

## Sarcopenia: An Emerging Giant Greater Than Osteoporosis

Sarcopenia is defined as the loss of skeletal muscle mass and strength with increased age, resulting in weakness, limited mobility, and increased susceptibility to injury. There are many reports on the clinical features, etiologies, pathomechanisms, clinical course, and prognosis of patients with sarcopenia. In particular, frailty, muscle wasting, and sarcopenia are common among older adults, and are chronic problems that threaten the healthy life expectancy of each country. Prevention, treatment, and rehabilitation of these conditions have become a major concern in health care today. For the clinical application of sarcopenia in medical practice, its recognition as a disease and consensus on diagnostic criteria have highest priority, with emphasis on basic research and accumulation of clinical evidence.

The initial concept of sarcopenia only considered reduced muscle mass. However, even when muscle mass is significantly reduced, muscle strength and function may be normal or better; conversely, muscle strength and function may be significantly reduced, even when muscle mass is within normal range. Therefore, it has been difficult to develop useful criteria for the diagnosis of sarcopenia based only on loss of muscle mass. Since the European Working Group on Sarcopenia in Older People suggested diagnostic criteria including walking speed and grip strength in addition to muscle mass in 2010, the definition and diagnosis combining reduced muscle mass with either muscle weakness or poor physical performance have been established. Other working groups such as the Asian Working Group for Sarcopenia, International Working Group on Sarcopenia and the Foundation for National Institutes of Health Biomarkers Consortium also follow this concept. However, different criteria for sarcopenia have been suggested, and consensus on standardized diagnostic criteria and cutoff values have not yet been achieved in each country.

Clinical experience must be accumulated to establish consensus on diagnostic criteria for a new disease. However, until new diagnostic tests or treatments are clinically applied, much verification is required and many institutional procedures must be established; these should be performed at most research levels. Thus, there is an impediment to application of accumulated clinical evidence in an institutional framework based on clinical consensus: i.e., a new diagnostic tool or treatment cannot be recognized as a standard procedure because the evidence of clinical effectiveness is limited.

In particular, the cutoffs used for diagnosis are different according to regions and population. In order to expand clinical applications, achieving consensus on diagnostic criteria with standardized values obtained from diagnostic references at regional or national level should be a top priority.

Another important condition for clinical application is to designate a disease code in the International Classification of Diseases (ICD). There is a need to raise awareness of sarcopenia as a new disease. Since the National Institutes of Health publicized osteoporosis as a disease in 1984 and the U.S. Food and Drug Administration approved the use of osteoporosis medication, everyone has been in agreement about the importance of prevention and treatment of osteoporosis for over 30 years. Because there has been no ICD-10 code for sarcopenia, international efforts have been made to obtain a new code designation. In the United States, Aging in Motion, a coalition of organizations working to advance research and treatment on sarcopenia submitted a proposal for a code to the ICD-10 Coordination and Maintenance Committee, Centers for Disease Control and Prevention (CDC) in July 2014. As a result, the CDC has established an ICD-10-CM (Clinical Modification) code for sarcopenia, M62.84 is a new 2017 ICD-10-CM code that became effective on October 1, 2016. The disease code of sarcopenia is not yet designated in the ICD-10 used in other countries. However, it is expected that the recognition of the disease will be further promoted if sarcopenia is listed in the ICD system in many countries in addition to the United States. The establishment of disease recognition and diagnostic criteria are the basis for the clinical efficacy of various treatments, rehabilitation, and prevention measures. In the future, the significance of sarcopenia is expected to be at or greater than that of osteoporosis. Sarcopenia will become a new geriatric giant.

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