PREVALENCE AND CLINICAL-INFLAMMATORY CORRELATES OF SARCOPENIA IN PATIENTS WITH RHEUMATIC DISEASES ACCORDING TO THE EWGSOP2 CRITERIA

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Abstract

Background: Sarcopenia is characterized by a progressive decline in skeletal muscle strength, muscle quantity or quality, and physical performance. Patients with chronic rheumatic diseases may be at increased risk of sarcopenia because of persistent systemic inflammation, reduced physical activity, functional impairment, and prolonged disease duration. This study aimed to determine the prevalence of sarcopenia among patients with rheumatic diseases according to the European Working Group on Sarcopenia in Older People 2 (EWGSOP2) criteria and to investigate associations between sarcopenia-related functional parameters and systemic inflammation.

Keywords: Sarcopenia; rheumatic diseases; EWGSOP2; rheumatoid arthritis; systemic lupus erythematosus; systemic sclerosis; ankylosing spondylitis; C-reactive protein; muscle strength; physical performance.

Methods: This cross-sectional study included 200 patients with confirmed rheumatic diseases, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), systemic sclerosis (SSc), and ankylosing spondylitis (AS). The study population comprised 130 women (65.0%) and 70 men (35.0%). Sarcopenia was assessed using the EWGSOP2 diagnostic algorithm. Muscle strength was evaluated by handgrip strength (HGS) using a dynamometer, with cut-off values of <27 kg for men and <16 kg for women. Appendicular skeletal muscle mass (ASMM) was assessed using bioelectrical impedance analysis, and physical performance was evaluated using the 4-meter gait speed test. Systemic inflammation was assessed by serum C-reactive protein (CRP) concentration. Statistical analyses were performed using SPSS version 26.0. Student's t-test or the Mann–Whitney U-test was used for between-group comparisons according to data distribution, while Spearman's rank correlation coefficient was used to assess associations between continuous variables. The Kruskal–Wallis test was used for comparisons among rheumatic disease groups.

Results: Confirmed sarcopenia was identified in 31.0% of patients (62/200), while 13.5% (27/200) had probable sarcopenia. Low muscle strength was observed in 44.5% of patients, including 46.2% of women and 41.4% of men. Reduced gait speed was detected in 43.0% of participants. The prevalence of confirmed sarcopenia differed significantly among the rheumatic disease groups ($H = 14.82$, $p = 0.002$). Disease-specific prevalence was highest among patients with ankylosing spondylitis (44.1%) and systemic lupus erythematosus (37.5%), followed by systemic sclerosis (28.1%) and rheumatoid arthritis (23.3%). Patients with confirmed sarcopenia had significantly higher CRP concentrations than those without sarcopenia (13.36 ± 7.11 mg/L vs. 6.21 ± 4.24 mg/L; $p = 0.001$). CRP concentration was inversely correlated with HGS ($r = -0.38$, $p = 0.001$) and gait speed ($r = -0.41$, $p = 0.001$). Age showed a moderate inverse correlation with appendicular skeletal muscle mass ($r = -0.42$, $p = 0.001$), while disease duration was inversely correlated with muscle strength ($r = -0.49$, $p = 0.001$).

Table 1. Distribution of Sarcopenia According to Rheumatic Disease Type

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Rheumatic disease	Total patients, n	Probable sarcopenia, n (%)	Confirmed sarcopenia, n (%)
Ankylosing spondylitis	34	4 (11.8%)	15 (44.1%)
Systemic lupus erythematosus	48	7 (14.6%)	18 (37.5%)
Rheumatoid arthritis	86	12 (14.0%)	20 (23.3%)
Systemic sclerosis	32	4 (12.5%)	9 (28.1%)
Total	**200**	**27 (13.5%)**	**62 (31.0%)**

Note: Percentages were calculated using the total number of patients within each rheumatic disease group. The disease-specific numbers of confirmed sarcopenia sum to 62 patients, corresponding to the overall prevalence of 31.0% (62/200).

Discussion and Conclusion: Sarcopenia represents a clinically relevant comorbidity among patients with chronic rheumatic diseases and is associated with impaired muscle strength and physical performance. The highest proportions of confirmed sarcopenia were observed among patients with ankylosing spondylitis and systemic lupus erythematosus. Higher CRP concentrations were observed in patients with confirmed sarcopenia and were inversely associated with muscle strength and gait speed, indicating an association between systemic inflammatory activity and impaired muscle function. Older age and longer disease duration were also associated with unfavorable muscle-related outcomes. Systematic assessment of muscle strength, muscle mass, and physical performance according to the EWGSOP2 framework may facilitate early identification of sarcopenia and support individualized rehabilitation and physical activity interventions in patients with rheumatic diseases.

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