<S6-3>

Circulating Irisin Levels as a Predictive Biomarker for Sarcopenia

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Myokines are peptides released by the skeletal muscle, and have gained popularity as potential biomarkers for sarcopenia. Irisin is a recently identified myokine, but its role in pathological sarcopenia remains unclear. We investigated the validity and accuracy of circulating irisin levels as a potential biomarker for sarcopenia. We evaluated the anthropometrics, body composition, sarcopenia-related parameters and serum irisin levels of 715 community-dwelling Koreans. Sarcopenia was determined on the basis of the clinical diagnostic criteria of muscle atrophy and weakness, which were proposed by the Asian Working Group for Sarcopenia.

Circulating irisin levels were correlated with appendicular lean mass/height2 (rmen = 0.275; rwomen = 0.321) and handgrip strength (rmen = 0.219; rwomen = 0.312) in both sexes (all $P < 0.01$). Furthermore, the mean circulating irisin levels were lower in the sarcopenia group than in the normal group (all $P < 0.05$). In the logistic regression models, the association between serum irisin concentration and incident sarcopenia persisted even after adjusting for potential confounders, such as sex, age and fat indices (odds ratio 0.20, 95% CI 0.07-0.60; P for trend <0.01). The predictive values of serum irisin for sarcopenia were <1.0 μg/mL in men and <1.16 μg/mL in women, with the area under the receiver operating characteristic curves of 0.87 (95% CI 0.77-0.99) and 0.68 (95% CI 0.55-0.81), respectively (all $P < 0.01$).

Taken together, a low level of circulating irisin is a sensitive marker for muscle weakness and atrophy. Irisin is a potential biomarker for muscle dysfunction that could help predict the onset of sarcopenia and provide new avenues for monitoring age-related muscle changes.