Low muscle strength as a predictor of incident pneumonia in older patients with heart failure: sub-analysis of fragile-hf


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Funding Acknowledgements: Type of funding sources: Private grant(s) and/or Sponsorship. Main funding source(s): Novartis Pharma Research Grants, Japan Heart Foundation Research Grants

Background: Patients with heart failure often develop pneumonia during the course of their illness, which leads to high mortality. A decrease in swallowing muscle strength due to aging or concomitant disease may be involved in the development of pneumonia in the elderly. We sought to investigate the association between low muscle strength and the incidence of pneumonia in older patients hospitalized for worsening HF.

Methods: We carried out a sub-analysis of FRAGILE-HF, a prospective multicenter study, including 1228 consecutive older (>=65 years) hospitalized patients with HF (median age 81; 57.6% male; left ventricular ejection fraction (LVEF) 46 ± 17%). The patients were followed-up for two years after discharge from the index hospitalization.

Results: A total of 87 patients (7.1%) developed pneumonia after discharge, with an incidence of 43 per 1,000 patient-years. The patients with incident pneumonia were more likely to be male and had lower body mass index than those without pneumonia. A total of 895 patients (72.9%) with low muscle strength, defined as handgrip strength < 28 kg for men and < 18 kg for women according to the international criteria, were more likely to develop pneumonia than those with normal muscle strength (p < 0.001 for log-rank: figure). Low muscle strength was a significant predictor of incident pneumonia after adjustment with age, sex, body mass index, LVEF, and history of chronic lung disease and cerebral infarction (adjusted hazard ratio with 95% confidence interval: 3.31 [1.68-6.53], p < 0.001). Furthermore, 43.7% and 19.1% died in patients with and without pneumonia during the follow-up period, respectively, with the subsequent risk of all-cause mortality after the occurrence of pneumonia (adjusted hazard ratio: 4.09 [2.85-5.87], p < 0.001).

Conclusions: Low muscle strength was associated with incident pneumonia in older patients hospitalized for worsening HF. This finding may support the need for an interventional study targeting muscle wasting to prevent pneumonia in HF.
Number at risk
Normal muscle strength 333 320 298 268
Low muscle strength 895 795 684 586