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Treatment of left ventricular thrombus after myocardial infarction: need longer or lifetime use of anticoagulants?

We read with great interest the retrospective study by Zhou *et al*.[1] recently published in *ESC Heart Failure*. This study analysed the single-centre data of patients with heart failure with reduced ejection fraction (HFrEF) in the past decade, with a median follow-up time of 1.38 years. The authors reported that left ventricular thrombus (LVT) was highly associated with ischaemic stroke in patients with sinus rhythm (HR: 5.74, 95% CI: 3.38–9.75) and that 'patients with LVT, even those in sinus rhythm, would benefit from systemic anticoagulation treatment'. Unfortunately, the authors did not specify the duration of anticoagulation therapy and ratio of LVT resolution and recurrence, and therefore, no data were available on the effect of long-term anticoagulants on LVT recurrence and embolic events.

Currently, extensive anterior MI, LV ejection fraction less than 40%, severe regional wall motion abnormalities, and left ventricular aneurysm are considered to be independent risk factors for LVT.[2] For patients with confirmed LVT, current guidelines recommend starting anticoagulant plus antiplatelet therapy for 3–6 months; if there is evidence of LVT resolution, oral anticoagulants can be discontinued.[3,4] In terms of anticoagulant selection, the latest meta-analysis showed that there was no significant difference between direct oral anticoagulants (DOACs) and VKA in the efficacy of LVT resolution (P_S = 0.22), but the DOACs group had a lower risk of bleeding.

However, in clinical practice, we found that many patients encountered LVT recurrence after anticoagulants discontinuation (a typical case will be enclosed with the letter). Currently, there are limited research data on the incidence of LVT recurrence and great difference in different research reports, ranging from 5.7% to 14.5%.[6,7] Moreover, the issue of anticoagulation strategies for patients at high risk for LVT recurrence after thrombus regression was not specified in current guidelines, which may expose these patients to fatal systemic embolism consequences. Here, we suggest that more attention should be given to this topic by clinicians, and for patients with high-risk factors (as described above) for LVT, it is still necessary to continue using anticoagulants (even for a lifetime) after LVT regression. Similarly, after finding that 53% of

Figure 1 Results of transthoracic echocardiography. Part (A) was taken on 13 August 2015, showing a 1.35 × 1.76 cm echogenic mass suggestive of left ventricular thrombus. Part (B) was taken on 6 November 2015, and no echogenic mass was shown.

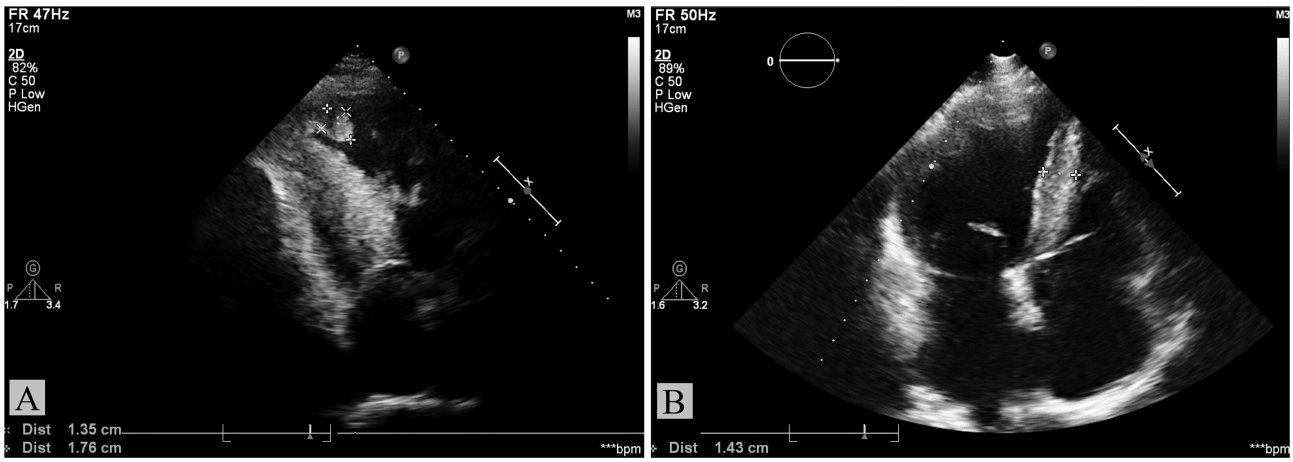
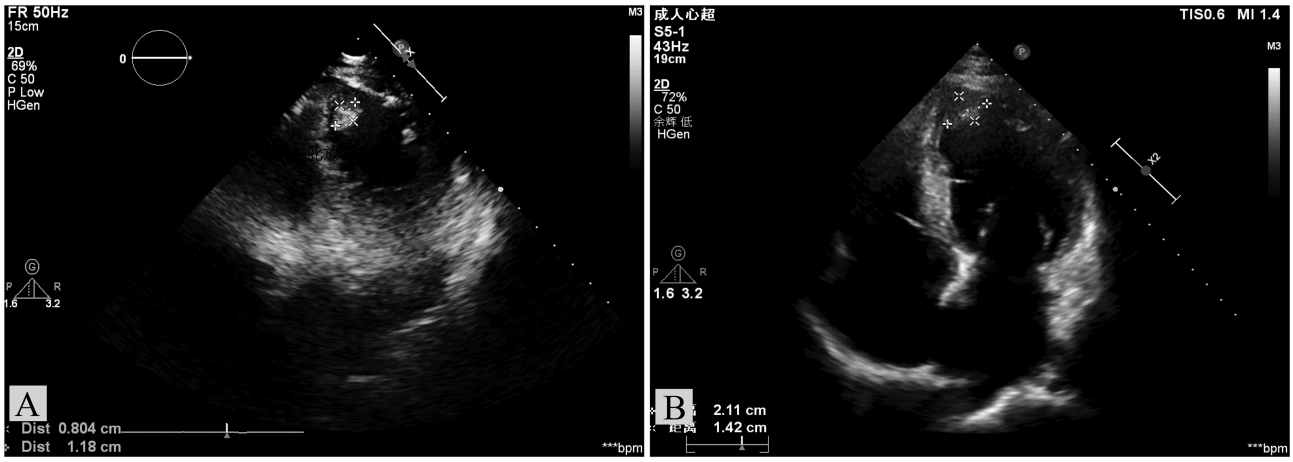


Figure 2 Results of transthoracic echocardiography. Parts (A) and (B) were taken on 22 May 2017 and 13 May 2019, respectively, showing a 0.8 × 1.18 cm and a 2.11 × 1.42 cm echogenic mass suggestive of left ventricular thrombus.



systemic embolism events occurred after 6 months of AMI onset, Maniwa *et al*. suggested that a longer (over 6 months) anticoagulation therapy should be required for prevention of systemic embolism in MI patients with LVT.[8] Although long-term anticoagulation therapy may benefit those patients, it is worth noting that the implementation of anticoagulation therapy should be individualized and evaluated according to the risk stratification and anticoagulant tolerance. Further large studies are warranted to verify its rationality and explore the extent of anticoagulation therapy in order to improve the deficiencies of the guidelines in this respect.

A typical case: a 56-year-old male patient was admitted to hospital in August, 2015, complaining of chest tightness and shortness of breath for 1 month. Combined with medical history, electrocardiogram, myocardial enzyme spectrum, and radionuclide myocardial perfusion imaging, the clinical diagnosis of anterior wall MI was made; transthoracic echocardiography showed severe regional wall motion abnormalities, cardiac insufficiency, and echogenic mass suggestive of LVT. In addition to hypertension, no history of diabetes, stroke, or other chronic diseases was reported. Three months after warfarin anticoagulant therapy plus antiplatelet therapy, echocardiography indicated that the LVT disappeared, so anticoagulant medication was discontinued (*Figure 1*). Unfortunately, echocardiography suggested thrombus recurrence in May 2017 and May 2019, respectively, and both recurrences occurred after the previous LVT resolution and discontinuation of anticoagulants (*Figure 2*). During the follow-up period, the patient's history and imaging examination did not suggest any embolic event.

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