Transient Atrial Fibrillation During Acute Myocardial Infarction Is a Predictor of Poor Outcomes

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It is well known that atrial fibrillation (AF) develops during acute myocardial infarction (AMI) as a common complication, which incidence increases with age and Killip score. Although episodes may usually last from minutes to hours and often be repetitive, sometimes it lasts longer than 7 days, which requires cardioversion. The mechanism still remains to be elucidated. New-onset AF is usually temporary, similar to AF after cardiac surgery, AF during the blanking period of 1–3 months after radiofrequency catheter ablation, and AF caused by hyperthyroidism. Transient AF is considered as a temporarily developed AF for which a known cause or contributor such as inflammation, ischemia, metabolic...
abnormality, and severe hemodynamic instability exists. According to the recent guideline, transient AF is defined as first-detected AF, regardless of whether it is truly the first episode, which spontaneously terminates later.\(^\text{6}\)

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In this issue of the Journal, Wi et al\(^\text{1}\) suggest that transient new-onset AF is associated with poor clinical outcomes and an important independent predictor of major adverse cardiovascular events (MACE) and death in AMI patients. They defined transient new-onset AF as AF newly developed only during hospitalization for AMI without prior history and without being documented for 1 month after hospital discharge. A variety of studies have suggested that the development of AF in the setting of AMI is an independent predictor of MACE or short-term and long-term death. This issue still remains controversial. My group also reported that new-onset AF was associated with 1-year mortality only (hazard ratio 1.68), but not in-hospital death.\(^\text{6}\) A community-based study reported that AF developed in 6.7% within 2 days, 3.7% between 3 and 30 days, 12.3% more than 30 days after AMI onset and that AF developing >30 days after MI had the highest risk of death.\(^\text{7}\) Of note, according to the ARIAM Andalucia Study, the propensity score analysis revealed that only new-onset AF persisted as an independent predictor for death, and that MACE were more frequent in new-onset AF than in previous AF or non-AF patients.\(^\text{8}\) In patients with chronic heart failure, only new-onset AF was also associated with increased death (hazard ratio 1.72), but not paroxysmal or chronic AF.\(^\text{9}\) More recently, Batra et al in the Swedish registry study reported that AF was associated with a higher risk of MACE than sinus rhythm, irrespective of AF type (paroxysmal, persistent, chronic).\(^\text{10}\)

However, it is uncertain whether AF was the first episode and whether AF recurs and persists after discharge, because AF is often asymptomatic. It is possible for AF to recur more than 1 month after hospital discharge, even in patients with transient new-onset AF. If AF recurs after >1 month discharge in some patients even without AF documented at least 48 h before death, it is easy to consider that the prognosis is influenced by AF itself (Figure 1). Unless AF recurs during the follow-up, factors other than AF itself need to be considered, such as systolic and diastolic dysfunction, severe hemodynamic instability (cardiogenic shock or cardiac arrest) in the acute phase. To differentiate the 2 patterns, it is useful to evaluate the presence of atrial structural substrate (Figure 2), which is called “atrial late potential”, by P wave signal-averaged ECG.\(^\text{11,12}\) Increased P wave duration or PQ interval could reflect the presence of atrial structural substrate.\(^\text{13}\) Wi et al’s data demonstrated that stroke incidence in transient AF was similar to that in non-AF patients, which might indicate AF did not recur so often after discharge, although Bishara et al\(^\text{14}\) reported that the incidence of recurrent AF and stroke or transient ischemic attack after hospital discharge was markedly higher in patients with transient AF during the index hospitalization. Their findings suggested that anticoagulation therapy should be taken into consideration for patients with transient AF as well. In addition, because AF duration might be a risk factor of the transition to chronic AF,\(^\text{12}\) cardioversion is recommended in the early phase of the acute stage and sinus rhythm should be maintained by amiodarone, which could prolong the atrial refractory period without any effect on conductivity, angiotensin II receptor blockers, which would still be expected to prevent atrial fibrosis, and statins,\(^\text{6,15}\) which might reduce inflammatory effects on the atrium.

**Conflict of Interest**

None declared.

**References**

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