

Is the intersection syndrome is an occupational disease?

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Summary

The intersection syndrome, described since the 19th century, is an uncommon disorder associated with the abductor pollicis longus and extensor pollicis brevis bellies (first dorsal compartment) rubbing against the extensor carpi radialis longus and brevis tendons (second dorsal compartment). Overuse occurred in occupational setting was barely described although it could lead to compensation by the French health insurance system. We reported a case of an intersection syndrome in a 58 year-old man who recently became a supermarket cashier. This job involved repeated extension and flexion of the wrist. The disorders arose after a minimal traumatism. Since it is recognized as an occupational disease, compensated ending of the activity causing the disorder could have been obtained.

Key words: Musculoskeletal disorder, intersection syndrome, occupational disease

Introduction

Described since the 19th century, intersection syndrome is an uncommon disease characterized by pain and swelling in the area of 7 cm of the distal radius. The syndrome corresponds to a noninfectious inflammatory process in the second extensor compartment tendon of the forearm. In some cases, occupational aetiology could be evoked considering the possible overuse of the extensor of the wrist at work, as is the case in this report.

Case report

A 58 year-old right-handed man, was sent by his occupation physician to our occupational health unit for a musculoskeletal disorder. This man used to be an administrative worker and a drawer in a computer company, then an independent worker for 8 years. Because of financial problems, he became a supermarket cashier in 2003. In 2004, he had a moderate wrist traumatism caused by holding a pack of bottle of water. Since then, he had suffered from pain in the postero-lateral side of the right wrist. The ultrasonography showed a large swelling zone in the brachio-radialis muscle and the dorsal compartment of the right wrist. A hand surgeon diagnosed an intersection syndrome and gave oral nonsteroidal anti-inflammatory medication and three weeks cessation of exposure. In front of resistant pain, wrist immobilization and cortisone injection had been performed in the swelling zone. Pain was successfully treated but relapsed with exposure. Five months after the pain started, the pain and swelling of the area of the distal radius (7cm from radial styloid) was still present in our visit (figure 1). Physical examination showed discomfort at the Finkelstein's test [passive stretch test with ulnar abduction and flexion of the thumb (with clenched fist' ulnar abduction), with wrist extended about 20° and forearm in pronated position (1)], but only at the site of the swelling. We submitted for compensation as an occupational disorder and ended the occupational of exposure. The evolution is favourable, except for the recurrence of

pain when the patient overuses his wrist in odd jobs or while cooking. Sick leave was prolonged until retirement (17th month after diagnosis).

Discussion

Even though the intersection syndrome has been described since the 19th century, there are very few descriptions of this disorder in manual work. In 1951, an English study performed in an industrial cohort (Vauxhall engines) found that different situations were related with intersection syndrome (which could be associated together): recent task modifications, recovery after a sick leave, overuse of the wrist or traumatism (2). In a French study in 1954, P.L. Bernard reported associations between this disorder and unusual laborious work or unusual long work (overtime, rush order, unusual task ...) (3). More recently, a prospective study performed in Thailand concluded that this overuse syndrome was associated with repeated radial deviation of the wrist (4), such as it was also described in sports (5,6). This is obviously different in European countries, where the proportion of the farmers in population is lower. In a case series of 13 patients followed by Grundberg and Reagan, seven patients had gradually symptoms over several weeks while they performed repetitive tasks (7). In one patient, symptoms started after a blow to this wrist area. Actually, several authors reported a traumatic tenosynovitis arising from repetitive use of the upper extremity, such as occurred in our patient (2). Besides, Idler et al reported that intersection tends to occur with the onset of a new activity rather than to develop from prolonged exposure to activities involving repetitive wrist motion (8).

The few cases of work-related intersection syndrome described in the literature could be partly explained by the numerous clinical terms for intersection syndrome, its relative rareness, and the lack of consensus on pathophysiology. First described by Velpeau in 1841 as

“peritendonitis crepitans”, a 1858 medical thesis described the “chronic synovial tendonitis”, and Lucke in 1872 used “hydropsia” of the tendon (3). In 1882, Larger described the “Aï crepitans” (still employed in France). Dobyns et al introduced the term “intersection syndrome” (9). It has also been referred to in the literature as “subcutaneous perimyosite”, “bugaboo forearm”, “advential bursitis”, “oarsman's wrist”, “abductor pollicis longus bursitis”, and “squeaker's wrist”. There are few prevalence studies, whichever terms was used, with very low prevalence [between 0.20% and 0.37%, (4,10)].

The last hypothesis to explain the low number of studies of occupational intersection syndrome is the lack of consensus about the pathophysiology of this condition.

The syndrome is located at the muscle bellies of the abductor pollicis longus and the extensor pollicis brevis (first dorsal compartment) and the extensor carpi radialis longus and brevis tendons (second dorsal compartment) (7,11). Although authors consider that the intersection syndrome is a result of friction between bellies from the first dorsal compartment and the tendons of the second dorsal compartment (8,12), some hypothesised that this condition was primarily due to hypertrophy of the bellies of the abductor pollicis longus and the extensor pollicis brevis (6), while some others hypothesised entrapment from stenosis (7). Recent studies with MRI's considered rather a non-infectious tenosynovitis associated with overuse, considering the peritendonitis oedema (10,13,14), with a possible association from different mechanisms and evolutions (10). This disorder could thus be associated with occupational wrist overuse, eventually revealed by a hand traumatism, such as in our patient.

It is important to remember that intersection syndrome diagnosis is a clinical diagnosis (figure 1), even though ultrasonography and MRI could be helpful in excluding differential diagnosis (10,13,14). Major differential diagnoses include tenosynovitis of the extensor tendons involving the first, second or third dorsal compartment, blunt local trauma or entrapment of

the dorsal radial sensory nerve as it emerges beneath the brachioradialis (Wartenberg's syndrome), or non-specific cellulitis (8)...

The last discussion point is the interest of declaration and compensation of this syndrome in the French health system. Actually, two mechanisms can be used by workers affiliated to French Health Insurance (the Social Security plan, covering 80% of French workers): the work injury compensation or the occupational disease compensation. Our patient had received a negative answer for work injury compensation, but was compensated for occupational diseases (15). For instance, 24,848 workers had been compensated in that context for upper and lower limb musculoskeletal disorder in 2004 [major cause of compensation in the French system (16)], with 7,372 for shoulder disorders, 4,708 for elbow, 11,756 for forerarm/wrist/hand, 620 for lower-limb and 390 for multisyndrome. Workers from other health insurance system could also be compensated, in most of cases following recommendations from a medical committee. Compensating the intersection syndrome has financial and medical advantages. In our case, sick leave until retirement lead to improvement. Actually, the first step in the treatment of intersection syndrome is ending wrist overuse. Other steps include wrist immobilisation in a neutral position with a splint, oral nonsteroidal anti-inflammatory medication, cortisone injection in the swelling zone or between the musculotendinous junctures of the abductor pollicis brevis and the underlying radial wrist extensor tendons, or surgery in case of persistent pain (4,7,8,11).

The intersection syndrome is an uncommon disorder which could be associated with repetitive use of the wrist in occupational settings. This disorder could be advantageously compensated by French health insurance.

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Figure 1: Swelling of the area of the distal radius, at 7cm from radial styloid.