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EDITORIAL

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Editorial to "Trends, burden, and impact of arrhythmia on cardiac amyloid patients: A 16-year nationwide study from 1999 to 2014"

Cardiac amyloidosis (CA), commonly resulting from extracellular protein fibril deposition throughout the body's organ systems, is an important cause of heart failure.[1] In recent years, the contemporary estimates reporting on CA have shown a significant increase in the prevalence rate (18-55 per 100 000 person-years).[2] The two major forms of CA accounting for approximately 95% of CA are the transthyretin amyloidosis (ATTR) and immunoglobulin light-chain (AL) types. Cardiac ATTR may account for up to 15% of heart failure cases in the elderly. CA occurs secondary to the deposition of insoluble protein fibrils in cardiac tissue leading to progressive myocardial dysfunction, heart failure, and arrhythmias. Previous studies have demonstrated not only heart failure but also atrial and/or ventricular tachyarrhythmias, and bradycardias among AL and ATTR cardiomyopathies. These arrhythmias in patients with CA are often very symptomatic and poorly tolerated.

Isath et al reported that the frequency of those arrhythmias, their predictors, and the influence of in-hospital outcomes, and finally the role of implantable cardioverter-defibrillators (ICDs) in patients with CA. They analyzed a total of 145 920 CA hospitalizations between 1999 and 2014 in the United States and 56 199 (38.5%) of them were associated with arrhythmias based on the National Inpatient Sample database using ICD-9-CM codes. This study first reported the frequency of arrhythmias in patents with CA from a large-scale US registry. In their study, cardiac arrhythmias were common in patients with CA, with AF being the most common. Furthermore, cardiac arrhythmias complicating CA were associated with worse in-hospital outcomes, an increased length of stay, and a higher cost of hospitalization. Regarding the life-threatening arrhythmias, the rate of ICD implantations has been increasing over time and is associated with an improved short-term mortality in patients with CA.

In atrial tachyarrhythmias, AF is the most frequent arrhythmia in patients with CA and appears to be the most prevalent in ATTR amyloidosis. The clinical management in these patients could be clinically challenging. Beta-blockers could be beneficial for most etiologies of heart failure with a reduced ejection fraction; however, the arrhythmic management with using common medications such as beta-blockers, calcium-channel blockers, and digoxin could be difficult because of clinical decompensation caused by toxicity by binding to amyloid myofibrils in the myocardium. In addition, studies have reported that the presence of AF in patient with CA is associated with an exceptionally high risk of a stroke and systemic embolism, making anticoagulation necessary regardless of the CHADS2 and CHA2DS2-VASc scores. In particular, the AL amyloid cardiomyopathy has been underestimated, poorly recognized, or excluded from clinical researches because of underdiagnosis and short life expectancy. Thus, high-quality evidence and guideline recommendations for the management of arrhythmias in patients with CA are limited. Interestingly, the present study showed that coexisting heart failure and thyroid disorders were associated with a higher risk of arrhythmias. Another study reported that a significant proportion of CA patients with AL had hypothyroidism and were predominantly asymptomatic, indicating a survival disadvantage.[3] However, the relationship between thyroid disease and cardiac arrhythmias and also regarding the pros and cons of the use of amiodarone still remain unclear. On the other hand, limited studies have reported the clinical implications of catheter ablation for atrial arrhythmias in patients with CA. Donnellan et al reported that AF ablation was related to a favorable outcome in CA patients with ATTR and is most effective when performed earlier stage of the disease process.[4]

As CA patients commonly suffer from sudden death, ventricular tachyarrhythmias, and conduction disorders, an individualized treatment including medications and/or device implantations may be required. Most of these conduction system disorders may occur secondary to amyloid filtration. However, the timing of an ICD, biventricular pacing or pacemaker implantation remains unclear and controversial among experts and society guidelines. Furthermore, previous studies showed that about one-half of the patients with CA suddenly died; however, the expert guidelines have not strongly supported an ICD implantation for both primary and secondary prevention in patients with CA.[5] In those patients, the most common reason of sudden death appears to be electromechanical dissociation, resulting in pulse-less electrical activity rather than life-threatening ventricular arrhythmias, and lead to poor prognosis and life

expectancy. Those patients could be refractory to ICD therapy owing to a higher defibrillation threshold. Therefore, decisions concerning ICD implantations should be patient centered and made in collaboration with relevant expertise to balance the risks of ventricular arrhythmias and sudden cardiac death with the competing risks of worsening heart failure and noncardiac death. Further research is needed to determine the management of the arrhythmias in CA patients.

CONFLICT OF INTEREST

The author declares no conflict of interest for this article.

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