

Validation of the HFA-PEFF- and H2FPEF score in Japanese patients with heart failure with preserved ejection fraction

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Background: Diagnosing heart failure with preserved ejection fraction (HFpEF) still remains challenging, and simple and reliable diagnostic tools have been required. Recently, novel and evidence-based diagnostic algorithms for HFpEF were proposed, such as H2FPEF score (Circulation. 2018) and HFA-PEFF score (Eur Heart J 2019), and their accuracy was validated in the outside patient group. However, there are regional and ethnic variations in patient characteristics of HFpEF, particularly between Western and Asian countries, and it is not elucidated whether these diagnostic scores are useful in Asian population.

Purpose: To investigate the validity of the HFA-PEFF- and H2FPEF score in Japanese patients with HFpEF.

Methods: We calculated H2FPEF score and the second step of HFA-PEFF score among the registered patients in the PURSUIT-HFpEF (Prospective, Multicenter, Observational Study of Patients with Heart Failure with Preserved Ejection Fraction) study, which is a multicenter registration of patients hospitalized for HFpEF. The obtained scores were compared with the scores of the HFpEF cohort in the previous validation studies. We followed the study patients for median of 360 days (IQR 237–630 days) to observe the major adverse cardiovascular events (MACE; composite of death, heart failure hospitalization and stroke).

Results: We enrolled 757 patients hospitalized for HFpEF between June 2016 and August 2019 for the present study. H2FPEF score was obtained

in 588 (77.7%) patients among them. Compared with the HFpEF cohorts in the previously reported sub-analysis of TOPCAT trial, the PURSUIT-HFpEF cohort had lower mean value of HFpEF score (4.0 ± 1.8 points vs. 6.0 ± 2.0 points in Americans or 5.3 ± 1.9 points in Russians). It had significantly higher proportion (40.3%, $p < 0.001$) of patients in the low likelihood of HFpEF category (0–3 points) than the TOPCAT cohorts (8.0% in Americans and 19.6% in Russians).

HFA-PEFF score was obtained in 615 (81.2%) patients, though global longitudinal strain was not available. The mean value of HFA-PEFF score was 5.0 ± 0.8 , and all patients had ≥ 2 points. The proportion of patients in the high likelihood of HFpEF category (5–6 points) was 88.3%, which was significantly higher ($p < 0.001$) than those of the HFpEF cohort from Europe and USA in the previous validation study (Eur J Heart Fail 2019). There was no correlation between H2FPEF score and HFA-PEFF score ($R = 0.06$, $p = 0.14$). Cox proportional hazard model selected HFA-PEFF score as a significant predictor for MACE during follow-up period, whereas H2PEF score was not selected. Kaplan-Meier survival analysis demonstrated that patients with 6 points of HFA-PEFF score had higher incidence rate of MACE than those with ≤ 5 points ($p = 0.002$).

Conclusion: The HFA-PEFF score could be more useful for the diagnosis and risk stratification for HFpEF than the H2PEF score in the Japanese cohort.