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Case Report

Bilateral Carpal and Tarsal Tunnel Syndrome in The Same Patient: A Case Report

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Abstract

We report, an unique case with co-existing bilateral severe tarsal tunnel syndrome (TTS) and bilateral severe carpal tunnel syndrome (CTS), which were diagnosed by clinical examination and electrophysiological studies. Compression neuropathy, especially when bilateral or multiple may be secondary to a systemic disease. To date, bilateral carpal and tarsal tunnel syndromes in the same patient have been reported only a few cases in the literature.

Keywords: Carpal tunnel syndrome, entrapment neuropathy, tarsal tunnel syndrome

Aynı Hastada İkitarafli Karpal ve Tarsal Tünel Sendromu: Olgu Sunumu

Özet

Klinik muayene ve elektrofizyolojik çalışmalarla tanı konmuş, iki tarafli ciddi tarsal tünel sendromlu ve iki tarafli ciddi karpal tünel sendromlu, nadir bir vaka sunuyoruz. Kompresyon nöropatisi, özellikle iki tarafli veya multipl olduğunda sistemik bir hastalığa sekonder olabilir. Literatürde, bugüne kadar, aynı hastada iki tarafli tarsal tünel sendromu ve iki tarafli karpal tünel sendromu, sadece bir kaç vakada bildirilmiştir.

Anahtar Kelimeler: Karpal tünel sendromu, tuzak nöropati, tarsal tünel sendromu

INTRODUCTION

Carpal tunnel syndrome (CTS) is a widely known median nerve entrapment neuropathy at the elbow. It is mostly idiopathic but occasionally secondary to well defined diseases such as acromegaly, diabetes mellitus, myxedema, rheumatoid arthritis and amyloidosis⁽³⁾.

The tarsal tunnel syndrome (TTS) is an entrapment neuropathy caused by pressure on the posterior tibial nerve as it passes posterior and inferior to the medial malleolus beneath the fibrous origin of the abductor hallucis muscle^(3,10). The cause is

unknown but is probably like that responsible for the CTS.

We report, an unique case with co-existing bilateral severe TTS and bilateral severe CTS, which were diagnosed by clinical examination and electrophysiological studies. To date, bilateral carpal and tarsal tunnel syndromes in the same patient have been reported only a few cases in the literature^(4,14).

CASE PRESENTATION

A 50-year-old man was admitted to the neurosurgery department with a 1-year-

long history of burning pain and numbness in both hands and feet. He is a professional cook and 170 cm tall and had a body weight of 110 kg and a body mass index of 38.06 kg/m². On neurological examination of hands, bilateral hypoesthesia in index and middle fingers were found. The Phalen's test (wrist-flexion test), anti-Phalen's test (sustained extension of the wrist), flick maneuver, ischemic test and Tinel's sign were all positive bilaterally. Paraesthesia was accompanied in both feet by "electrical shocks" extending from the plantar arch to the tip of all toes and by occasional nocturnal numbness. No foot trauma, no precipitating factors or long distance walking were reported. Tinel's sign and dorsiflexion-eversion test were positive bilaterally. Motor powers were intact bilaterally. There was hypoesthesia top in-prick in the region of the medial and lateral plantar nerves.

On electrophysiological study, both nerve conduction velocity and latency for median motor-sensory fibers were abnormal, suggestive for bilateral CTS. Electrophysiological evaluation of both posterior tibial nerves showed a prolonged distal motor-sensory latency. However, ulnar-radial nerve and other lower extremity studies were within normal limits. Polyneuropathy was excluded by virtue of clinical and electrophysiological findings.

General neurological state was normal. No bony abnormality of ankles, feet, wrists and hands could be detected radiologically. Color doppler ultrasonography of the lower extremities was reported as normal. There has been no clinical evidence of systemic or organ amyloidosis.

Relief of symptoms was achieved after injection of hydrocortisone in bilateral carpal tunnel. But tarsal tunnel symptoms weren't resolved with conservative treatment. S-shaped incision was made behind the left medial malleolus to expose the posterior tibial nerve. Posterior tibial nerve was compressed by adherent veins,

which were cut with bipolar coagulation (Figure 1). Proximal and distal explorations were performed. No further abnormality that could have been the cause of the nerve compression was found. Biopsies were taken for histological evaluation and it was reported normal. The patient's recovery was uneventful with relief of symptoms on the left side.

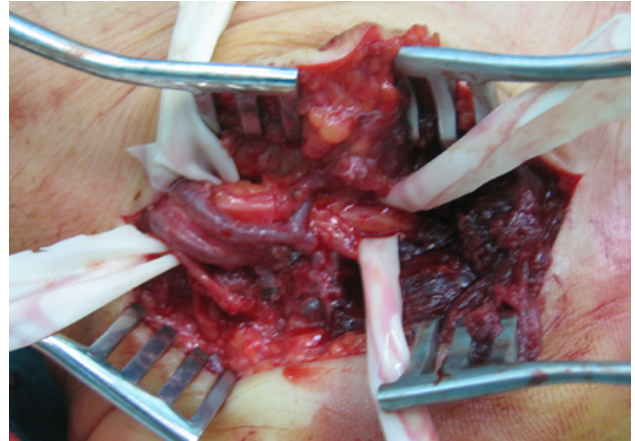


Figure 1: At operation, the left posterior tibial nerve was compressed by adherent veins.

DISCUSSION

CTS is the most common entrapment neuropathy. Although majority of the CTS cases are believed to be idiopathic, it may also be secondary to various systemic diseases such as hypothyroidism or amyloid deposition. According to Nathan and Keniston, older, overweight, and physically inactive people are more likely to develop CTS⁽¹³⁾. Any condition that crowds or reduces the capacity of the carpal tunnel may initiate the symptoms; a malaligned Colles fracture and edema from infection or trauma are among the more obvious causes, and tumors or tumorous conditions such as a ganglion, lipoma, or xanthoma are among the more common. Systemic conditions such as obesity, diabetes mellitus, thyroid dysfunction, amyloidosis, and Raynaud disease are sometimes associated with the syndrome.

Trauma caused by repetitive hand motions has been identified as an aggravating factor, especially in patients whose work requires repeated forceful finger and wrist flexion and extension. Laborers using vibrating machinery are at risk, as are office workers, especially typists and data entry clerks, who spend long hours with the wrists flexed. Many factors are implicated in the causation and aggravation of CTS⁽¹⁵⁾. In many cases, there are no particular identifiable causes even though the nerve is clearly compressed. Although many of these cases are attributed to “non-specific synovitis,” pathologic examination of the synovium obtained from the carpal canal in these cases usually fails to reveal signs of inflammation. Rather, fibrosis and/or edema changes are seen, which may themselves be secondary to compression rather than the primary cause of the entrapment neuropathy^(11,12). Our patient has no systemic disorder, but repetitive hand motions due to his profession may have lead to CTS.

Steroid injection offers transitory relief in 80% of patients, with only 22% being free of symptoms at 12 months. The patients in the mild group fare better than others with steroid injection⁽⁶⁾. Treat or correct underlying disorders if possible⁽⁹⁾. Therefore we tried steroid injection, in our patient, because we failed to demonstrate any underlying disorder.

TTS results in peripheral nerve entrapment much less often than CTS or cubital tunnel syndrome⁽³⁾. Entrapment of the posterior tibial nerve, or its branches, is due to intrinsic or extrinsic factors within the tunnel formed by the flexor retinaculum, behind and distal to the medial malleolus. The aetiological causes of TTS are mainly the presence of a ganglion, tenosynovitis, osseous prominence with tarsal bone coalition, trauma, varicose veins, neurinoma, hypertrophic or accessory muscles, hypertrophy of the flexor retinaculum, and some are idiopathic^(1-3,7,10).

Keck reported a patient with bilateral TTS, and he found tortuous posterior tibial veins surrounding the nerve, which he describes as resembling a varicocele⁽¹⁰⁾. Cimino reported that varicosities are the third most common cause of TTS, and that idiopathic and traumatic causes are the first and second most common respectively⁽²⁾. Sammarco and Chang reported that sixty-two patients underwent tarsal tunnel release, with 13 of them bilateral. They noted that the most common surgical findings included arterial vascular leashes and varicosities, which cause indentation and scarring about the nerve⁽¹⁶⁾. Gould and Alvarez reported a case with bilateral TTS, slightly overweight, in which surgery revealed varicosities overlying the medial and lateral plantar nerves at their origin⁽⁸⁾. Turan et al also reported varicose veins more commonly than other compressive etiologies. The enlarged vessels crossing the nerve are theorized to cause direct compression of the posterior tibial nerve and its branches, particularly when the leg is in a dependent position⁽¹⁷⁾.

A thorough search should be made to identify the underlying lesion, but a number of cases arise spontaneously with no obvious cause. The diagnosis is based on clinical findings and EMG studies, and radiography may detect the underlying abnormality⁽⁵⁾. Treatment may vary depending on the lesion present. We performed surgery and explore and decompress the posterior tibial nerve, because related symptoms did not resolve with conservative treatment. During the surgical procedure, we detected varicose veins.

Compression neuropathy, especially when bilateral or multiple may be secondary to a systemic disease such as amyloid deposition. Our patient with bilateral carpal and tarsal tunnel syndrome has not a systemic disease. Although rare a physician must be aware of these conditions when searching for an etiological factor.

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