

Editorial



Right Atrial Strain as a Surrogate Marker for Right Ventricular Function in Patients with Heart Failure

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Conflict of Interest

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Guideline-directed medical therapy (GDMT) is an especially important part of the treatment of patients with heart failure (HF) and should be applied to all patients possible.¹⁾ In particular, physicians must understand the guidelines for starting or changing medication and decide which treatment is appropriate for each patient, especially in patients hospitalized for acute heart failure (AHF). AHF can be defined as new-onset or worsening of symptoms and signs of HF, and outcomes of AHF remain globally poor.²⁻⁴⁾ Therefore, the treatment strategy for improving outcomes of patients with AHF should be optimized and personalized on the continuous line of chronic HF. Patients presenting or suspected with AHF should undergo rapid triage and appropriate treatment for possible cardiogenic shock, respiratory failure, myocardial infarction and/or arrhythmia.²⁾⁵⁾ After that, treatment should then be tailored and optimized according to phenotype, pathophysiology, precipitants, pathology, poly-morbidity, potential harm and preferences.⁶⁾ In this respect, hospitalization in patients with HF and reduced ejection fraction provides a good opportunity to re-address GDMT, and pre-discharge initiation of GDMT is associated with improved prognosis and reduced re-admission rate. The key factors physicians must carefully consider are drug selection and timing of administration, which should be decided according to the patient's condition and symptoms. AHF patients that display evidence of congestion should receive decongestive treatment such as vasodilators and/or diuretics.⁷⁾⁸⁾ While diuretics are mainly used in the presence of fluid overload, vasodilators are administered to reduce filling pressures in the presence of fluid redistribution and preserved systolic blood pressure. Inappropriate use of inotropic agents is associated with increased morbidity and mortality; therefore, inotropes should be reserved only for patients with cardiogenic shock due to impaired myocardial contractility.⁹⁾ In cases of persistent hemodynamic instability despite escalating doses of inotropes, mechanical circulatory support such as veno-arterial extracorporeal life support and percutaneous left-ventricular assist devices should be considered before irreversible organ failure.¹⁰⁾

In patients with AHF, invasive hemodynamic monitoring is important to find an appropriate intravenous line to maintain decongestive therapy and monitor blood pressure. Due to its invasiveness, invasive hemodynamic monitoring is frequently replaced by noninvasive hemodynamic monitoring. Echocardiography is the most useful tool, allowing a full hemodynamic evaluation in addition to an accurate determination of the cause of the cardiac problem.¹¹⁾ It is widely agreed that basic non-invasive hemodynamic monitoring may be

sufficient in simple cases, but invasive hemodynamic monitoring is often needed in complex cases. As Vakilian et al.¹²⁾ have shown in this study, invasive hemodynamic monitoring is essential, especially if patients are facing cardiac transplantation.

Forgotten over the past centuries, the right ventricle (RV) is known as an important factor in predicting prognosis and mortality in patients with HF. RV dysfunction is associated with not only the symptoms experienced by patients with HF, but RV dysfunction is also associated with increased mortality.¹³⁾ According to the guideline, measurement of RV diastolic function should be considered in patients with suspected RV impairment as a marker of early or subtle RV dysfunction, or in patients with known RV impairment as a marker of poor prognosis.¹⁴⁾ Beyond that, the authors showed data that demonstrated RV systolic and diastolic function, including an evaluation of the right atrium (RA), in patients waiting for heart transplantation. Among the severe parameters for RV function, they showed that RA function measured by strain was correlated with RV diastolic function and suggested RA strain could be a new echocardiographic parameter for RV hemodynamics in patients with HF. The RA has three functional aspects: a reservoir in systole, a conduit in early diastole, and a booster pump in late diastole.¹⁵⁾ There has been growing interest in markers of RA myocardial dysfunction using 2D speckle-tracking echocardiography (STE) and even further with 3D STE.¹⁶⁾¹⁷⁾ Of course, the RA strain value is not a parameter that can replace right heart catheterization (RHC) in cases of critically ill patients before a heart transplant. Thanks to this study, however, I think that the RA strain value might be a good parameter for RV diastolic function because the RA strain value has a stronger background (in that it can be used as a reference value for patient treatment before RV failure has already progressed or when RHC could be not performed).

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