SECONDARY SARCOPENIA IN RHEUMATOID ARTHRITIS PATIENTS TREATED BY BIOLOGIC DISEASE MODIFYING ANTI-RHEUMATIC DRUGS

Eriko Hasegawa1, 2, Satoshi Ito3, Yoichi Kurosawa1, 2, Daisuke Kobayashi1, Asami Abe4, Hiroshi Otani5, Kiyoshi Nakazona6, Akira Murasawa1, Ichiei Narita1, Hajime Ishikawa1, Niigata University Graduate School of Medical and Dental Sciences, Division of Clinical Nephrology and Rheumatology, Niigata City, Japan; 2Niigata Rheumatic Center, Department of Rheumatology, Shibata City, Japan

Background: Sarcopenia is characterized by a loss of muscle mass and strength, which leads to a reduced physical ability, poor quality of life (QoL), frailty and mortality. Rheumatoid arthritis (RA) is considered a cause of secondary sarcopenia.

Objectives: To clarify the effectiveness of biologic disease-modifying anti-rheumatic drugs (bDMARDs) on sarcopenia, including the physical ability, body composition and nutritional status.

Methods: This was a prospective cohort study including consecutive 41 patients (11 men, 30 women, 63.6±16.1 years old) with RA who started bDMARDs for the first time at Niigata Rheumatic Center. The diagnosis of secondary sarcopenia was made according to the diagnostic algorithm of the Asian Working Group for Sarcopenia (AWGS), excluding the criteria above older age. We observed the disease activity of RA, physical ability, body composition, nutritional status and QoL at baseline and 6 months. The disease activity was assessed by the disease activity score 28 joint count erythrocyte sedimentation rate (DAS28-ESR) and clinical disease activity index (CDAI). The physical activity was determined using the health assessment questionnaire (HAQ), 10-m walking test (10MWT) and timed up and go test (TUG). The nutritional status was determined based on the controlling nutrition status (CONUT) score and prognostic nutritional index (PNI). The overall QoL was measured by European quality of life scale-5 dimensions (EQ-5D).

Results: Among 41 patients who started bDMARDs, 19 were classified as having sarcopenia, and 7 were classified as having pre-sarcopenia. The bDMARD was certolizumab pegol in 10 patients, adalimumab in 7, abatacept in 7, golimumab in 5, infliximab in 3 and etanercept in 3. The DAS28-ESR (4.7±1.3 vs. 2.6±1.3, p<0.001) and CDAI (18.6±9.4 vs. 7.2±7.3, p<0.001) decreased significantly after 6 months of bDMARDs therapy. The physical activity was significantly improved after 6 months of bDMARDs: HAQ (1.1±0.9 vs. 0.7±0.9, p<0.001), 10MWT (1.5±0.7 vs. 1.6±0.6 m/s, p=0.046) and TUG (10.0±5.0 vs. 9.5±2.2 s, p=0.024). Regarding the nutritional status, the CONUT score (3.8±0.5 vs. 3.1±1.2, p<0.001) and PNI (44.9±6.4 vs. 49.7±4.1, p<0.001) were significantly improved after 6 months of bDMARDs. The EQSD was also improved after 6 months of bDMARDs (0.6±0.15 vs. 0.7±0.20, p=0.010). The body composition analysis showed a significant increase in the body weight (54.3±13.2 vs. 55.4±14.4 kg, p=0.006) and fat mass (16.3±7.3 vs. 17.4±7.8 kg, p=0.001) after 6 months of bDMARDs but no significant increase in the appendicular skeletal muscle mass (14.7±4.3 vs. 14.8±4.5, p=0.111). The proportion of patients classified as having sarcopenia showed a decreasing trend after 6 months of bDMARDs therapy (46.3% vs. 24.4%, p=0.0637).

Conclusion: After 6 months of bDMARDs therapy, the physical ability, nutritional status and QoL were significantly ameliorated. While the muscle mass was not markedly increased, the proportion of patients with sarcopenia showed a decreasing trend. The administration of bDMARDs might be useful for preventing secondary sarcopenia in RA patients.

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