Rupture of the sheath of the extensor carpi ulnaris tendon in a patient affected by rheumatoid arthritis

Chandra Bortolotto¹ · Ferdinando Draghi¹

Received: 6 December 2015 / Accepted: 14 December 2015 / Published online: 30 December 2015
© Società Italiana di Ultrasonologia in Medicina e Biologia (SIUMB) 2015

Rheumatoid arthritis is basically a disease of the synovia [1] generally located in the areas where the synovium is best developed [2]. The wrist is frequently involved in rheumatoid arthritis and so are the sheaths of the hand and wrist tendons, particularly those of the extensor carpi ulnaris [3].

The extensor carpi ulnaris has two heads attached to the radius and to the ulna. The distal tendon runs in the sixth osseo-fibrous extensor's tunnel in close contact with the ulna—where it is stabilized by a retinaculum—and then attached to the base of the fifth metacarpal. The sheath of the sixth osseo-fibrous tunnel extends from the head of the ulna at the base of the fifth metacarpal. Variants have not been described [3].

Synovitis affects the tendons, causing changes to their ultrastructure, and may lead to rupture [1]. Tenosynovitis persisting for more than 6 months has been found to be a risk factor for the rupture of the extensor tendons of the wrist [4]. Tendons ruptures due to synovial infiltration are common [5], and prevention by means of surgical tenosynovectomy before tendon rupture occurs has been proposed [4]. Spontaneous rupture of the sheath, however, is not reported to our knowledge.

We would like to report the case of an 87-year-old patient, suffering from rheumatoid arthritis which

underwent ultrasound examination for the presence of a lesion of about 3 cm suddenly appeared on the ulnar side of the dorsal wrist. The patient had no injuries, the lesion was not painful and it presented an elastic consistency. A 'cyst' of the wrist was the clinical diagnosis.

Sonography was performed with a linear multi-frequency probe and showed tenosynovitis of the extensor carpi ulnaris; the synovial sheath was found to be interrupted at about 2 cm from the insertion and communicating with a voluminous collection (approximately 3 cm in diameter) with internal echoes, which corresponded to the clinical lesion at the dorsal side of the wrist (Fig. 1, video 1).

A spontaneous rupture of the synovial sheath of the extensor carpi ulnaris was diagnosed. MRI was not performed because of the patient's pacemaker. Given the age and condition of the patient, rheumatologists opted for non-surgical therapy consisting in emptying the collection (made of synovial fluid and blood), corticosteroid injection under ultrasound guidance, and bandage of the wrist. The therapy showed good results. The presence of synovial fluid and blood confirmed the sonographic diagnosis.

The term 'cyst' in relation to the hand and wrist is used for a great variety of lesions containing fluids [6]: ganglion or ganglion cyst or mucoid cyst, joint recess, loculated synovitis or tenosynovitis or synovial cyst, bursitis [7], post-traumatic hematomas [8]. They represent about 60 % of hand masses.

Ganglions are the most common lesion, they usually occur between the second and fourth decades of life, and are generally located in the dorsal wrist [9, 10]. Ganglions consist of gelatinous material enveloped in a fibrous capsule. They are generally adherent to either an articular capsule, or a synovial sheath, a pulley, a retinaculum. The ganglions are a firm, poorly compressible nodule, small to moderate in size and their aetiology is unknown.

Electronic supplementary material The online version of this article (doi:10.1007/s40477-015-0190-1) contains supplementary material, which is available to authorized users.

✉ Chandra Bortolotto
chandra.bortolotto@gmail.com

¹ Radiology Department, Istituto di Radiologia, Fondazione IRCCS Policlinico San Matteo, Piazzale Golgi, 27100 Pavia, Italy

Fig. 1 Spontaneous rupture of extensor ulnaris carpi sheath. Scheme (a) UI: ulna, ext cu: extensor ulnaris carpi, star: effusion. Sonography shows tenosynovitis of the extensor carpi ulnaris (Ext cu) (b, c, d); the synovial sheath is interrupted at about 2 cm from the insertion (c) (arrows) and communicates with a voluminous collection with internal echoes (star)

Normal articular recesses are found in expected locations—such as the pisotriquetral joint—they are not painful and they are compressible.

Focal tenosynovitis of the tendon sheath are loculated fluid collections attached to tendons; as they move during digital motion they follow the tendons slide.

Serous bursae, whose presence is not constant, are found both between the tendon of the flexor carpi ulnaris and pisiform [8], and in the site where the musculotendinous junctions of the extensors muscles of the first compartment intersect with the tendons of the second extensor compartment. The causes of bursitis are similar to those of the other bursae, i.e. largely microtrauma and inflammatory diseases.

Haematomas are post-traumatic, well-defined masses generally located in the subcutaneous fat layer at the site of trauma [8, 10].

All these lesions are well circumscribed and hypo-anechoic on ultrasound, with posterior acoustic enhancement,

often presenting thin internal septations as well as fine internal echoes. Doppler sonography can exclude vascular malformations showing a pseudocystic appearance [9].

‘Cysts’ are often easily diagnosed through physical examination, however they may occasionally necessitate imaging—such as in the case illustrated—thus demonstrating that ultrasound is of real value in the diagnosis of fluid-filled lesions of the hand and the wrist, including those that are rare and unexpected.

Compliance with ethical standards

Conflict of interests All the authors indicate that they do not have a conflict of interest to disclose.

Ethical standards All human studies have been approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the Helsinki Declaration of 1975 and its late amendments. Additional informed consent was obtained from all patients for which identifying information is not included in this article.

References

1. Simmen BR, Gschwend N (1995) Tendon diseases in chronic rheumatoid arthritis. *Orthopade* 24(3):224–236
2. Tubiana R (1986) Rheumatic lesions of the carpus. *Orthopade* 15(2):135–149
3. Draghi F, Bortolotto C, Draghi AG, Gregoli B (2015) Musculoskeletal sonography for evaluation of anatomic variations of extensor tendon synovial sheaths in the wrist. *J Ultrasound Med* 34(8):1445–1452
4. Ryu J, Saito S, Honda T, Yamamoto K (1998) Risk factors and prophylactic tenosynovectomy for extensor tendon ruptures in the rheumatoid hand. *J Hand Surg Br* 23(5):658–661
5. Williamson SC, Feldon P (1995) Extensor tendon ruptures in rheumatoid arthritis. *Hand Clin* 11(3):449–459
6. Freire V, Guérini H, Campagna R, Moutounet L, Dumontier C, Feydy A, Drapé JL (2012) Imaging of hand and wrist cysts: a clinical approach. *AJR Am J Roentgenol* 199(5):W618–W628. doi:[10.2214/AJR.11.8087](https://doi.org/10.2214/AJR.11.8087)
7. Draghi F, Gregoli B, Bortolotto C (2014) Pisiform bursitis: a forgotten pathology. *J Clin Ultrasound* 42(9):560–561
8. Draghi F, Bianchi S, Gervasio A, Fachinetti C, Gaignot C, De Gautard R (2006) L'ecografia nella valutazione della patologia traumatica del polso e della mano. *JUS* 9(3):218–226
9. Nahra ME, Bucchieri JS (2004) Ganglion cysts and other tumor related conditions of the hand and wrist. *Hand Clin* 20(3):249–260
10. Lee CH1, Tandon A. Focal hand lesions: review and radiological approach. *Insights Imaging*. 2014;5(3):301–19. doi: [10.1007/s13244-014-0334-4](https://doi.org/10.1007/s13244-014-0334-4). Epub 2014 May 17