

Editorial



Interaction Between Heart Failure and Atrial Fibrillation

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► See the article “In-Hospital Mortality Rate and Predictors of 30-Day Readmission in Patients With Heart Failure Exacerbation and Atrial Fibrillation: A Cross-Sectional Study” in volume 4 on page 145.

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Conflict of Interest

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Heart failure (HF) and atrial fibrillation (AF) are considerable global health burden especially in developed nations.^{1,2)} Both are associated with significantly increased overall mortality, sudden cardiac death, unplanned hospitalizations, and impaired quality of life.^{1,2)} Importantly, both diseases interact with each other: HF aggravates AF and AF aggravates HF.³⁾ Recently, AF is not just considered as a rhythm disorder triggered by ectopies from pulmonary veins but also as a spectrum of cardiomyopathy affecting primarily left atrium.⁴⁾ In this point of view, AF can be a clinical manifestation of underlying HF. In the other hand, AF can be the primary cause of HF by tachycardia-induced cardiomyopathy or arrhythmia-induced cardiomyopathy.^{5,6)} Acute decompensation of previously existing HF can also occur by AF, especially when ventricular response is poorly controlled. Furthermore, adequate heart rate control in AF patients with HF can be challenging since rate control drugs such as beta-blockers or calcium-channel blockers can depress contractility of the heart and worsen HF symptoms. Unintended iatrogenic bradycardia due to rate control therapy is a common problem we encounter in our clinical practice. Therefore, it is critical to understand the underlying pathophysiology and interaction of HF and AF.

Gangu et al.⁷⁾ reported in-hospital mortality rate and predictors of 30-day readmission in patients with both HF and AF. The authors analyzed 48,250 hospital admissions with International Classification of Diseases, 10th Revision codes for both HF and AF. The 30-day readmission rate among 44,736 patients were 16.4% which is not negligible. In-hospital mortality itself was considerably high: 3,514 patients with 7.3% mortality rate. The most common cause for readmission was HF indicating successful HF management of these patients with both HF and AF is very challenging. Significant financial burden attributable to readmissions which is nearly identical with the index admission is concerning.

Another interesting finding of this study is that mortality rate did not differ significantly between heart failure with preserved ejection fraction (HFpEF; 6.5% during index admission and 8.9% during readmission) and heart failure with reduced ejection fraction (HFrEF; 7.2% during index admission and 7.8% during readmission). Radiofrequency catheter ablation (RFCA) of AF proved significant benefits in patients with AF and HFrEF.³⁾ However, the benefit of RFCA in AF patients with concomitant HFpEF is yet to be determined and it is possible that efficacy of RFCA may be different between HFpEF and HFrEF.⁷⁾ High mortality rates in AF patients in both HFrEF and HFpEF warrants further clinical research to improve survival in these patients.

The impact of SGLT-2 inhibitors on clinical outcome in patients with HF and AF is an area of active research. The DAPA-HF trial showed no interactions between AF and treatment effect of dapagliflozin in HFrEF patients.⁹⁾ However, subgroup analysis of AF patients did not show statistically significant benefit probably due to small sample size.⁹⁾ The post hoc analysis of the DECLARE-TIMI 58 trial revealed a significant reduction of AF and atrial flutter events in type 2 diabetes mellitus patients taking dapagliflozin.¹⁰⁾ We expect to observe the potential benefit of SGLT-2 inhibitors in AF patients and especially those with concomitant HF in the near future.

Another promising therapeutic option for patients with AF and HF is His-bundle ablation with simultaneous His-bundle pacing or left bundle branch area pacing especially when heart rate is poorly controlled.¹¹⁾ If rapid ventricular response cannot be controlled with medical therapy, His-bundle ablation with right ventricular pacing can serve as a bailout therapy. However, complete dependence on right ventricular pacing can be a significant burden to already failing left ventricle. Theoretically, physiologic pacing such as His-bundle or left bundle branch pacing can overcome the potential risk of pacing-induced cardiomyopathy in AF patients undergoing His-bundle ablation.¹²⁾¹³⁾

It is important to assess and manage common risk factors for both AF and heart failure, such as hypertension, diabetes mellitus, excess alcohol consumption, and obesity.¹⁴⁾¹⁶⁾ HF and AF will progress gradually unless their risk factors are adequately controlled. It should be noted that alcohol abstinence lowers AF recurrence in regular drinkers with AF to a similar degree we observe in AF patients undergoing RFCA.¹⁷⁾

The current work by authors significantly broadened our knowledge regarding clinical course of patients with concomitant HF and AF. Establishing effective therapeutic interventions to improve survival and readmission rates in patients with HF and AF would be our future perspective.

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