Increase in leg strength after outpatient cardiac rehabilitation contributes to improvement of gait speed in patients aged 75 years or older with cardiovascular disease

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[Background] Gait speed is known as a useful and significant prognosticator in elderly or frail patients with cardiovascular disease (CVD). However, the contributor for improvement of gait speed is still unclear in these patients. The aim of this study was to investigate the influence of increase in leg strength on gait speed in patients aged 75 years or older with CVD.

[Methods] Two hundred and ninety-six patients aged 75 years or older with CVD (80.5 ± 4.5 years, 176 males and 120 females) were followed up for 5 months and received cardiac rehabilitation during hospitalization and after hospital discharge. We obtained clinical information including laboratory data and prevalence of comorbidities from medical records. We also measured quadriceps strength (QS) and 10-m comfortable gait speed at hospital discharge and 5 months after the discharge. The QS and gait speed were examined with the changes from baseline to those after the observation period (ΔQS and Δgait speed). We compared clinical parameters between baseline and after the observation period and analyzed the determinants for Δgait speed using multiple regression analysis.

[Results] QS increased significantly from 36.9 ± 11.8%BW at baseline to 43.8 ± 13.7%BW after the observation period (P<0.001). Gait speed also increased from 0.96 ± 0.27m/s to 1.07 ± 0.25m/s (P<0.001). Multiple regression analysis with adjustment for clinical characteristics revealed that age (β=-0.335, P<0.001), ΔQS (β=0.215, P=0.006) and frequency of outpatient cardiac rehabilitation session (β=0.165, P=0.035) were significant independent determinants for Δgait speed.

[Discussion] This study demonstrated that the change in QS and frequency of outpatient cardiac rehabilitation session were independent determinants for change in gait speed in CVD patients aged 75 years or older. This result suggests that increase in leg strength after outpatient cardiac rehabilitation contributes to improvement of gait speed in this population.