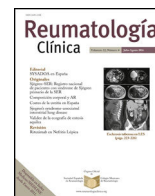




Sociedad Española
de Reumatología -
Colegio Mexicano
de Reumatología

Reumatología Clínica

www.reumatologiaclinica.org



Letter to the Editor

Median nerve ultrasound findings in systemic sclerosis patients: How do they relate to clinical features of the disease?

Hallazgos ecográficos del nervio mediano en pacientes con esclerosis sistémica: ¿cómo se comparan con aspectos clínicos de la enfermedad?

Dear editor,

Systemic sclerosis (SSc) is a rheumatic disease characterized by inflammation, vascular injury and fibrosis. Median nerve (MN) entrapment in the carpal tunnel (CT) seems to be frequent in patients with SSc^{1,2}. Ultrasound (US) evaluation of MN in SSc patients was only performed in few studies and conclusions were not linear³⁻⁵.

We aimed to compare specific MN US parameters between patients with SSc and a group of control subjects. Additionally, in the group of SSc patients, we also assessed the correlation between the US measurements and clinical variables of the disease. For this purpose, we conducted a cross-sectional study comprising 48 SSc patients, 39 females (81.3%), followed-up in our Rheumatology Unit with mean age of 56.98 ± 12.73 years and mean disease duration of 9.77 ± 6.12 years. The control group included 45 healthy subjects, 37 females (82.2%), paired for age (p=0.146) and gender (p=0.904). All individuals were Caucasian. Exclusion criteria were age <18 years, body mass index >30, previous wrist trauma or local corticosteroid injection.

Subjects were consecutively evaluated in our Department. MN cross-sectional area (MNA) and perimeter (MNP) of both sides of each person were measured at the level of the CT inlet in the transverse plane between the scaphoid tubercle and the pisiform bone. All measurements were performed by the same observer using a 15 MHz linear probe of a General Electric LOGIQ S8 US (image settings: frequency 15 MHz, gain 67 and depth 2.5 cm). Additionally, in the patients group, modified Rodnan skin score (mRSS), the hand mobility (HAMIS) and the SSc Severity Scale (SScSS) were also calculated. For simplification of comparative analysis, we present the results using the mean MNA and MNP of combined right and left sides. Statistical analysis included Chi-Square test, Mann-Whitney U-test, Kruskal-Wallis and Spearman correlation coefficient. Statistical significance was defined as P value <0.05. The study was performed following the Declaration of Helsinki principles and informed consent was obtained from all subjects.

We evaluated by US a total of 186 MN. Possible confounding variables as proportion of diabetes and CT surgery were similar between groups (p=0.803 and p=0.339, respectively). Median of MNA and MNP were significantly higher in SSc patients (7.5 mm² [6.6 to 9.5] and 13.8 mm [12.4 to 15], respectively) (median [interquartile range]) compared with controls (7.0 mm² [6 to 8] and 12.9 mm [11.7 to 14], respectively) (p=0.021 and p=0.018,

Table 1

Median Nerve Area (MNA) and Median Nerve Perimeter (MNP) comparison between the 3 phases of skin involvement among Systemic Sclerosis patients.

	Edematous (n=22)	Fibrotic (n=24)	Atrophic (n=2)	p value
Median MNA (mm ²)	9.25 [7.5 to 11.5]	7.25 [6.5 to 8.4]	7.25	<0.05
Median MNP (mm ²)	14.5 [13.5 to 16.9]	13.4 [12.4 to 13.9]	12.8	<0.05

respectively). Among SSc patients group, a positive correlation was found between mRSS and both MNA (Spearman's rho=0.335, p=0.02) and MNP values (rho=0.336, p=0.02). There was no correlation between MN US parameters and age, disease duration, HAMIS or SScSS. MNA and MNP were also similar in relation to gender and subset of disease (p>0.05). However, median of MNA and MNP were significantly different between the 3 phases of skin involvement, being higher in patients in the edematous phase (Table 1).

Our study showed an increased MNA and MNP in SSc patients in comparison with controls while few data available from previous studies yielded mixed results³⁻⁵. Contrarily to Bandinelli F et al³ who did not find any correlation between MN US measurements and SSc clinical features, we found some interesting correlations. In our study, patients in the edematous phase of skin involvement and patients with higher skin thickness assessed by mRSS showed higher MNA and MNP values. The presence of tissue edema and thick skin may contribute as mechanical factors for MN entrapment in the CT. Larger studies are needed to draw definite conclusions.

References

- Amaral TN, Peres FA, Lapa AT, Marques-Neto JF, Appenzeller S. Neurologic involvement in scleroderma: A systematic review. *Semin Arthritis Rheum.* 2013;43:335-47.
- Morer IC, Marco JV, Aznar JLH, Lafita CA, Caballo RB, Juste AO. Manifestaciones neurológicas en la esclerosis sistémica. *Rev Clin Esp.* 2003;203:373-7.
- Bandinelli F, Kaloudi O, Candelieri A, Conforti ML, Casale R, Cammarata S, et al. Early detection of median nerve syndrome at the carpal tunnel with high-resolution 18MHz ultrasonography in systemic sclerosis patients. *Clin Exp Rheumatol.* 2010;28:15-8.
- Bignotti B, Ghio M, Panico N, Tagliafico G, Martinoli C, Tagliafico A. High-resolution ultrasound of peripheral nerves in systemic sclerosis: a pilot study of computer-aided quantitative assessment of nerve density. *Skeletal Radiol.* 2015;44:1761-7.
- Tagliafico A, Panico N, Resmini E, Derchi LE, Ghio M, Martinoli C. The role of ultrasound imaging in the evaluation of peripheral nerve in systemic sclerosis (scleroderma). *Eur J Radiol.* 2011;77:377-82.

Joana Sousa-Neves*, Marcos Cerqueira, Carmo Afonso, Filipa Teixeira

Rheumatology Department, Conde de Bertandos Hospital, Ponte de Lima, Portugal

* Corresponding author.

E-mail address: joanasvsneves@gmail.com (J. Sousa-Neves).

<http://dx.doi.org/10.1016/j.reuma.2017.07.019>

1699-258X/© 2017 Elsevier España, S.L.U. and Sociedad Española de Reumatología y Colegio Mexicano de Reumatología. All rights reserved.