

Intramural left atrial hematoma after transcatheter radiofrequency ablation of atrial fibrillation

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The incidence of major life-threatening complications from radiofrequency catheter ablation (RFCA) for atrial fibrillation (AF) is less than 1%. They include pericardial effusion, stroke, hemorrhagic shock, respiratory failure, and myocardial infarction [1, 2]. In this clinical vignette, we report a rare but potentially life-threatening complication after AF ablation.

A 53-year-old female, with no past medical history, was admitted to our hospital for persistent AF with a rapid ventricular response which was refractory to drugs. Relevant examinations including transthoracic echocardiographic (TTE) (Figure 1A) were performed before RFCA. High-power and short-duration ablation (45–50 W for durations of 2–10 seconds on the posterior wall and 5–15 seconds

at other locations) was performed during pulmonary vein isolation, as well as left atrial roof and posterior lines ablation. Two days after the procedure, the patient complained of an uncomfortable feeling while swallowing. TTE (Figure 1B, C) and computed tomography angiography (CTA; Figure 1F) were immediately reviewed and showed a large intramural hematoma in the posterior wall of the left atrium. Cardiac magnetic resonance (CMR) imaging demonstrated very clearly the anatomic boundaries, showing the size was 23 × 56 mm (Figure 1D, E). To avoid further aggravation of the hematoma, the anticoagulation drug was suspended for one week. After a month of follow-up, the hematoma was gradually absorbed (Supplementary material, Figure S1).

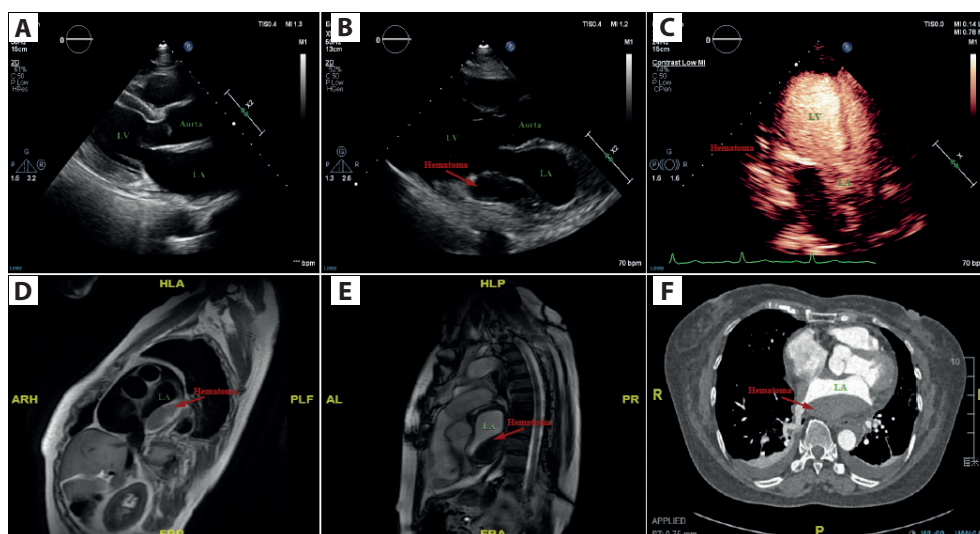


Figure 1. A. The preoperative transthoracic echocardiographic image. B. The postoperative transthoracic echocardiographic parasternal long-axis view showed a hematoma (indicated by the arrowhead) in the posterior wall of the left atrium. C. Myocardial contrast echocardiography image of the hematoma (the arrowhead). Dual inversion recovery black-blood MR sequences D. Dual inversion recovery black-blood MR sequence. E. Cine CMR: SSFP cine sequence (FIESTA). F. Postoperative CTA of the intramural hematoma (indicated by the arrowhead)

Abbreviations: CMR, cardiac magnetic resonance; CTA, computed tomography angiography; MR, magnetic resonance

In the present case, the patient had no other complaints except for the uncomfortable feeling while swallowing. Conservative treatment was applied because her hemodynamic status was stable. However, the hematoma was close to the mitral valve, which may induce acute mitral valve stenosis. Unlike other life-threatening complications, intramural hematoma can gradually be absorbed, and the symptoms are often not apparent and may easily be overlooked in clinical practice. However, potential obstruction of the mitral valve or rupture of hematoma may be severe and even fatal. There have been few cases of left atrial intramural hematoma after catheter ablation, and the mechanism is still unclear. Traumatic catheter manipulation-related injuries at the weakened sites or pulmonary laceration could be possible reasons [3]. A case study by Anand et al. [4] reported an acute left atrial intramural hematoma after an attempt to recanalize the circumflex artery. Due to subtotal occlusion of left atrial outflow, the patient underwent an emergency thoracotomy, which showed that the whole left atrium appeared bruised with no obvious hematoma. Anand et al. speculated that contained atrial intramural coronary vascular rupture or subepicardial perivascular damage might be the main causes [4].

Postoperative TEE is useful in evaluating intracardiac complications of AF patients undergoing RFCA. Transthoracic echocardiography and CTA can be used to evaluate the severity of hematoma, while CMR can offer a better atrial tissue characterization. The main differential diagnoses include pericardial effusion and left atrial dissection. The optimal treatment strategies for left atrial intramural hematoma remain unclear. Suspension of anticoagulation may help prevent hematoma expansion. For patients with stable hemodynamic status, conservative treatment might be advisable as intramural hematoma can be gradually absorbed in most cases. However, surgical intervention is

necessary once the patient's hemodynamic status becomes unstable. This case highlights that it is necessary to be gentle during the ablation procedure, especially during the posterior wall ablation, to avoid similar complications. Even in the absence of symptoms, a silent intramural hematoma is still potentially life-threatening and requires special attention in clinical practice.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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