

Editorial



Elevating Right Ventricular Assessment: The Transformative Prognostic Power of RVGLS/PASP Ratio in Acute Heart Failure

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The assessment of left ventricular (LV) function has long been the cornerstone of diagnosing, managing, and prognosticating heart failure (HF). However, there is a growing recognition of the critical role that right ventricular (RV) function plays in the pathophysiology and clinical outcomes of HF patients.¹ RV function has been strongly associated with outcomes such as survival, exercise capacity, and arrhythmias in HF patients. Studies have shown that reduced RV ejection fraction and impaired RV longitudinal strain significantly correlate with poorer clinical outcomes in HF, regardless of LV function.² Despite these findings, RV function assessment is not as routinely performed as LV evaluation, partly due to the complexity of RV anatomy and the challenges in obtaining reliable measurements.³ Echocardiographic parameters such as tricuspid regurgitation jet velocity, tricuspid annular plane systolic excursion, and RV fractional area change are commonly used but have limitations in sensitivity and specificity.⁴⁻⁶ Therefore, there is a pressing need for more robust and reliable methods to assess RV function accurately.

In this issue of the *International Journal of Heart Failure*, Park et al.⁷ present a significant advancement in RV function evaluation by investigating the prognostic value of the RV global longitudinal strain (RVGLS) to pulmonary artery systolic pressure (PASP) ratio in patients with acute HF (AHF). The study analyzed data from 2,865 hospitalized AHF patients (mean age, 71.1±13.5 years; 50.6% male) from the STRATS-AHF registry, a comprehensive cohort comprising 4,312 patients. By calculating the RVGLS/PASP ratio, the authors aimed to assess RV-pulmonary artery coupling, which reflects the relationship between RV contractility and afterload.

Over a median follow-up period of 35.0 months, the study reported an all-cause mortality rate of 41.8% (n=1,199). Univariate analysis revealed that a lower RVGLS/PASP ratio was significantly associated with increased mortality (hazard ratio [HR], 2.426; p<0.001). The optimal threshold value for predicting all-cause mortality was determined to be an RVGLS/PASP ratio of 0.32. Patients with a ratio ≤0.32 exhibited a 36% higher risk of mortality after adjusting for clinical and echocardiographic variables (adjusted HR, 1.365; 95% confidence interval, 1.205–1.547; p<0.001). This association remained consistent across all HF phenotypes. Notably, the RVGLS/PASP ratio demonstrated superior prognostic value compared to traditional echocardiographic parameters, achieving the highest concordance statistic (C-statistic=0.714) when included in the

multivariate model. This finding suggests that the RVGLS/PASP ratio provides incremental prognostic information beyond established risk factors.

The implications of Park et al.'s⁷⁾ study are significant for clinical practice. First, the RVGLS/PASP ratio can serve as a powerful prognostic tool in AHF patients, aiding in risk stratification and identifying individuals at higher risk of adverse outcomes. This is particularly valuable given the high mortality rates associated with AHF. Second, the consistent prognostic value of the RVGLS/PASP ratio across all HF phenotypes underscores the importance of RV function assessment regardless of LV ejection fraction. Traditionally, HF management has been heavily focused on LV dysfunction, but this study highlights that RV dysfunction plays a critical role even in HF preserved ejection fraction and HF mildly reduced ejection fraction patients.

Incorporating the RVGLS/PASP ratio into routine echocardiographic evaluations could enhance clinical decision-making. Patients identified as high risk based on a low RVGLS/PASP ratio may benefit from more aggressive therapies aimed at improving RV function or reducing pulmonary pressures. This could include the use of pulmonary vasodilators, diuretics, or interventions targeting the underlying causes of elevated pulmonary pressures.

However, implementing the RVGLS/PASP ratio in clinical settings presents challenges. Accurate measurement of RVGLS requires high-quality echocardiographic imaging and expertise in strain analysis, which may not be readily available in all healthcare facilities. Additionally, standardization of measurement techniques and addressing inter-vendor variability are necessary to ensure consistent and reliable results.⁸⁾ Further research is needed to validate these findings in diverse populations and to explore potential therapeutic interventions that could modify the RVGLS/PASP ratio and improve patient outcomes.

In conclusion, the study by Park et al.⁷⁾ represents a significant advancement in our understanding of the prognostic importance of RV function in AHF. The RVGLS/PASP ratio emerges as a robust and independent predictor of mortality, offering clinicians

a valuable tool for comprehensive patient assessment. This study underscores the necessity of integrating RV function evaluation into standard clinical practice for HF patients. By embracing a more holistic approach that includes both ventricles, we can enhance risk stratification, tailor therapeutic strategies, and ultimately improve outcomes for patients with HF.

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Conflict of Interest

The author has no financial conflicts of interest.

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