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Spontaneous rupture of the calcaneal tendon in rheumatoid arthritis after local steroid injection

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The spontaneous rupture of tendons in patients receiving systemic or local steroid therapy is becoming increasingly common. We here describe an avulsion of the calcaneal tendon on minimal effort after local steroid injections administered because of an acute flare-up of rheumatoid arthritis.

Case history

A 48-year-old woman complained of pain and swelling at the back of both heels 12 months after the onset of generalized rheumatoid arthritis. Her current therapy was Ibuprofen (Brufen) 100 mg. three times a day and a course of weekly intramuscular injections of gold. She received one injection of 40 mg. methylprednisone acetate into the site of the tendo-calcaneus attachment on both sides followed by a second injection into the left heel 3 weeks later with marked relief of symptoms.

When walking 4 weeks later, however, she sustained a spontaneous rupture of the left calcaneal tendon with very little pain. At operation a complete tear amounting to an avulsion was found almost at the calcaneal attachment, only a small tuft remaining on the bone. The proximal end of the tendon did not show obvious degeneration and a small piece of tissue was taken out for histological examination. The microscopical section showed no evidence of fibrinoid necrosis. A number of immature stellate fibroblasts together with numerous small endothelial-lined blood vessels and small focal haemorrhages were seen. There was also a light sprinkling of lymphocytes and plasma cells and an occasional polymorphonuclear leucocyte.

Discussion

Although the spontaneous rupture of tendons, due either to attrition or to focal degeneration, is not uncommon, and calcaneal tendinitis or bursitis is often seen, spontaneous rupture of the Achilles tendon is extremely rare in rheumatoid arthritis. The absence of fibrinoid necrosis in our patient suggests that rupture was not due to rheumatoid necrosis.

Cowan and Alexander (1961), M. L. H. Lee (1961), and Smaill (1961) reported one patient each with spontaneous rupture of the tendon on minimal effort while receiving oral steroids for conditions other than rheumatoid arthritis. H. B. Lee (1957) described avulsion after three local injections of hydrocortisone in a cross-country runner who was thought to have chronic tendo-calcaneal bursitis. A high-jumper ruptured the patellar ligament after a local injection of steroid for chronic tendinitis (Ismail, Balakrishnan, and Rajakumar, 1969). Both these athletes were engaged in strenuous activity at the time.

The painful swelling behind both heels in our patient was almost certainly part of the acute flare-up of rheumatoid arthritis. Clinically, the diagnosis of tendo-calcaneal bursitis was made, but at operation there was no evidence of recent bursal inflammation. The site of rupture was significant, as in a series of 36 spontaneous ruptures the site was 2 to 4 cm. above the calcaneum (Hutchison, 1961). It is likely that the methylprednisone acetate was injected into the substance of the tendon where, because of the avascular nature of the tissue, it probably remained for a long time. The anti-inflammatory effect of the steroid rapidly relieved the swelling and pain, thus encouraging the patient to early ambulation. Under the influence of steroid treatment, it would appear that the rupture process was delayed, as evidenced by the presence of immature fibroblasts. We believe that steroid injection not only delayed the maturation of the fibrous tissues, but probably also reduced the tensile strength of the tendon (Wrenn, Goldner, and Markee, 1954), causing it to rupture on minimal effort. The opposite heel, on the other hand, received ample rest and opportunity for adequate repair because of the persistence of symptoms on the other side, and it thus escaped the possible danger of spontaneous rupture.

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Conclusion

The danger of a rupture of the tendo-calcaneus should be carefully weighed against the quick relief of symptoms which follows local steroid injection. It would appear to be safer to treat an inflammatory swelling behind the heel in acute rheumatoid arthritis either by complete rest in bed or by rest in a plaster cast while natural healing takes place.

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