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Gait speed and handgrip strength as predictors of all-cause mortality and cardiovascular events in hemodialysis patients

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Objectives: Low physical performance in patients undergoing maintenance hemodialysis is associated with a high mortality rate. We investigated the clinical relevance of gait speed and handgrip strength, the two most commonly used methods to assess physical performance.

Methods: We obtained data regarding gait speed and handgrip strength from 277 hemodialysis patients and evaluated their relationship with baseline parameters, mental health, plasma inflammatory markers, and major adverse clinical outcomes. Low physical performance was defined by the recommendations suggested by the Asian Working Group on Sarcopenia.

Results: The prevalence of low gait speed and handgrip strength were 28.2% and 44.8%, respectively. Old age, low serum albumin levels, high comorbidity index, and impaired cognitive functions were associated with low physical performance. Patients with isolated low gait speed exhibited a general trend for worse quality of life than those with isolated low handgrip strength. Gait speed and handgrip strength showed very weak correlations with had different determinant factors (older age, the presence of diabetes, and lower serum albumin for low gait speed, and lower body mass index, and the presence of previous cardiovascular events for low handgrip strength). Patients with low gait speed and handgrip strength had elevated levels of plasma endocan and matrix metalloproteinase-7 and the highest risk of all-cause mortality and cardiovascular events among the groups (adjusted hazard ratio of 2.72, $p = 0.024$).

Conclusions: Gait speed and handgrip strength reflected distinctive aspects of patient characteristics and that their combination improved the prediction of adverse clinical outcomes in hemodialysis patients. Gait speed seems to be a better indicator for poor patient outcomes compared with handgrip strength.