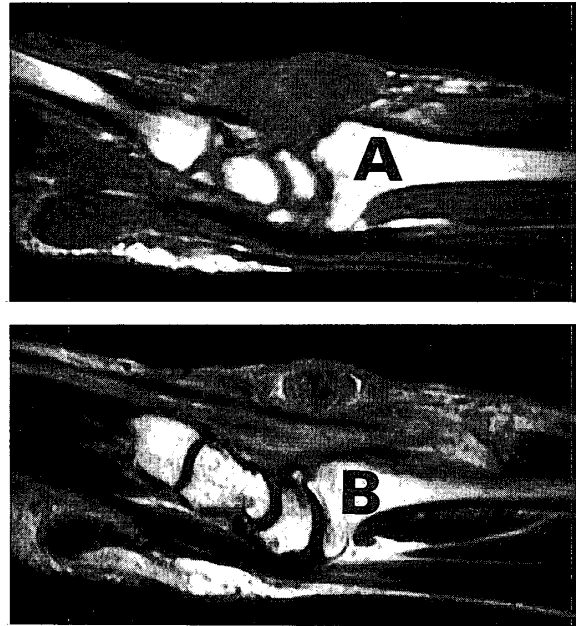


Figure 4. Magnetic resonance imaging of the right wrist. A (T1-weighted image), B (T2-weighted image).

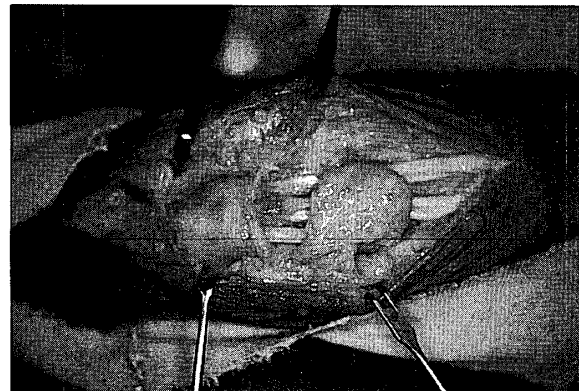


Figure 6. An appearance of the soft tissue mass during surgery.

Discussion

Subcutaneous nodules develop in about 20 per cent of patients who have rheumatoid arthritis, usually in those who have severe disease¹⁰⁾, but they are otherwise uncommon. When the lesions develop in the juxta-articular and periarticular tissue of a joint, or in a bursa, a tendon sheath, or even in the periosteum²⁾, they usually are part of a

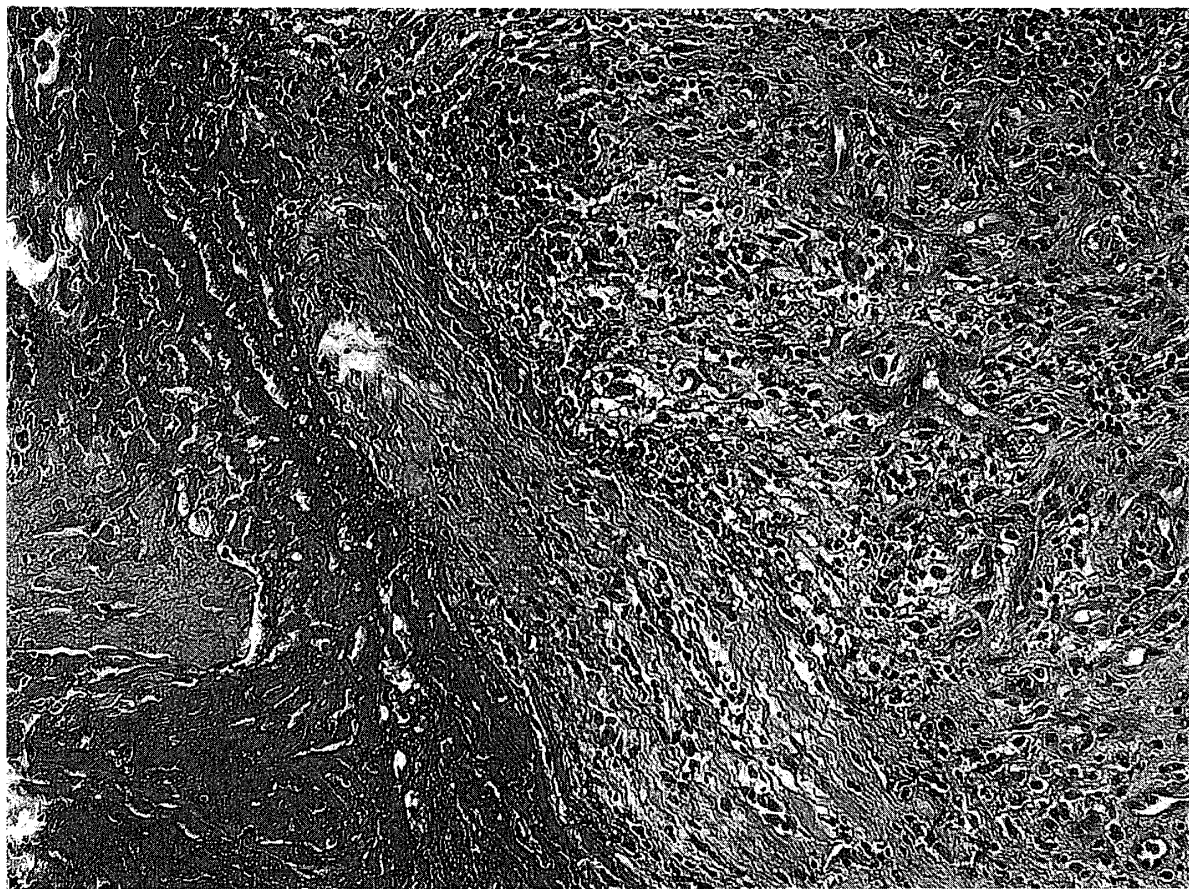


Figure 7. Histologic feature of the soft tissue mass.

more generalized lesion in the synovial membrane or the connective tissue. In our patient, the typical rheumatoid nodule, characterized by central fibrinoid necrosis surrounded by histiocytic cells and fibroblasts in palisade formation, had been originated from extensor tendon of the wrist joint.

Of interest, our patient did not have polyarthritis, although rheumatoid nodules are found most frequently in patients who have extensive polyarthritis and who have a high serum titer for rheumatoid factor^{2,11,12}. Since rheumatoid nodules can develop in any juxta-articular or peri-articular tissue²⁻⁴, we believe that the nodule in our patient originated in the tenosynovial membrane of the extensor tendon. Nodular lesions of the tendon

most commonly affect the profundus tendon in the palm causing triggering at the fibrous flexor sheath⁶.

After resection of the soft tissue mass, the patient developed polyarthritis. Of interest also, an acceleration of rheumatoid arthritis in methotrexate-treated rheumatoid arthritis have been reported in literature^{13,14}, although we did not use methotrexate to our patient.

We resected the soft tissue mass originated from extensor tendon before the rupture of the tendon, because the dorsum of the wrist is most vulnerable localization for the rupture of the extensor tendons. When the tenosynovitis does not respond to the conservative treatment, dorsal tenosynovectomy with resection of nodule should be considered. Dorfman et

al.¹²⁾ showed that nodules can erode adjacent bone without prompt surgical intervention, and the tendons may rupture eventually. Therefore, in a patient who has rheumatoid arthritis and has a soft tissue mass that is near a joint or invades it, one must consider a diagnosis of a rheumatoid nodule.

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