Occupational tarsal tunnel syndrome

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Tarsal tunnel syndrome characterises a complex of symptoms that result from compression of the posterior tibial nerve as it passes through the fibro-osseous tunnel located beneath the flexor retinaculum on the medial aspect of the ankle.¹ The syndrome has been described in several case reports and review articles²⁻⁴ since Keck's⁵ and Lam's⁶ original case reports in 1962. Whereas other nerve entrapment syndromes are known to be caused by activities including repetitive motion of the hands and feet and are frequently occupational, no similar relation has been described for the tarsal tunnel syndrome. Lam looked for common risk factors among a series of ten patients with tarsal tunnel syndrome but found that none shared a common occupation.¹ Davies, in a personal communication to Lam, noted that several of his own patients with tarsal tunnel syndrome were jockeys. Tarsal tunnel syndrome was one of the many foot disorders described in a clinical survey of dancers by Sammarco and Miller.⁷ We present a case of tarsal tunnel syndrome in a seamstress that appears to have been caused by a repetitive trauma injury that occurred in the workplace.

Case report

The patient is a 53 year old woman who was referred to our occupational medicine clinic by a general practitioner to determine whether or not her nerve entrapment syndrome was related to work. The patient had no symptoms until August 1985 when she developed pain in the medial aspect of her right foot. The pain increased in severity until February 1986 when she was unable to sleep, sitting up in a chair for relief. At that time she underwent surgery to lyse the adhesions which had encased the posterior tibial nerve and prevented its movement within the tarsal tunnel. The pain resolved immediately after the operation and the patient remained free of pain until May 1986 when her symptoms recurred. She underwent physical therapy and received a corticosteroid injection without relief. In November 1986 she underwent a second operation

to remove scar tissue that entrapped the posterior tibial nerve. The pain was not relieved with the second operation and the patient continues to experience severe pain on the medial aspect of her right foot with numbness in the toes.

From 1968 to 1985 the patient worked as a seamstress. She sat at an electric sewing machine which she operated by using her right foot to press on a pedal; she spent her 40 hour work week depressing the foot pedal several hundred times a day. She had no other work experience and had never had trauma to her right foot.

Physical examination found a 5 cm scar posterior to the right medial malleolus and extending proximally and inferiorly. Pain sensation was increased to light touch and pinprick over the medial aspect of the right foot. Numbness and tingling were increased with repetitive tapping over the posterior tibial nerve (Tinel's sign). The patient is undergoing re-evaluation for pain relief techniques (including oral analgesics, local anaesthetic injection, and a transcutaneous electrical nerve stimulation unit) and a third operation.

Discussion

The patient's symptoms of pain and paresthesias in the toes and medial aspect of the foot, originally worse at night and relieved by sitting with her leg hanging down, are classic of tarsal tunnel syndrome. The immediate relief of symptoms after release of the adhesions found at surgery with consequent mobilisation of the posterior tibial nerve are also characteristic. Unfortunately, scar tissue caused re-entrapment of the nerve necessitating additional surgery. The patient's recurrent pain probably indicates the formation of more scar tissue.

Tarsal tunnel syndrome has been described in about equal numbers in men and women ranging in age from the teens to the mid-70s. The risk factors for tarsal tunnel syndrome are largely unknown. Suggestions for the pathophysiology of the syndrome include: (a) traction on the neurovascular bundle via fibrous septa from the flexor retinaculum which actually attach to the bundle; (b) the high degree of vascularity of the tarsal tunnel rendering it more susceptible to the effects of local vascular injury; and (c) local disease

from lipomas, ganglion cysts, fractures, tenosynovitis, and synovial hypertrophy.¹ The latter pathological changes have been well described for carpal tunnel syndrome and may be caused by the repetitive trauma occurring in many occupations. To date there has been insufficient evidence for such a relation between occupation and tarsal tunnel syndrome.

Our patient worked for 17 years in a job that required repetitive motion of her right foot for a large proportion of her working week, and it is logical to assume that repetitive trauma may be responsible for the condition. Further studies should be undertaken to determine the prevalence of the syndrome in different working populations and to analyse the potential association between tarsal tunnel syndrome and specific occupations.

References

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