Risk assessment of total and cardiovascular disease mortality using sarcopenia and obesity

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Background/Aims: Sarcopenia is characterized as the progressive decrease of muscular mass, strength, and athletic performance with age. Metabolic syndrome (MS) is described as the presence of obesity-related cardiovascular risk factors such as abdominal obesity, poor glucose tolerance, hypertriglyceridemia, reduced HDL cholesterol, and/or hypertension. In older adults, classic cardiovascular risk factors are commonly present in people with sarcopenia. Therefore, we aimed to estimate the impact of sarcopenia and other MS components on the risk of CVD mortality in this study.

Methods: Total, 7419 participants were included from National Health and Nutrition Examination Survey (NHANES) from 2013 to 2015. Appendicular skeletal mass index (ASMI) was used to assess skeletal muscle mass of participants. Participants were divided into eight groups based on sarcopenia, metabolic syndrome (MS) and obesity status. A multivariate logistic regression analysis was performed with the risk of all-cause and CVD-mortality.

Results: The mean age was 55 years, and 50.4% of participants were male. The prevalence of sarcopenia was 22.1% (n= 1636 of 7419). During the follow-up period, 1503 of the 7419 people (20.2 percent) died, with 347 of them dying from CVD. Among the eight groups, people with sarcopenia, MS and obese showed the highest HRs (2.03, 95% CI = 1.53-2.90, $p < 0.001$) for all-cause mortality. For CVD-mortality, the sarcopenia, MS but non-obese group showed the highest HRs (3.44, 95% CI = 1.70-6.85, $p = 0.001$). Interestingly, people who had only central obesity (non-sarcopenic, metabolic healthy), did not increased mortality rate at all (HR = 1.03, 95% CI = 0.77-1.38, $p = 0.84$), whereas people who had only sarcopenia (non-obese, metabolic healthy) showed significantly increased all-cause mortality (HR = 1.67, 95% CI = 1.09-2.59, $p = 0.02$) compared to people who had no risk factor.

Conclusions: The risk for all-cause and CVD mortality was significantly increased in participants with metabolic syndrome accompanied by sarcopenia. This finding emphasizes the importance of early intervention for skeletal muscle wasting, especially in metabolically unhealthy subjects.