



Oral Communication Abstract

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Steady exercise improves hand grip and leg muscle strength in hemodialysis patients

Ran-hui Cha

Department of Internal Medicine-Nephrology, National Medical Center, Korea, Republic of

Objectives: Sarcopenia due to chronic inflammation and biochemical disturbances in chronic kidney disease is severer and more prevalent in patients on hemodialysis (HD). We longitudinally evaluated the hand grip (HGS) and leg muscle strength (LMS) in patients receiving HD and tried to find factors associated with muscle strength.

Methods: We screened (January 2020 (n=127)) and followed up (June 2020 (n=110) and December 2020 (n=104)) HGS (opposite the fistula side) and LMS (both sides) at single center by using digital hand and leg dynamometer (T.K.K.5401 and 5710e/5715, Takei scientific instruments Co. Ltd., Niigata, Japan).

Results: HGS and LMS showed good correlation ($r = 0.658$, $p < 0.001$). HGS (24.2 vs. 15.5 kg) and LMS (32.8 vs. 22.5 kg) were better in men ($p < 0.001$ and $p < 0.001$, respectively). Muscle strength was greater in men irrespective of age except for LMS in younger patients (< 60 years). Older patients (≥ 60 years) showed decreased LMS than others in women ($p = 0.01$). Patients who performed steady home- or hospital-based exercise showed marginally higher HGS (23.1 vs. 19.8 kg, $p = 0.07$) and significantly higher LMS (33.7 vs. 25.9 kg, $p = 0.004$). Steady exercise showed improvement of LMS throughout the study period (from January to June, $p = 0.004$, from January to December, $p = 0.014$). Multiple linear regression analysis proved male sex and steady exercise were factors associated with better HGS and LMS. Steady exercise showed greater impact on LMS in male patients with longer HD vintage (≥ 44 months) and on HGS in younger male patients with shorter HD vintage (< 44 months).

Conclusions: Steady exercise was important determinant of muscle strength in HD patients. We need to encourage patients to steadily do regular home- or group-exercise before sarcopenia develops and introduce new feasible form of exercise for HD patients.

Leg muscle strength according to exercise status

