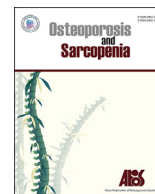




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Editorial

Overcoming osteoporosis and beyond: Locomotive syndrome or dysmobility syndrome



To the editor

We are presently facing ongoing global healthcare problems that are evolving to reflect the aging population. Musculoskeletal diseases are highly prevalent among elderly persons, and many of them have diverse complications. The impairment of the locomotive system—consisting of muscles, joints, cartilage, bones including the spine, intervertebral discs, and nerves—is closely associated with a lower quality of life. In elderly people with locomotive syndrome (LS), hip fracture is the most serious complication of falling and a major cause of death in these people. In this issue, there is a paper of “Locomotive syndrome in Japan” by Ishibashi [1]. The author described that the Japanese Orthopaedic Association proposed the concept of LS in 2007, and recommended locomotion training for prevention and treatment of musculoskeletal diseases in aged patients. The author insists that these efforts will improve mobility and thus eventually reduce the demand for related medical care in elderly persons.

In contrast to medical researchers in Japan, those in other countries, including Korea, have only paid attention to osteoporosis and bone metabolic diseases rather than the overall interaction of parts of skeletal system such as muscles and joints. However, Korea's population is also aging rapidly, and had already evolved from an “aging society” to an “aged society.” This is also true of many other parts of the world. Therefore, research is required to understand and prevent LS and dysmobility syndrome (DS). DS is proposed to be classified as three or more of the following 6 factors: osteoporosis, falls in the preceding year, obesity/high fat mass, low lean mass, slow gait speed, and low grip strength [2,3]. Recently, a study in Korea revealed that low peak jump power is associated with elevated odds of DS in community-dwelling elderly subjects, indicating that peak jump power may be also an important parameter for evaluating physical function in aged people. Therefore, the elderly people with low peak jump power should be educated to improve their muscle power [4]. In another study of 5994 men ≥ 65 years of age without hip arthroplasty who were able to walk without assistance, baseline DS was revealed to increase the risk of hip and other major osteoporotic fractures [5]. A study in Taiwan showed that patients with DS and pre-DS had a higher risk of mortality than the healthy control group [6]. The most important part of the therapeutic approach for overcoming DS is protein intake. For healthy adults, a daily protein intake of 0.7–0.8 g protein/kg body weight is recommended. Higher daily protein intakes of 1.0–1.2

and 1.2–1.5 g/kg body mass are recommended for the elderly and subjects with high risk of malnutrition, respectively. In addition, low water intake increases the risk of sarcopenia 1.5 fold, and thus it is helpful for people over 65 years old to drink 5 glasses or 1 L of water per day. These should be accompanied by regular exercise and physical activity in elderly individuals. Recently, the National Institute for Longevity Science in Japan has been promoting an exercise program called “cognicise” to prevent both cognitive dysfunction and DS.

Although osteoporosis medications have been prescribed clinically for a long time to improve bone health, there are not yet any medicines that can effectively increase muscle mass. However, anabolic steroids, selective testosterone receptor modulators, and myostatin inhibitors have been investigated for improving muscle function in the elderly. In addition, research on molecular mechanisms of muscle–bone interaction have identified the importance of irisin, osteocalcin, β -aminoisobutyric acid, and prostaglandin E_2 molecules, which could become targets of future therapies. Therefore, there is a strong possibility of new drug development for maintaining both muscle and bone health.

In conclusion, holistic and multidisciplinary efforts are needed to improve the health and quality of life of the elderly population through thorough understanding of mobility organs as a whole.

Conflicts of interest

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

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