Antithrombin III deficiency concomitant with atrial fibrillation causes thrombi in all chambers: 2D and 3D echocardiographic evaluation

Antithrombin III is an inhibitor of procoagulation cascade using intrinsic and common pathways, the deficiency of which presents with venous thromboembolisms. A 62-year-old man who had anterior myocardial infarction 6 months ago was admitted to our outpatient clinic. Intracardiac defibrillator (ICD) was also implanted after myocardial infarction for primary protection. He was prescribed with dual antiplatelets on discharge after percutaneous coronary intervention to left anterior descending artery. Transthoracic echocardiography (TTE) revealed decreased ejection fraction (25%), apical thrombus in the left ventricle, giant biatrial thrombi, and thickened ICD lead in the right chambers (Fig. 1a–d; Video 1). 2D and 3D transesophageal echocardiography (TEE) demonstrated a giant left atrial thrombi in the left atrial appendage and the left atrium basis (Fig. 2a–c, 3c–d; Video 2, 3). The origination of the right atrial thrombus from the superior vena cava was also demonstrated (Fig. 2d, Video 4). ICD lead was observed to be thickened, which was considered secondary to thrombus burden (Fig. 3a, b). Thrombophilia panel was obtained from the patient's venous blood sample before starting intravenous heparin therapy. Heparin therapy was carried on for a week without stopping. Biochemical tests were normal for factor V Leiden mutation, protein C-S deficiency, prothrombin gene mutation, MTHFR gene mutation, thrombomodulin gene mutation,

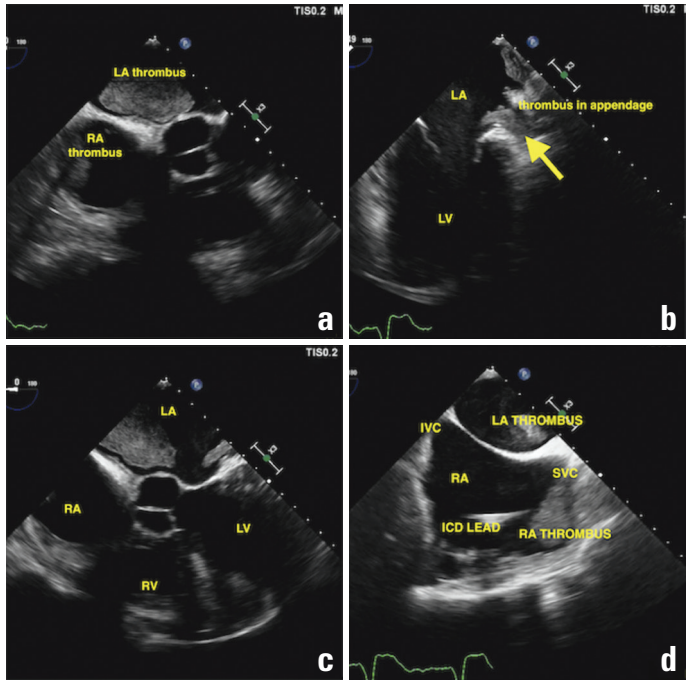

Figure 2. Figure 2a–c showing giant left atrial thrombi in 2d transesophageal echocardiography. Figure 2d shows left atrial thrombus and right atrial thrombus originating from superior vena cava

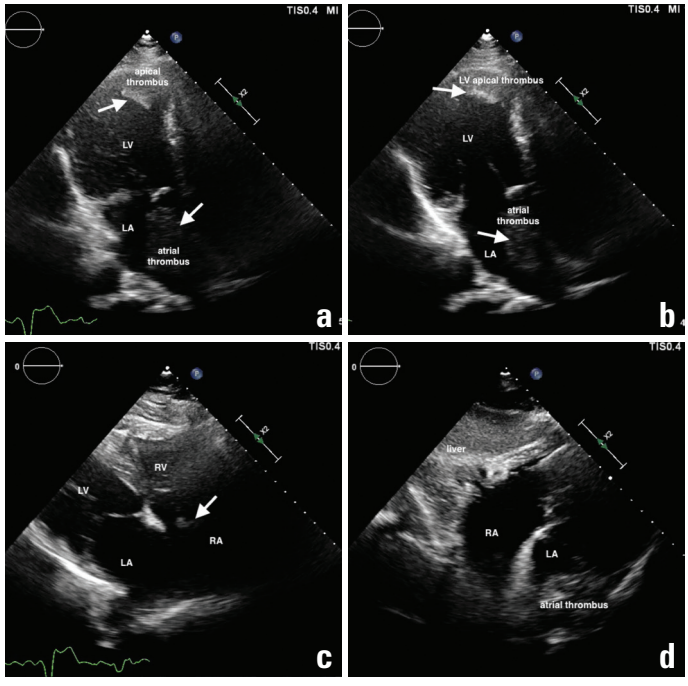

Figure 1. Figure 1a–b showing left ventricular apical and left atrial thrombi images of transthoracic echocardiography. Figure 1c showing right atrial thrombus in modified apical four-chamber view. Figure 1d shows left atrial thrombus in subcostal view

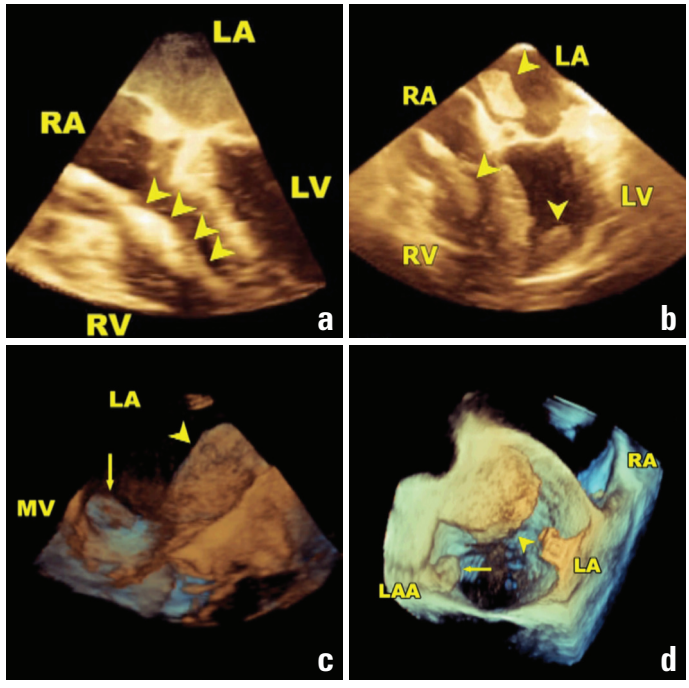

Figure 3. Images from 3D transesophageal echocardiography. Figure 3a, b showing left atrial, left ventricular thrombi, and thickened ICD lead secondary to thrombus burden. Figure 3c,d showing giant thrombi in the left atrium and left atrial appendage.

hyperhomocysteinemia, and other rheumatological diseases. Antithrombin III was interestingly detected as 55% of the reference level. Antithrombin concentrates were also initiated after the A3-D diagnosis. After 2 weeks, TEE was repeated, but the giant thrombi persisted; therefore, the option of surgery was offered to the patient. However, the patient refused the operation because of high risk under informed consent , and he was discharged from our hospital under warfarin, ticargrelor, and acetyl–salicyclic acid therapy.

Video 1. TTE video indicating left ventricular apical thrombus and giant left atrial thrombus.

Video 2. TEE video showing giant left atrial thrombus.

Video 3. TEE video showing thrombus in the left atrial appendage and its x-plane reflections.

Video 4. TEE images showing left atrial thrombus and right atrial thrombus originating from the superior vena cava.

Mert İlker Hayıroğlu, Muhammed Keskin, Cevdet Dönmez, Muhammed Burak Günay, Şennur Ünal Dayı
Department of Cardiology, Dr. Siyami Ersek Thoracic and Cardiovascular Surgery Center Training and Research Hospital; İstanbul-*Turkey*

Address for Correspondence: Dr. Mert İlker Hayıroğlu
Cüneyt Koşal sok. Uyum Apt.
Acıbadem, Üsküdar, İstanbul-*Türkiye*
E-mail: mertilkerh@yahoo.com

DOI:10.14744/AnatolJCardiol.2016.7456

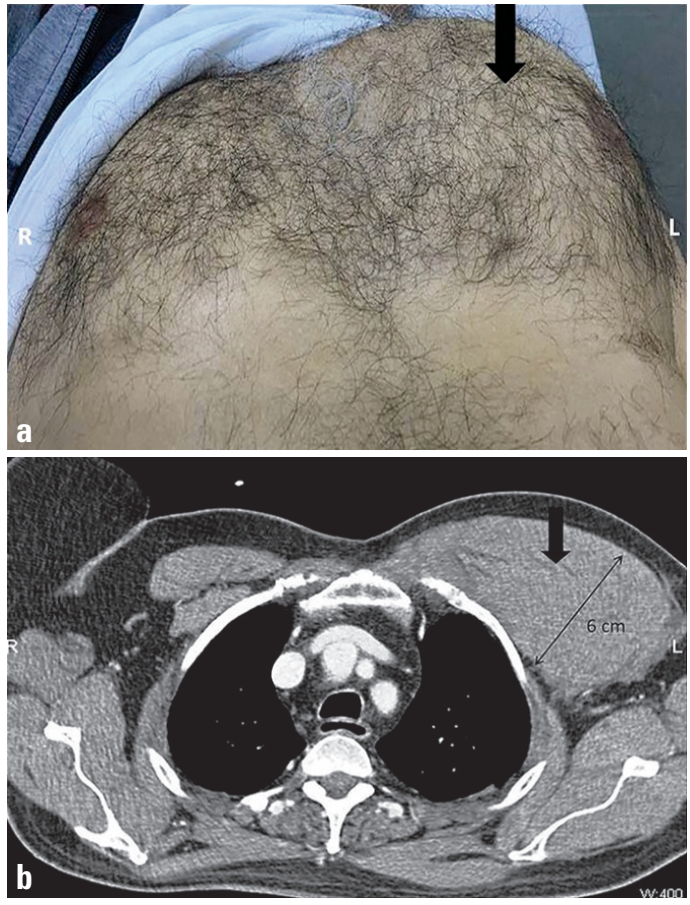

Figure 1. (a) Left pectoral side swelling due to hematoma (black arrow). **(b)** Thorax CT showing large left pectoral muscle hematoma of 6 cm size (black arrow)

Pectoral muscle hematoma: A rare complication of transradial cardiac catheterization

Transradial access has much fewer complications when compared to transfemoral access, but detection and management of these complications are not well defined. We presented two unusual cases of pectoral muscle hematoma after transradial coronary angioplasty.

The first case was a male patient who had undergone angiography through the left radial artery. Advancing to the aortic arch through the axillary artery was challenging and was performed by changing to 0.035 inch stiffer hydrophilic wire. The patient complained of a dull left-sided chest pain after angiography; his ECG revealed no sign of ischemia. Left pectoral muscle was swollen and tense on palpation (Fig. 1a). Thorax CT revealed a large hematoma in the left pectoral muscle (Fig. 1b). No extravasation was detected in control subclavian and axillary angiography (Fig. 2). The second case was a male patient who had undergone angiography through the right radial artery. Passing

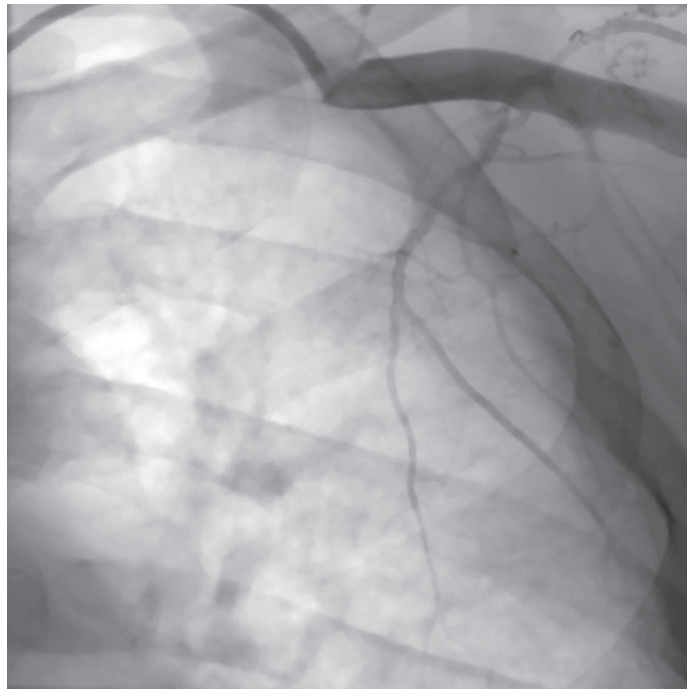

Figure 2. Angiographic view of the left subclavian artery showed no area of contrast blush of a possible perforation