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Functional impairment in patients with systemic sclerosis: relation to disease peculiarities and pain

Yaroslava Krasienko, Tetiana Karasevska

Department of Internal Medicine with a course of Cardiology and Rheumatology, Bogomolets National Medical University, Kyiv, Ukraine

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Introduction: Systemic sclerosis (SSc) is characterised by microvascular abnormalities affecting multiple organs. Pain is a prevalent and debilitating symptom of SSc that can have a significant impact on patients' quality of life and physical function.

The study aims to evaluate functional impairment in patients with SSc and to investigate their association with disease peculiarities and pain.

Material and methods: A retrospective analysis of medical records from the European Alliance of Associations for Rheumatology (EULAR) Research Voucher grant "The bone and muscle state in patients with systemic sclerosis" included 32 patients with SSc (mean age: 57.1 ±12.5 years; body mass index: 24.6 ±4.6 kg/m²; disease duration 8.4 ±5.9 years). Functional status was assessed using HAQ-DI, and patients were stratified into 3 groups: G1 minimal (score 0–1), G2 moderate (1–2), and G3 severe (2–3) disability. We analysed pain in patients using the Visual Analogue Scale (VAS) and the VAS physician global score. A hand-grip dynamometer assessed muscle strength. The analysis included laboratory markers (C-reactive protein, erythrocyte sedimentation rate, interleukin-6), skin involvement evaluated by modified Rodnan skin score (mRSS), the presence of digital ulcers (DU) and interstitial lung disease (ILD). Statistical analysis was performed on the Med-Stat software.

Results: Patients in G1 exhibited significantly lower pain scores than those in G2, as measured by both the patient VAS (30.1 ±18.1 vs. 59.0 ±18.5; $p = 0.05$) and the physician VAS (26.9 ±16.0 vs. 50.5 ±19.2; $p = 0.05$). As far as it was in G3: VAS patient (63.3 ±15.1 vs. 30.1 ±18.1; $p = 0.05$), and VAS physician (69.3 ±34.4 vs. 26.9 ±16.0; $p = 0.05$). Among G3 patients in comparison with G1, significantly higher mRSS scores (27.3 ±7.9 vs. 16.7 ±7.8; $p = 0.05$) and reduced hand grip strength (6.33 ±6.1 vs. 16.7 ±7.8; $p = 0.05$) were demonstrated. No significant associations were observed between HAQ-DI and age, disease duration, laboratory parameters, DU or ILD.

Discussion: These findings highlight the importance of a thorough evaluation of functional limitations and pain in SSc. Our observations emphasise that functional impairments are closely related to patients' reported pain and the severity of the disease as assessed by physicians. In our study, decreased hand strength and skin involvement were found to be risk factors for functional impairment.

Conclusions: In patients with SSc, functional impairment correlates with pain intensity, muscle strength, extent of skin involvement, and global disease activity assessed by physicians.