Circulation: Heart Failure

RESEARCH LETTER

Clinical Determinants of Quality of Life in Patients With Acute Decompensated Heart Failure With Preserved Ejection Fraction: Insights From the PURSUIT-Heart Failure With Preserved Ejection Fraction Registry

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Improvement of quality of life (QOL) is one of the most important clinical end points for patients with heart failure (HF).[1] As our society continues to age, patients with HF are placing increasing value on better QOL over prolonged survival. Thus, physicians should place increasing awareness toward improving QOL in the management of HF.

The prevalence of HF with preserved ejection fraction (HFpEF) is rapidly increasing worldwide and the condition is becoming a growing issue as patients with HFpEF are generally old and often have multiple comorbidities. It is, therefore, clinically relevant to identify aggravating factors of QOL among cardiac factors and noncardiac comorbidities comprehensively, to specify appropriate therapeutic targets in HFpEF. Although several previous studies of HFpEF in the United States have already identified clinical correlates of adverse QOL,[2] the results might vary depending on geography, considering the wide diversity and regionality of HFpEF. Therefore, we aimed to identify the factors associated with impaired QOL in Japanese patients with HFpEF.

Patient data were obtained from the PURSUIT-HFpEF study (Prospective Multicenter Observational Study of Patients With Heart Failure With Preserved Ejection Fraction), which is a prospective multicenter observational study of acute decompensated heart failure patients with HFpEF (left ventricular ejection fraction ≥50%) in Osaka.[3] Regarding data collection, baseline characteristics, laboratory tests, echocardiography, clinical frailty scale, and the geriatric nutritional risk index[4] were obtained at discharge. As an outcome measure, EuroQol 5 dimensions 5-level (EQ-5D-5L)[5] was obtained at discharge to evaluate patients' QOL. Briefly, EQ-5D-5L consists of 5 domains on each 5-point scale representing patient well-being, namely mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, and the scores were converted to a country-specific index, which ranges from 0 to 1. Patients were stratified based on the tertile of EQ-5D-5L score. A multivariable ordinal logistic regression model was constructed to identify the factors associated with impaired QOL in a holistic way. The study was approved by an institutional review committee and

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that the subjects gave informed consent. Our study data will not be made available to other researchers for purposes of reproducing the results because of institutional review board restrictions. However, the study materials that support the findings of this study and the methods used in the analyses will be provided by the corresponding author upon reasonable request.

Between June 2016 and September 2020, a total of 864 patients were enrolled in the present study (mean age: 81 years, the proportion of female: 55%, mean body mass index: 22 kg/m^2). The study population was divided into tertiles based on their EQ-5D-5L score as follows: low EQ-5D-5L 0.038 to 0.664 (n=287), middle EQ-5D-5L 0.665 to 0.867 (n=293), and high EQ-5D-5L 0.871 to 1.000 (n=284). The Jonckheere-Terpstra test and Cochran-Armitage test showed that low EQ-5D-5L scores were significantly associated with higher age (P<0.01), higher female rate (P<0.01), higher NT-proBNP level (P<0.01), lower geriatric nutritional risk index (P<0.01), and higher clinical frailty scale (P<0.01).

The result of multivariable ordinal logistic regression analysis for the identification of factors associated with impaired QOL was shown in the Figure. Age (P<0.01), female sex (P<0.01), and log-transformed NT-proBNP (P<0.01) were significantly associated with impaired QOL. Notably, noncardiac factors, such as malnutrition (P=0.03) and frailty (clinical frailty scale; <0.01) were significantly associated with worse QOL. On the other hand, cardiac factors, such as NYHA class, AF, LVDd, TRPG, and cardiac index had no significant association after multivariable adjustment.

One of the distinctive results of the present study was a significant association between impaired QOL and noncardiac factors, such as higher age and malnutrition. This result was in contrast with previous studies in the United States, which showed that young age and obesity were significant predictors of adverse QOL in patients with HFpEF.[2] These contradictory results could be derived from differences in HFpEF phenotype based on geographic differences. Although participants in HFpEF studies in the United States have contained a large proportion of patients with the young obese phenotype of HFpEF, our cohort was mainly composed of a thin elderly female phenotype with high comorbidity burden.

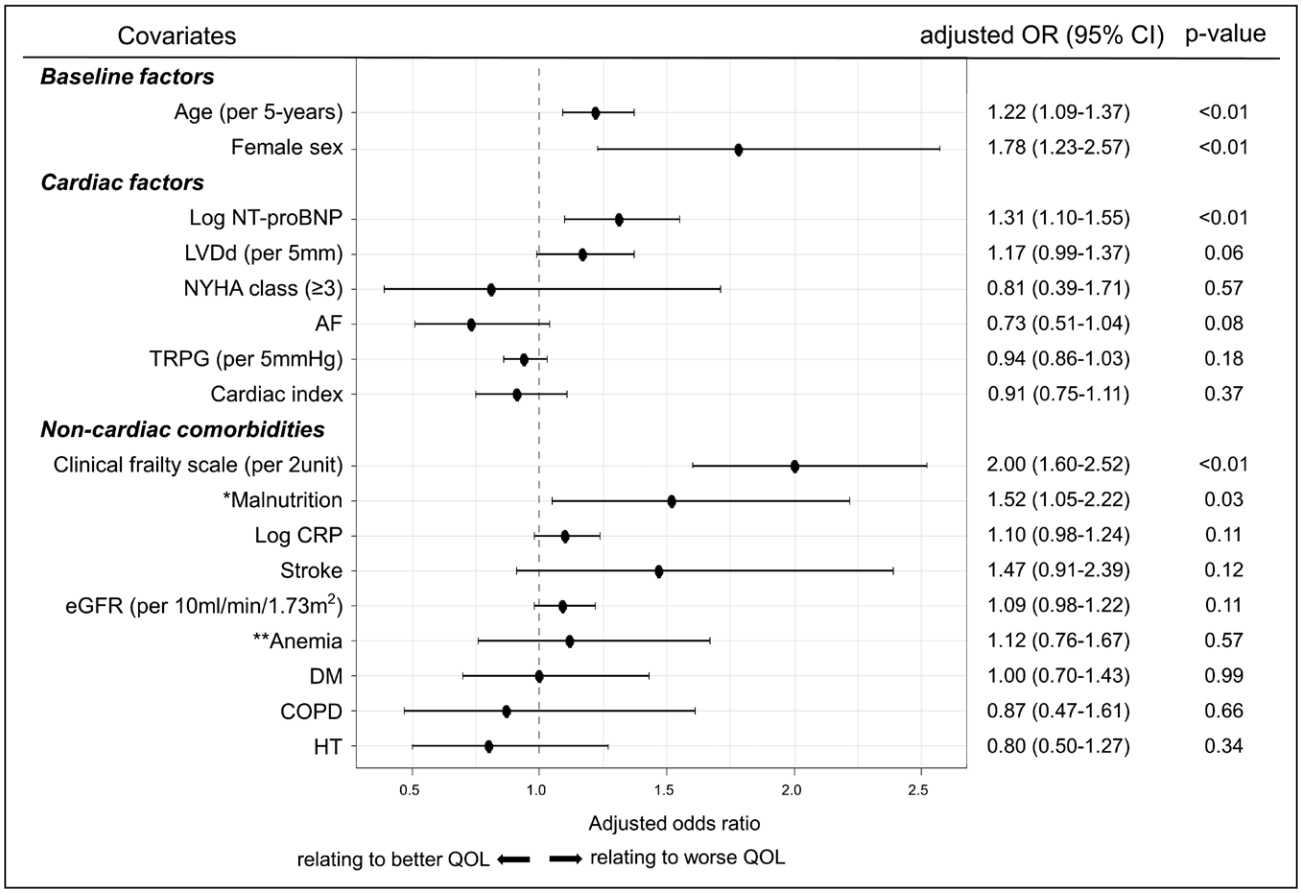

Figure. Multivariable ordinal logistic regression model for the identification of factors associated with impaired quality of life (QOL). AF indicates atrial fibrillation; COPD, chronic obstructive pulmonary disease; DM, diabetes; eGFR, estimated glomerular filtration rate; HT, hypertension; Log CRP, log-transformed C-reactive protein; Log NT-proBNP, log-transformed N-terminal pro-B-type natriuretic peptide; LVDd, left ventricular end-diastolic dimension; NYHA, New York Heart Association; OR, adjusted odds ratio; and TRPG, tricuspid regurgitant pressure gradient. *Malnutrition was defined as a geriatric nutritional risk index below 92, according to previous studies on HFpEF.[4] **Anemia was defined as hemoglobin <13 mg/dL for men and <12 mg/dL for women.

Accordingly, determinants of adverse QOL may be completely different depending on phenotype of HFpEF.

The present study also showed that frailty was one of the strongest correlated factors of impaired QOL. Together, our findings suggest that aging, malnutrition, and the subsequent progression of frailty could be predominant factors of adverse QOL in Japanese patients with HFpEF. Therefore, malnutrition and frailty are potential therapeutic targets for improving QOL in addition to the optimization of HF therapies, considering the fact that NT-proBNP level was also a significant factor associated with worse QOL. Although weight loss is a postulated solution for improving QOL in patients with the obese phenotype of HFpEF,[2] therapeutic strategies to ameliorate QOL in Japanese patients with HFpEF seem to go in the opposite direction. Thus, it is important to be cautious of patients' nutritional status in daily practice. Moreover, establishment of effective nutritional support therapies may also be beneficial.

Major limitations are based on the observational nature of the study. It was difficult to clarify the causal relationship between impaired QOL and several covariates. Further interventional studies are required to clarify whether nutritional support therapies can improve QOL in patients with HFpEF.

In conclusion, aging, female sex, NT-proBNP, and especially noncardiac comorbidities, such as malnutrition and frailty were significant factors associated with impaired QOL in Japanese patients with HFpEF.

ARTICLE INFORMATION

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