



EVALUATION OF MYOKINES SERUM LEVELS, MUSCLE MASS AND RADIOGRAPHIC PROGRESSION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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BACKGROUND

Myokines, such as irisin and myostatin, are cytokines/growth factors mainly expressed in skeletal muscle, which is also their primary target tissue. They exert physiological and pathological functions in distant organs. Rheumatoid arthritis (RA) patients have significant joint destruction, as well as muscle loss. Irisin is known to increase bone and muscle mass, while myostatin is a negative regulator of muscle growth and promotes osteoclastogenesis. The aim of this study was to evaluate serum levels of irisin and myostatin, body composition and one-year radiographic progression in RA patients.

MATERIALS AND METHODS

One hundred twenty-three RA female patients were included. Thirty-four healthy subjects paired by sex, age and body mass index (BMI) were enrolled as the control group. Blood samples were collected and serum levels of irisin and myostatin were evaluated by ELISA. Appendicular lean mass index adjusted by fat mass index Z-score (ALMI/FMI Z-score) was assessed by total body dual-energy x-ray absorptiometry. Forty RA patients had their hands and feet radiographs, taken within three months of the blood collection and a year later, assessed by van der Heijde-modified total Sharp score (vdH-mTSS) to verify one-year radiographic progression. Statistics included Mann-Whitney U test and Spearman correlation, with significance at $p < 0.05$.

RESULTS

The mean age of RA patients was 53 years, mean DAS28-CRP was 3.82, mean disease duration was 11.2 years and mean BMI was 27.33 kg/m². Myokines serum levels were significantly lower in RA patients than in controls (irisin: 25.61±8.25 vs 30.36±10.95 ng/ml; myostatin: 3011.28±1271.11 vs 4049.08±1610.01 pg/ml). Low muscle mass (ALMI/FMI Z-score ≤ -1) was present in 29.3% of RA patients, and myokines levels were not different between patients with low and normal muscle mass. The 24.4% RA patients receiving biological therapy had lower myokines levels, and significantly lower myostatin levels, compared to RA patients not receiving biologics (irisin: 31.71±7.69 vs 25.93±6.89 ng/ml; myostatin: 2448.64±1114.90 vs 3261.66±1156.28 pg/ml). The mean values of vdH-mTSS were 28.3 and 31.3 in the first and second evaluation, respectively. Over one year, 81.5% of patients presented radiographic progression (Δ vdH-

mTSS>0), and 21% presented rapid progression (Δ vdH-mTSS>5). Myokines serum levels were not correlated with radiographic progression.

CONCLUSION

Serum levels of irisin and myostatin were significantly lower in RA patients, compared to controls, and were not associated with muscle mass and radiographic progression. The use of biological therapy by RA patients may affect myokines serum levels, and the amount of irisin and myostatin that reaches the joint, or is produced in the joint environment, may differ from the circulating concentration.