Severe Carpal Tunnel Syndrome with Ulcerative Complications: A Case Report

Síndrome do Túnel Cárpico Úlcero-Mutilante: Um Caso Clínico

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RESUMO

A síndrome do túnel cárpico (STC) afeta 1% a 5% dos adultos, maioritariamente mulheres entre os 40 e 60 anos. Causada pela compressão do nervo mediano, apresenta-se com dor, parestesias e perda de força. Fatores de risco incluem artrite reumatoide, gravidez e hipertensão arterial. Em casos avançados, podem surgir úlceras indolores, sugerindo uma variante ulceromutilante.

Mulher de 83 anos, ex-costureira, com hipertensão, artrite reumatoide e STC bilateral. Após cirurgia na mão direita, desenvolveu úlceras indolores e défices sensório-motores nos dedos da mão esquerda. A eletromiografia confirmou STC grave no lado esquerdo, e a apresentação clínica sugeriu a variante ulceromutilante. Foi encaminhada para cirurgia.

Úlceras indolores são raras na STC, descritas pela primeira vez em 1979, e resultam da compressão prolongada das fibras sensoriais e autonómicas do nervo mediano. O diagnóstico precoce e a intervenção cirúrgica são essenciais para prevenir danos irreversíveis, como reabsorção óssea.

PALAVRAS-CHAVE: Neuropatia Mediana; Síndrome do Túnel Cárpico; Úlcera

ABSTRACT

Carpal tunnel syndrome (CTS) is the most common nerve entrapment disorder, affecting 1% to 5% of adults, primarily women aged 40-60. It results from median nerve compression, causing pain, numbness, and reduced grip strength. Risk factors include rheumatoid arthritis, pregnancy, and hypertension. Advanced cases may present with painless skin ulcers, suggesting an ulceromutilating variant.

An 83-year-old retired seamstress with hypertension, rheumatoid arthritis, and bilateral CTS, diagnosed nine years ago, developed progressive sensory-motor deficits and painless ulcers on her left hand despite successful

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right-hand surgery. Electromyography confirmed severe left CTS and the clinical presentation suggested an ulceromutilating variant. She was referred for corrective surgery.

Painless ulcers in CTS are rare but have been reported since 1979, resulting from prolonged nerve compression and skin necrosis. Early diagnosis and surgery are crucial to prevent irreversible damage, like bone resorption. This case emphasizes the need to consider this variant in advanced CTS.

KEYWORDS: Carpal Tunnel Syndrome; Median Neuropathy; Ulcer

INTRODUCTION

Carpal tunnel syndrome (CTS) is the most common nerve entrapment disorder seen in clinical practice.[1] Most sources indicate that between 1% and 5% of adults worldwide will suffer from CTS[2-4] and that it is more prevalent in women than in men.[2,3,5] The disorder can affect people of any age; however, it most commonly affects those between 40 and 60 years old.[6]

CTS results from compression of the median nerve within the carpal tunnel, leading to symptoms such as numbness, tingling, and discomfort in its sensory distribution. These complaints may occur alone or be accompanied by sensory or motor deficits in the affected areas. Patients often report that their hands feel numb or that they frequently drop objects, reflecting reduced grip strength. The sensory disturbances are usually limited to the palmar side of the thumb, index, middle, and part of the ring finger, as well as the adjacent palm. An aching sensation in the front (volar) side of the wrist is frequently present, sometimes radiating upward along the forearm or downward into the palm and fingers. It is not unusual for patients to describe symptoms affecting the entire hand. Some also report a sensation of swelling or tightness, changes in how the hand perceives temperature (feeling unusually cold or hot), or noticing a difference in skin coloration.[2] As the condition progresses, patients may experience reduced grip strength, hand weakness, and limitations in movement. Risk factors for developing CTS include female sex, diabetes mellitus, obesity, hypothyroidism, rheumatoid arthritis, and pregnancy.[7] The symptoms worsen while driving, reading newspapers, and painting, and they become more severe at night. Atypical presentations may occur in advanced stages of the disease and severe cutaneous involvement should raise suspicion for an ulceromutilating variant.[8-10]

CASE REPORT

We present the case of an 83-year-old retired Caucasian woman, formerly a seamstress, with no known smoking or alcohol habits. Her medical history included controlled hypertension, rheumatoid arthritis, and bilateral CTS confirmed by electromyography (EMG) nine years prior. Four years ago, she consulted her primary care physician due to paresthesias and decreased grip strength in both hands, primarily within the median nerve distribution. Due to initially more severe symptoms in her right hand, she underwent corrective surgery on that hand performed by an orthopedic surgeon. This resulted in a complete resolution of symptoms on that side.

Last year, the patient returned to her primary care physician with progressive sensory-motor deficits in her left hand and painless ulcers on the second (Fig. 1) and third (Fig. 2) fingers, evolving over two months. She denied experiencing any recent trauma, ischemia, Raynaud's phenomenon, or finger thickening. EMG showed absence of motor and sensory response of the median nerve, reconfirming severe left-sided CTS. Blood tests showed negative antinuclear antibodies, which helped rule out connective tissue diseases such as systemic sclerosis or lupus, conditions that may present with digital ulcers and might otherwise be considered in the differential diagnosis. Considering the severe CTS diagnosis and the suggestive clinical presentation, the ulceromutilating variant of the disease was suspected. An orthopedic referral was initiated, and the patient currently awaits surgery.

DISCUSSION

Painless skin ulcers associated with CTS were first described by Bouvier et al. in 1979.[11] However, reports of such cases remain rare. Skin involvement can be found in 20% of the cases of CTS and is associated with advanced stages of the disease.[3] Digital ulcers appear to be more common in men[12] and occur due to severe damage to the motor, sensory and autonomic nerve fibers.[10,12] The thumb, index finger, middle finger, and the lateral half of the ring finger are most frequently affected, as they receive sensory innervation from the median nerve. This nerve is a terminal branch of the brachial plexus, formed by the anterior rami of

FIGURE 1. Photograph highlighting a digital ulcer on the patient's second finger

FIGURE 2. Photograph highlighting a more severe digital ulcer presenting on the patient's third finger

the C5 to T1 spinal nerve roots, and supplies the palmar surfaces of these digits via its digital branches.[13] Compression of the sensory fibers leads to loss of protective sensation in the affected areas, increasing the risk of unrecognized mechanical and thermal injuries, which can progress to necrosis and fingertip ulceration.[3] Compression of autonomic fibers contributes to skin breakdown by causing hypohidrosis, swelling, and increased skin temperature. Additionally, obstruction of venous return within the carpal tunnel leads to intrafunicular edema and anoxia, further promoting ischemic damage to the tissue.[10] In severe cases, patients may present with nail dystrophy, onycholysis, hyperkeratotic cuticles, and acro-osteolysis of the distal phalanges due to vascular compromise.[9]

To diagnose CTS, a complete medical history must be taken. The patient should be asked about the frequency of symptoms, whether they occur at night or during the day, and if certain positions or repeated movements aggravate them.[4] Other risk factors, such as rheumatoid arthritis, must also be assessed, as seen in the presented case. To diagnose CTS, physical examination techniques such as Phalen's, Durkan's, and Tinel's tests are used, but confirming the diagnosis typically requires electrophysiological studies. In contrast, diagnosing an ulceromutilating variant of the condition relies primarily on clinical evaluation and requires a high level of suspicion.[14] Accurate diagnosis of this variant is crucial, as timely surgical intervention is vital to avert bone lesions.

Patients with prolonged, untreated CTS who develop painless ulcers within the median nerve territory should raise suspicion for an ulceromutilating variant. Motor, sensory, and skin changes, especially in individuals with high-risk occupations, warrant prompt referral to orthopedics for definitive treatment, typically carpal tunnel release surgery. Although rare, prolonged and severe CTS as a cause of digital ulcers should not be neglected. A thorough physical examination must be performed, and timely hospital referral is essential to prevent irreversible deformities.

DECLARAÇÃO DE CONTRIBUIÇÃO /CONTRIBUTORSHIP STATEMENT

SCC - Conceptualização, redação do draft original, revisão e validação do texto final.

JH - Redação, revisão e validação do texto final.

Todos os autores aprovaram a versão final a ser publicada.

SCC - Conceptualisation, writing of the original draft, revision and validation of the final text.

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