A New Frailty Index Valid for the Korean Elderly Population

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Background: Frailty is related to adverse outcomes in the elderly. We aimed to validate established frailty criteria for community-dwelling Korean elderly. We also developed and validated a new frailty index based on a multidimensional model. **Methods:** We studied 693 participants of the Korean Longitudinal Study on Health and Aging (KLoSHA). We developed a new frailty index (KLoSHA Frailty Index, KFI) and compared predictability of the index with established frailty criteria from the Cardiovascular Health Study (CHS) and Study of Osteoporotic Fracture (SOF). Mortality, hospitalization, and functional decline were evaluated. **Results:** The criteria from SOF, CHS and KFI correlated with each other, with a Spearman's coefficient from -0.003 to 0.487. During the follow-up period (5.6±0.9 years), 97 (14.0%) died. Frailty statuses from the CHS index and KFI (c-index: 0.596 and 0.713, respectably; p<0.001, better for KFI) were related to mortality but were not related to mortality using the SOF. The KFI showed better predictability for following functional decline than CHS index (AUC of ROC: 0.937 for KFI and 0.704 for CHS index, p=0.001); However, the SOF index did not have predictability for following functional decline. Frailty from the KFI (HR=2.13, 95% CI 1.04-4.35) and CHS criteria (HR=2.24, 95% CI 1.05-4.76) were significantly correlated with hospitalization. In contrast, frailty by the SOF index was not significantly correlated with hospitalization (HR=1.43, 95% CI 0.68-3.01). **Conclusions:** A novel frailty index (KFI), can be derived from geriatric assessment data, is a useful and valid criterion for the evaluation and prediction of frailty in the Korean elderly population.

Determining Cutoff Values for Sarcopenia in the Korean Population Using Bioimpedan ce Analysis

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Background: Because sarcopenia is associated with adverse outcomes in elderly, detecting sarcopenia is a prominent issue. Dual energy X-ray absorptiometry (DXA) and bioimpedance analysis (BIA) are widely used to measure muscle mass. Although BIA is a useful method compared to DXA due to its low cost and lack of radiation hazard, reference values of sarcopenia in Korean population by BIA are not yet determined. Therefore, this study established cutoff values of sarcopenia in Korean population for height and weight adjusted muscle mass indices by BIA. **Methods:** We retrospectively reviewed health examination data of Seoul National University Gangnam Center acquired from 2003 to 2009. BIA data (Inbody 720, Biospace, Korea) of 3,620 men and 4,006 women aged 20 to 34 years, and 2,201 men and 1,701 women 65 or older were evaluated. Appendicular skeletal muscle mass (ASM) was adjusted by height and weight. The sex-specific cut point of class I sarcopenia for each index was defined as 1SD below the mean of the male or female reference group aged 20 to 34, with that of class II sarcopenia as 2SD below the mean. Also, the sex-specific lowest 20 percentile values of each index in the aged over 65 years were determined. Then prevalences of sarcopenia in elderly people were calculated for each index. **Results:** Male-specific cutoff points of class I and II sarcopenia were 6.78 kg/m^2, 5.97 kg/m^2 for height-adjusted ASM (ASM/ht^2), and 29.19%, 27.17% for weight-adjusted ASM (ASM/wt). For women, those for height- and weight-adjusted ASM were 4.94 kg/m^2, 4.36 kg/m^2 and 25.57%, 23.85% respectively. The lowest 20 percentile-cut points for men over 65 years or more were 6.69 kg/m^2 by ASM/ht^2 and 28.85% by ASM/wt. For women, those were 5.76 kg/m^2 and 24.49%. Based on reference values calculated, male-specific prevalences of class II sarcopenia over 65 years or more were 3.7% by ASM/ht^2 and 3.5% by ASM/wt. For women, those were 0.2% by ASM/ht^2 and 9.8% by ASM/wt. **Conclusions:** Based on reference values yielded in this study, it become available to evaluate sarcopenia by BIA as well as DXA in the Korean population.