

Editorial



Venous Thromboembolism in Heart Failure Patients: Building Evidence towards Better Care and the Need for Precision

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OPEN ACCESS

Received: Jul 19, 2021

Revised: Jul 26, 2021

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Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Conflict of Interest

The author has no financial conflicts of interest.

► See the article “Heart Failure Is Associated with Increased Risk of Long-Term Venous Thromboembolism” in volume 51 on page 766.

The prevalence and incidence of heart failure (HF) is growing¹⁾ as the overall incidence of cardiovascular disease is increasing²⁾ and most importantly, the Koreans live longer to a healthy life than ever before. However, it is notable that the survival is slowly improving, suggesting a better care strategy should be considered.

There are 2 issues that draw our attention in the management of HF. The first one is focused on the survival of HF itself. Although the survival of HF with reduced ejection fraction has improved, there are no medications to date that is associated with improved survival of HF with preserved ejection fraction. In addition, the medications that improve the survival of HF with reduced ejection fraction is only associated with 20–30% improvement of survival at best.³⁾ Second, as the survival rate of HF is improving with various medications and devices, it is now time to consider whether the disease is associated with or even, causally related to conditions other than HF itself. For example, it is well known that HF is related to worse cancer-free survival and that it directly stimulates the growth of cancer.⁴⁾

The article by Xu et al.⁵⁾ is an important article in this aspect. By gathering a wide variety of articles related to venous thromboembolism (VTE) and HF, the authors have shown that HF is closely related to incident pulmonary embolism. Although the authors have stated that the risk of deep vein thrombosis is not increased by HF, it is relatively clear from the forest plot that this would also be true with the increase of papers as well. There have been several retrospective studies that demonstrate this association as well as an analysis of a longitudinal prospective cohort study.⁶⁾ Xu et al.⁵⁾ confirms this association with a higher quality systematic review.

The importance of this interesting association is because it opens up new questions that are relevant in care of HF patients. First, the authors have found that the incidence of VTE is increased in only chronic HF patients. The authors also provide a good explanation for why this association is not valid in acute HF patients, possibly by more meticulously medical treatment in patients hospitalized for HF. This leads to the burning question on whether the HF patients would benefit from more meticulous medical care. For example, will the prescription of direct oral anticoagulant (DOAC) benefit these patients, who are otherwise

Data Sharing Statement

The data generated in this study is available from the corresponding author(s) upon reasonable request.

The contents of the report are the author's own views and do not necessarily reflect the views of the *Korean Circulation Journal*.

not an indication of these drugs? If so, for how long would these patients be anticoagulated? Based on what parameter?

Interestingly, the authors already suggest a partial answer to the duration of DOAC prescription. Second, the increased incidence of VTE was evident with a long follow-up period of more than a year after the diagnosis of HF. If the medications for thrombophylaxis is to be effective, this provides a basis for a long-term prescription, if not life-long. It is interesting to note that a recent trial that randomized HF patients to rivaroxaban 2.5 mg twice daily failed to reduce the incidence of cardiovascular events, including incident VTE.⁷⁾ However, another trial also demonstrated that there was a marginal difference in the incidence of VTE when prescribed rivaroxaban 2.5 mg twice daily and aspirin 100 mg daily compared to aspirin 100 mg daily.⁸⁾ This may be related to the insufficient dose of DOAC used in the trial or the difference in the patient population enrolled to the different studies or both, suggesting a tailored approach might be beneficial.

Then, with all these evidences, where are we and how do we implicate this into patient care? Although the previous study randomizing the HF in sinus rhythm failed to meet the primary endpoint,⁷⁾ it is clear from the post-hoc analysis that the thromboembolic events, including incident stroke, can be significantly reduced with a low-dose DOAC.⁹⁾ While the increase of DOAC would lead to the increase of bleeding events, both major and minor, it seems evident that DOAC, to some extent, would reduce the incidence of thromboembolic event.

With these potential harms by DOAC and also, its potential benefits, the future question lies on who would benefit more with these aggressive measures. Recent evidences have demonstrated that we are close to fine decision of the right treatment. For example, a genotype-guided dosing of warfarin has been proven to provide a more accurate dosing of warfarin in the therapeutic range,¹⁰⁾ which means that in the future, it should be possible to pinpoint those at high risk as well as adjust the dose according to their genetic and/or environmental background. We are now building evidence towards better care and as such, there is a desperate need for precision in the near future!

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