

Case Report

Vascular Changes in Severe Carpal Tunnel Syndrome: A Differential Diagnosis of Vasculitis[☆]

Roser Areny-Micas,^{a,*} Rebeca Silva-Donoso,^a Viviana Urtubia-Manríquez,^a Jorge Saavedra-Muñoz,^b Lidia Hernández-Reyes,^c Marta Aliste-Silva^d

^a Unidad de Reumatología, Servicio de Medicina, Hospital Félix Bulnes, Universidad Mayor, Santiago, Chile

^b Unidad de Reumatología, Servicio de Medicina, Hospital San Juan de Dios, Santiago, Chile

^c Unidad de Reumatología, Servicio de Medicina, Hospital Salvador, Universidad de Chile, Santiago, Chile

^d Unidad de Reumatología, Servicio de Medicina, Hospital José Joaquín Aguirre, Universidad de Chile, Santiago, Chile

ARTICLE INFO

Article history:

Received 3 February 2011

Accepted 20 April 2011

Available online 26 October 2011

Keywords:

Carpal tunnel syndrome

Vasculitis

ABSTRACT

Carpal tunnel syndrome may present with skin lesions. This may lead to a differential diagnosis with vasculitis. Sympathetic nervous system perivascular involvement and recurrent injuries secondary to sensory loss are probably part of the mechanism of injury. In this case, we also comment on the pathogenic role of persistent median artery associated with a bifid median nerve.

© 2011 Elsevier España, S.L. All rights reserved.

Alteraciones vasculares en síndrome del túnel carpiano severo: un diagnóstico diferencial de vasculitis

RESUMEN

El síndrome del túnel carpiano puede manifestarse con lesiones cutáneas. Estas pueden plantear el diagnóstico diferencial con una vasculitis. El compromiso del sistema nervioso simpático perivascular y los traumatismos a repetición secundarios a la hipoestesia son probablemente parte del mecanismo de daño. En este caso, se plantea además el papel patogénico de una arteria mediana remanente asociada a nervio mediano bífido.

© 2011 Elsevier España, S.L. Todos los derechos reservados.

Palabras clave:

Síndrome del túnel carpiano

Vasculitis

Introduction

Clinical manifestations of carpal tunnel syndrome (CTS) are known as subjective signs (paresthesia, proprioceptive alterations, paresthesia) and objective (alterations in sensitivity and motor function, positive Tinel and Phallen tests, and atrophy of the thenar eminence). Most of the patients are managed with medical or surgical treatment in relation to their clinical manifestations, the results of the electromyography in their progression. In some cases, presentation may be atypical and secondary atrophy may be present after

severe compromise, which obliges the clinician to exclude other diagnoses.

Clinical Case

We present the case of an 84-year-old woman with a history of controlled hypertension and 2 months with skin lesions on both hands, classified as a type of vasculitis associated with cyanosis on the first, second and third fingers, and severe pain that led to emergency hospitalization for suspected systemic vasculitis. Upon directed interrogation, there was no evidence of connective tissue disease or drug use. She received enalapril to treat high blood pressure. Physical examination highlighted periungual lesions, indicative of vasculitis, but their distribution was dermatomal, associated with severe hypoesthesia in the same territory and significant atrophy of the thenar region, bilaterally (Fig. 1). The rest of the examination was normal, in particular, no skin

[☆] Please, cite this article as: Areny-Micas R, et al. Alteraciones vasculares en síndrome del túnel carpiano severo: un diagnóstico diferencial de vasculitis. Reumatol Clin. 2012;8(1):36–38.

* Corresponding author.

E-mail address: rosar.arenym@gmail.com (R. Areny-Micas).



Fig. 1. Right hand palm and a detail of the right index finger.

lesions at other sites were seen and her blood pressure was normal. Laboratory studies were performed: blood count, erythrocyte sedimentation rate and renal function as well as complete urine testing were normal, she had negative rheumatoid factor, negative antinuclear antibodies, ENA and negative C and P ANCA. The patient complained of abnormal sensitivity and nocturnal paresthesias and lack of strength in her hands for some time, so she had been seen by other physicians, leading to a diagnosis of CTS, undergoing an upper extremity electromyography a year earlier. This showed a severe entrapment of both median nerves at the carpal tunnel, with complete denervation of the thenar eminence. Ultrasonography was performed, showing the entrance to the tunnel at the pisiform, a right median nerve with a 17 mm²

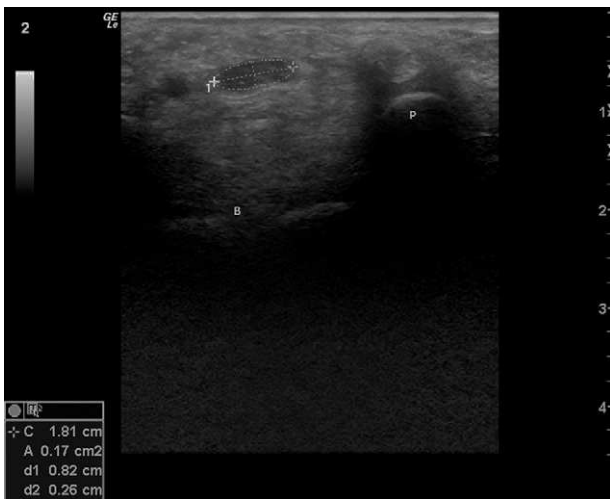


Fig. 2. Transverse image of the right median nerve at the entrance of the carpal tunnel, with measurement of the nerve area with an ellipse (0.17 cm²), at the pisiform level P (B: large bone). (Image obtained with a General Electrics LOGIC e ultrasound, with a lineal 8–12 mHz transducer, using a frequency of 12 mHz and maximal enlargement.)



Fig. 3. Transversal image of the median nerve in the carpal tunnel: median artery remnant. (Image obtained with a General Electrics LOGIC e ultrasound, with a lineal 8–12 mHz transducer, using power Doppler with a frequency of 5.0 MHz, gain of 12, PRF DE 1.2 h Hz and a wall filter of 180 Hz.)

area (normal = ±10 mm²)^{1,2} (Fig. 2), with the central presence of a median artery remnant (Fig. 3). The left median nerve was also thickened, with an area at the pisiform level of 18 mm². Both nerves appeared trapped in the carpal tunnel in longitudinal sections (Fig. 4).

Discussion

Skin lesions are localized on the median nerve territory because, as reported in the literature, in severe CTS there may be perivascular sympathetic nervous system compromise in that distribution.^{3–5} This patient also presented a remnant of the median artery, an uncommon anatomical variant⁶ generally associated to a bifid median nerve, leading to a greater repercussion on the compression of structures in the tunnel, affecting tissue vascularization even further. Thrombotic phenomena and occlusion of the remnant artery may be triggered for CTS.^{7,8} The case presented had a unilateral remnant artery; we may suppose that if it had occurred bilaterally it may have occluded and increased symptoms. Severe hypoesthesia adds the possibility of presenting associated traumatic lesions.^{9,10}

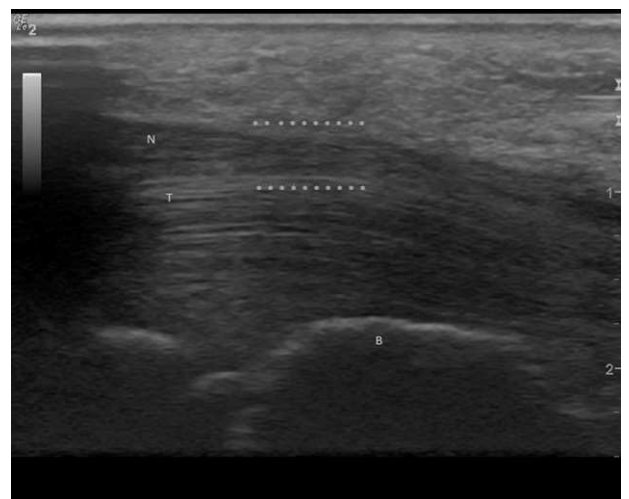


Fig. 4. Longitudinal image of the right median nerve. (Image obtained with a General Electrics LOGIC e ultrasound, with a lineal 8–12 mHz transducer, using a frequency of 12 mHz.) B: large bone; N: median nerve; T: hand flexor tendons; *: compression zone.

It is important to perform the diagnosis because a surgical option, through the liberation of the nerve at the retinaculum, could revert the lesions, impeding the appearance of severe complications. This clinical presentation with atrophy in severe, long-term CTS is currently infrequent because most of the patients have rapid access to specialized care.

Conclusions

Faced with a patient with possible systemic vasculitis but with limited hands, the clinician must make a differential diagnosis with severe CTS and secondary atrophy because the treatment is very different and the use of steroids and immunosuppressants will not benefit these patients.

References

1. Mondelli M, Filippou G, Gallo A, Frediani B. Diagnostic utility of ultrasonography versus nerve conduction studies in mild carpal tunnel syndrome. *Arthritis Rheum.* 2008;59:357–66.
2. Klauser A, Faschingbauer R, Bauer T, Wick M, Gabl M, Arora R, et al. Entrapment neuropathies: carpal tunnel syndrome. *Sem Musculoskelet Radiol.* 2010;14:487–500.
3. Léger O, Lavallé F. Carpal tunnel syndrome revealed by digital ulcerations caused by arterial vasospasm. *Chir Main.* 2005;24:39–41.
4. Natale M, Spennato P, Bocchetti A. Ulcerative and mutilating variant of carpal tunnel syndrome. *Acta Neurochir (Wien).* 2005;147:905–8.
5. Román J, Puig L, De Miguel G, De Moragas JM. Carpal tunnel syndrome presenting as sclerodactylia, nail dystrophy and acro-osteolysis in a 60-year-old woman. *Dermatology.* 1997;195:159–61.
6. Gassner EM, Schocke M, Peer S. Persistent median artery in the carpal tunnel: color Doppler ultrasonographic findings. *J Ultrasound Med.* 2002;21:455–61.
7. Fumiere E, Dugardeyn C, Roquet ME, Delcour C. US demonstration of a thrombosed persistent median artery in carpal tunnel syndrome. *JBR-BTR.* 2002;85:1–3.
8. Kele H, Verheggen R, Reimers CD. Carpal tunnel syndrome caused by thrombosis of the median artery: the importance of high-resolution ultrasonography for diagnosis. Case report. *J Neurosurg.* 2002;97:471–3.
9. Huaux JP, Rombouts JJ, Knoops P. Loss of digital tissues and carpal canal syndrome. Apropos of 3 cases. *Ann Chir Main.* 1986;5:249–52.
10. Fritz TM, Burg G, Böni R. Carpal tunnel syndrome with ulcerous skin lesions. *Dermatology.* 2000;201:165–7.