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SPONTANEOUS RUPTURES OF TENDONS IN RHEUMATOID ARTHRITIS

By

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PREVIOUS EXAMINATIONS

Extensor pollicis longus. Spontaneous rupture of this tendon is a fairly rare complication occurring after Colles' fracture, usually in unreduced or mal-united cases.

v. Stapelmohr (1940) gave a detailed analysis of 148 such cases. His series included only one case in which a polyarthritis of the rheumatoid type had been present for 17 years. During the operation, rupture of the extensor pollicis longus tendon was found to be located distally from the carpal ligament; the distal end was inserted into the extensor carpi radialis brevis. No microscopic examination was reported.

Wadstein (1946) described one case, which is considered to be due to "rheumatism". During the operation, the tendon was found to be divided, the ends being widely separated. Both ends were thickened, oedematous, and degenerated. A transplantation of the extensor indicis tendon was performed with excellent functional results. The pathologist's report was as follows: a chronic tendinitis. In the middle of the the tendon as well as on its outer surface were nests of granulomas. There were no definite signs of anything extraordinary, but rheumatic granulation may be surmised.

Harris (1951) described five cases of spontaneous rupture of the extensor pollicis longus tendon in persons with generalized rheumatoid arthritis. Two of them were operated upon, with good functional results in both cases.

In the first case, mentioned above, histological lesions of a chronic inflammatory type, which can be compared with the lesions of rheumatoid arthritis seen in other sites, were found. These lesions may be summarized thus:

1. rheumatoid tenosynovitis
2. rheumatoid myositis with chronic inflammation and lymphocytic infiltration in the endomycium, and waxy degeneration of the muscle bundles
3. vascularization and lymphorrhages in the substance of the tendon.

Mathieu-Pierre-Weil and *Canet* (1952) report a similar case.

Extensor digitorum communis. Spontaneous ruptures of these tendons are very rare.

In 1948 *Vaughn-Jackson* presented two cases of spontaneous ruptures of the tendons of IV–V fingers, due to attrition by arthritic roughening of the distal end of the ulna. The tendons were severed at the level of the inferior radioulnar joint. The stumps of the tendons bulged and were joined to each other by scar tissue. Grey strands of the remaining tendon sheaths joined the cut ends. The floor of the compartment for these tendons under the dorsal carpal ligament was eroded by the rough end of the ulna, and this had caused the fraying of the tendons.

In both cases the distal end of the ulna was resected and the gaps in the tendons were grafted with strips from adjacent tendons.

No histological examination was reported.

Kersley (1948) reported one patient with multiple spontaneous muscle rupture in connection with rheumatoid arthritis. In addition to the rupture of the quadriceps, which appeared to be at the musculotendinous junction, there were spontaneous ruptures of the extensor apparatus of the fourth digit of the right hand, and the *flexor digitorum profundus* of the third digit of the left hand. The site of these lesions was considered to be in the forearm, probably at the musculo-tendinous junction.

In 1952 *Gladstone* reported two cases of spontaneous rupture of the extensor digitorum communis tendons after fractures in the wrist.

These appear to be the only cases which have been published.

CASES FROM OUR OWN OBSERVATIONS

Among about 1000 patients suffering from rheumatoid arthritis we have found 5 cases of spontaneous rupture of the tendons.

Extensor pollicis longus.

Case No. 1. Labourer, aged 45, had for 20 years suffered from rheumatoid arthritis involving inter al. both wrists. Five years ago, the

patient felt, during his usual labour, a sudden tingling sensation in his left thumb and forearm, and afterwards he noticed that he was unable to extend the distal phalanx of the thumb. There was a tenosynovitic swelling at the dorsal side of both wrists, where X-ray revealed arthritic changes. Active extension of the terminal phalanx was absent, and when unsupported this fell into about 45 degrees of flexion. The tendon

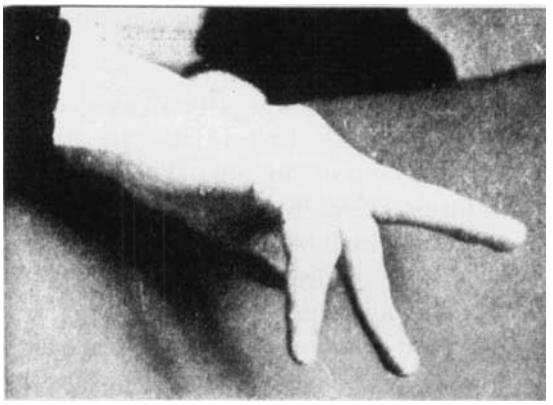

Fig. 1.

of the extensor pollicis longus as a boundary to the snuff-box could not be demonstrated on attempting thumb extension against resistance. The patient had typical, histologically verified rheumatoid nodules in his knees and fingers.

Case No. 2. Motor-boat driver, aged 43. Arthritic changes in both wrists in the course of 17 years. Rupture of the left extensor pollicis longus tendon occurred half a year ago while pulling a rope. Otherwise this case was similar to Case No. 1.

Case No. 3. Female teacher, aged 42. In the course of 18 years she had several joint attacks. Later on a generalized rheumatoid arthritis developed. During her stay at the hospital while lifting the bedclothes on one occasion, the patient suddenly felt a snapping in her left wrist and noticed that she was unable to extend the thumb. There was a lack of extension of 30 degrees of the distal phalanx. When attempting extension the extensor pollicis longus tendon was felt as a slack strand at the dorsal side of the snuff-box.

In Cases Nos. 1–2 the patients were accustomed to their condition and were not interested in undergoing an operation, while in Case No. 3 the operation was impossible because of severe rash.

Fig. 2.

Extensor digitorum communis.

Case No. 4. Printing works employee, aged 27. The patient contracted rheumatoid arthritis 14 years ago. Both wrists and fingers were severely involved. In September 1953, during general deterioration of the joint symptoms, the patient noticed a soft lump at the dorsal side of the right wrist. This swelling was massaged and it diminished slightly in size. On Jan. 1st, 1954, when not at work, the patient noticed that he was unable to extend the fourth and fifth fingers of his right hand. There was no pain.

Examination Febr. 27th, 1954. General condition good. Sedimentation rate 19 (Westergren). Old typical rheumatoid changes in the feet, fingers, wrists and elbows. There was a lack of dorsiflexion of the wrists of 10 degrees, flexion being to 20 degrees only. These movements were painful. There was a complete lack of extension of the basal phalanges of the IV–V fingers of the right hand (Fig. 1). Passive extension was complete. There was a soft lump at the dorsal side of the wrist, surrounding the extensor tendons. X-ray revealed grave arthritic changes of both wrists, with partial fusion of the carpal bones.

Operation (Vainio). Curved longitudinal incision. The extensor tendons of the III–V fingers were encaged in a greyish-red, rubber-like granulomatous mass, suggestive of the collagenous pseudotumors of *Kestler*. This mass was removed. The extensor tendons of the IV–V fingers were found to be severed at the level of the distal radio-ulnar joint. The club-like ends of the tendons were widely separated and embedded in a granulomatous mass. The ends were joined together with only strand-like remnants of tendinous tissue. No extensor dig. V proprius remained. On the floor of the compartment of the extensor digi-

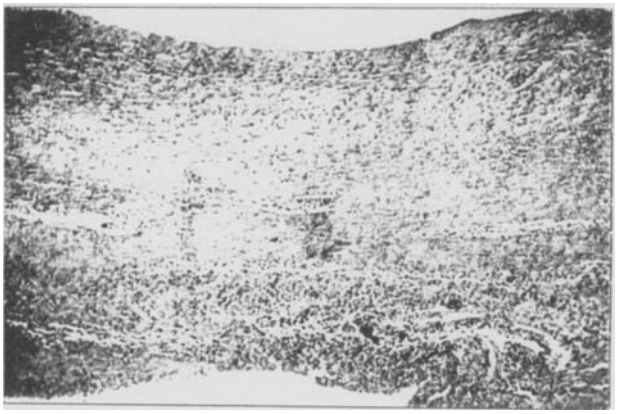

Fig. 3.

torum communis under the dorsal carpal ligament there was a hole, 5 by 5 mm, eroded by the sharp-edged head of the ulna. This hole was surrounded by bright-red synovial tissue, bulging from the distal radio-ulnar joint. When the forearm was pro-supinated, the sharp edge of the head of the ulna was seen to move like a buzz-saw in the hole of the compartment. This movement had finally frayed off the pathologically changed tendons.

The head of the ulna was removed together with all synovial tissue. An arthrodesis of the radio-carpal joint was made. The ends of the tendons were cut in healthy tissue. The tendon of the extensor carpi ulnaris was lengthened and inserted into the distal stump of the extensor of the fifth finger. The gap in the tendon of the extensor of the fourth finger was grafted with a strip from the extensor carpi ulnaris.

Pathologist's report (Dr. Ritama). Z 399–54. Histological examination of the resected parts of the tendons revealed a rheumatoid nodule in one of them. It consisted of an indistinctly fibrillar tissue with diffusely distributed histiocytic cells, and showed sharply outlined vascular areas; patches of fibrinoid necrosis and of mucoid swelling were present. At the distal junction of the nodule, destructive foci and slit-like cavities were present in the tendon tissue (Fig. 2). In both tendons, there was severe degeneration of the specific elements, with foci of vascular and histiocytic proliferation and collections of exudate cells present in the interstices. In part, the tendons were covered by a layer of a cellular granulation tissue, the superficial tendinous fibrils showing a tendency to become eroded and replaced by the granulation tissue (Fig. 3), or alternatively there was a covering layer of fibrinoid-hyaline substance with a palisading layer of histiocytes between it and

Fig. 4.

the tendinous tissue. A segment in one of the tendons consisted only of a few remaining fibrils (Fig. 4).

After two months there was a good extension of the IV–V fingers and the radio-carpal joint had painlessly fused.

Flexor digitorum superficialis.

Case No. 5. Housewife, aged 47. She had suffered for 14 years from rheumatoid arthritis, most severely involving the fingers. The patient was operated upon because of triggerfinger action and weakness of grip of the right third finger. A bean-sized granuloma was found to be located at each of the two slips of the superficial flexor tendons. The ulnar slip was completely disconnected, while the radial one had frayed to a few strands of stretched tendon tissue. As the profundus tendon was intact, the function of the finger improved considerably after the removal of the hindering granulomas.

Pathologist's report. (Dr. Ritama). Z 406–54. Histological examination of the specimen revealed a rheumatoid nodule with features essentially similar to those present in the nodule of the preceding case. Tendinous structures with fibrinoid degeneration and even liquefaction, were included in the granulomatous tissue which was partly fibrillar and partly vascular, and showed areas of fibrinoid and mucoid degeneration and foci of exudate cells (Fig. 5). Many of the vascular channels showed fibrinous thrombosis.

There is no great difference between a pathologic distension and a clinically complete rupture where some stretched remains of the tendon tissue still join the cut ends.

Fig. 5.

According to two other papers from our clinic, such spontaneous distensions are not uncommon in rheumatoid arthritis (4, 5).

Among 305 patients, 113 had a so-called button-hole deformity of the fingers. The inability to extend the proximal phalanx of the thumb is caused by inflammatory distension of the tendon of the extensor pollicis brevis attached to the base of the basal phalanx. The inability to extend the middle phalanx of the II–V fingers is caused by inflammatory distension of the middle slip of the extensor apparatus and lateral displacement of the lateral slips.

Changes similar to those found in ruptured tendons in rheumatoid arthritis have been noticed by *Kestler* and by us in the damaged extensor hood of the fingers.

As described in another paper, we found that among 159 rheumatoid arthritis patients with shoulder pain, 6 were unable to maintain the passive abduction of the arm. This condition, resembling the traumatic rupture of the cuff, was due to inflammatory distension of these structures.

SUMMARY

The authors describe 5 cases of spontaneous rupture of tendons in rheumatoid arthritis, 3 being in the extensor pollicis longus, one in the extensor digitorum communis of IV–V fingers, and one case in the flexor digitorum superficialis of III finger. Two cases were operated on and examined histologically. Rheumatoid nodule of the tendon was found to be the primary lesion in both cases.

RESUME

Les auteurs décrivent 5 cas de rupture spontanée des tendons dans l'arthrite rheumatoïde, trois dans le long extenseur du pouce ou l'extenseur commun des doigts IV et V, et un cas dans le fléchisseur superficiel du IIIème doigt. Deux cas ont été opérés et examinés histologiquement. It a été constaté dans les deux cas que la nodule rheumatoïde du tendon était la lésion primaire.

ZUSAMMENFASSUNG

Die Verfasser beschreiben 5 Fälle von Spontanruptur von Sehnen in Fällen chronisch rheumatischer Polyarthritis. Dreimal wurde dies am extensor pollicis longus oder dem extensor digit. communis des 4. und 5. fingers und einmal am flexor digitorum sublimis des 3. fingers beobachtet. Zwei der Fälle wurden operiert und histologisch untersucht. Rheumatische Knoten der Sehnen wurden als primäre Erkrankung in beiden Fällen gefunden.

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