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Sclerostin as a Putative Myokine in Sarcopenia

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Sclerostin is an osteocyte-derived circulating protein that suppresses the Wnt/β-catenin signaling pathway and bone formation [1]. Sclerostin deficiency in humans and mice causes inherited high bone mass conditions characterized by exaggerated bone formation [1,2]. Many studies have demonstrated the role of sclerostin as a regulator of bone mass, and emerging studies have suggested that circulating sclerostin could serve as a biomarker for non-skeletal diseases [3,4]. However, relatively few studies have shown the effects of sclerostin on muscle physiology and pathology in humans.

Sarcopenia, an age-associated multifactorial disease, includes a notable decline in muscle mass and strength, neuromuscular function, and performance [5-8]. Despite its effects on mortality and morbidity, sarcopenia biomarkers remain unknown. Based on the coexistence of sarcopenia and osteoporosis in the population with aging and frailty, as well as considerable overlap in the pathophysiology of these two diseases, in an article titled, "Decreased serum level of sclerostin in older adults with sarcopenia," Ahn et al. [9] investigated whether circulating sclerostin is associated with sarcopenic indices in older adults. The authors showed that higher circulating levels of sclerostin were significantly associated with a lower risk of sarcopenia, low muscle mass, and muscle weakness in Korean older adults [9]. These data were statistically significant, even after considering the confounding effects of age, sex, and body mass index. These findings are consistent with previous investigations showing a negative correlation between serum sclerostin levels and skeletal muscle mass index in Korean subjects without diabetes [10]. Therefore, it is plausible to predict that sclerostin could serve as a potential novel biomarker for sarcopenia.

However, this observational study could not determine the causal relationship between the variables. Thus, it would be interesting to determine how decreased serum sclerostin levels affect muscle mass and function, which may provide a new therapeutic target for sarcopenia. Moreover, further studies are needed to clarify the role of sclerostin in the muscle-bone relationship in a variety of racial and ethnic populations. Since it has been recognized that many hormones and growth factors regulate muscle mass and protein metabolism [7,11,12], it would be valuable to investigate the role of sclerostin in the myopathies of endocrine disorders.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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