APICAL TROMBUS in a PATIENT WITH NORMAL LEFT VENTRICULAR SYSTOLIC FUNCTION

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Abstract

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Clinical presentation

A 54-year-old male patient presented to the emergency department with a painful right hand which was pale and cold. The vital signs were 85 beats per minute of heart rate, 120/80 mmHg measured blood pressure, 20 breaths per minute of respiratory rate and 98% of oxygen saturation in room air. The physical examination findings of cardiovascular, respiratory, and gastrointestinal systems were normal. Extremity examinations showed right hand and forearm cold, pulseless and hypoesthetic without loss of motor functions.

The color Doppler ultrasound of the right upper extremity were performed, and acute long segment thrombosis of the axillary artery were detected. Biochemical tests were normal other than high glucose and D-Dimer test results. Electrocardiogram showed normal sinus rhythm with complete right bundle branch block and left anterior fascicular block, normal PR and QTc intervals and no ischemic changes of ST-T segments (Figure 1).

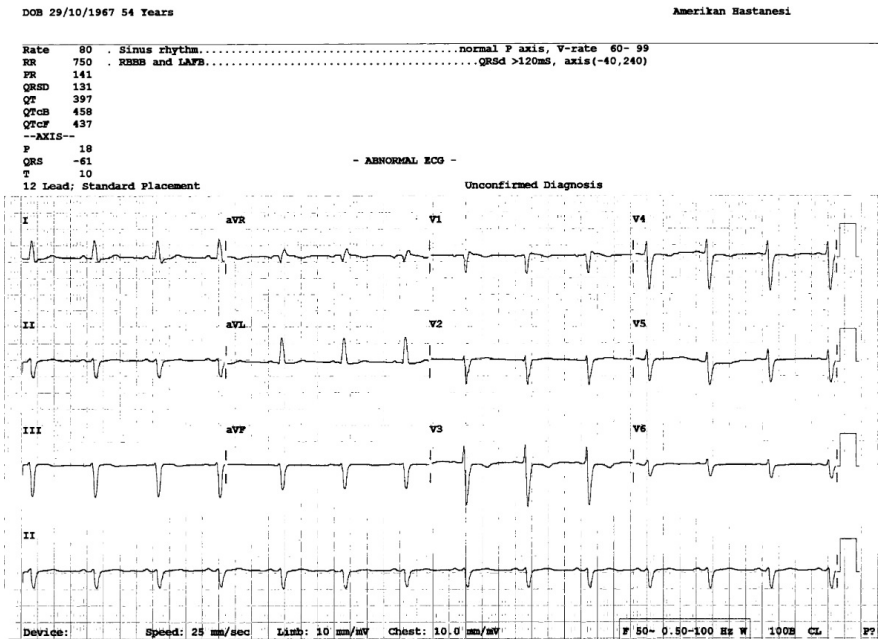
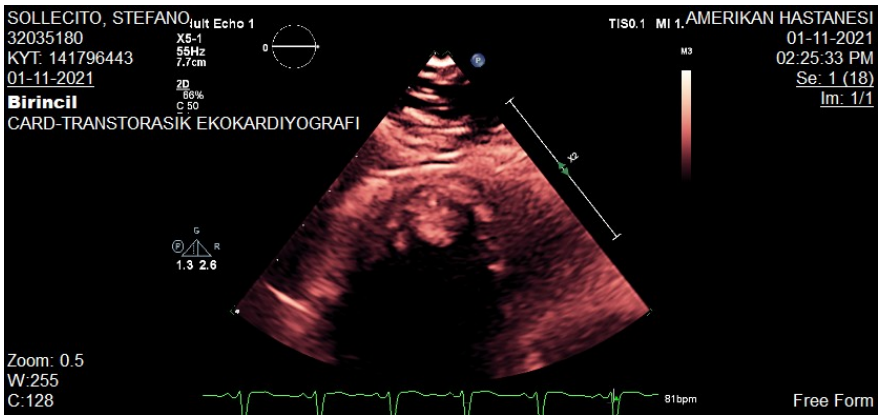


Figure 1 - Electrocardiogram

The brachial thrombectomy under the guidance of ultrasound signing was performed urgently and successful distal flow observed.

The patient has had a sarcoma excision from his right hip and diagnosed with metastatic sarcomas in the lungs and has had the last surgery for one of these masses with video-assisted thoracic surgery (VATS) 7 weeks ago. He has never smoked, and alcohol consumption was social, and he does not have a special medical history for clotting disorders.

Transthoracic echocardiography showed normal chamber sizes and valvular functions, with the ejection fraction (EF) %60 without wall motion abnormalities. In the apical four and two chamber views, hyperechogenic mass measured 1,32x1,05 cm was seen in the left ventricle's apex, and it was commented to be a thrombus (Figure 2).



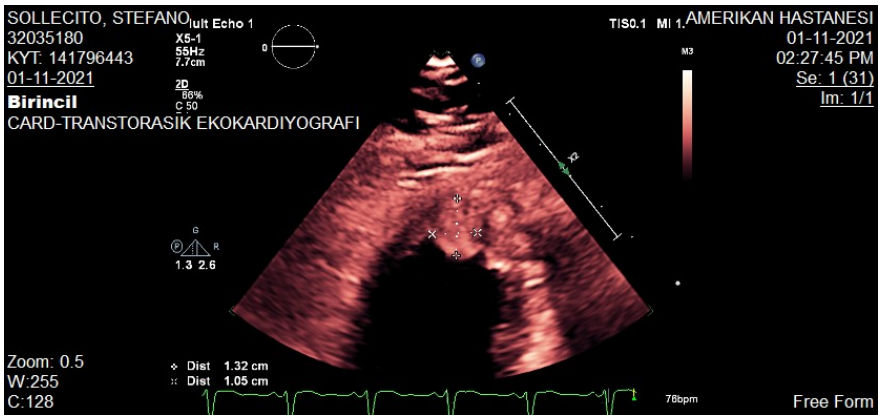
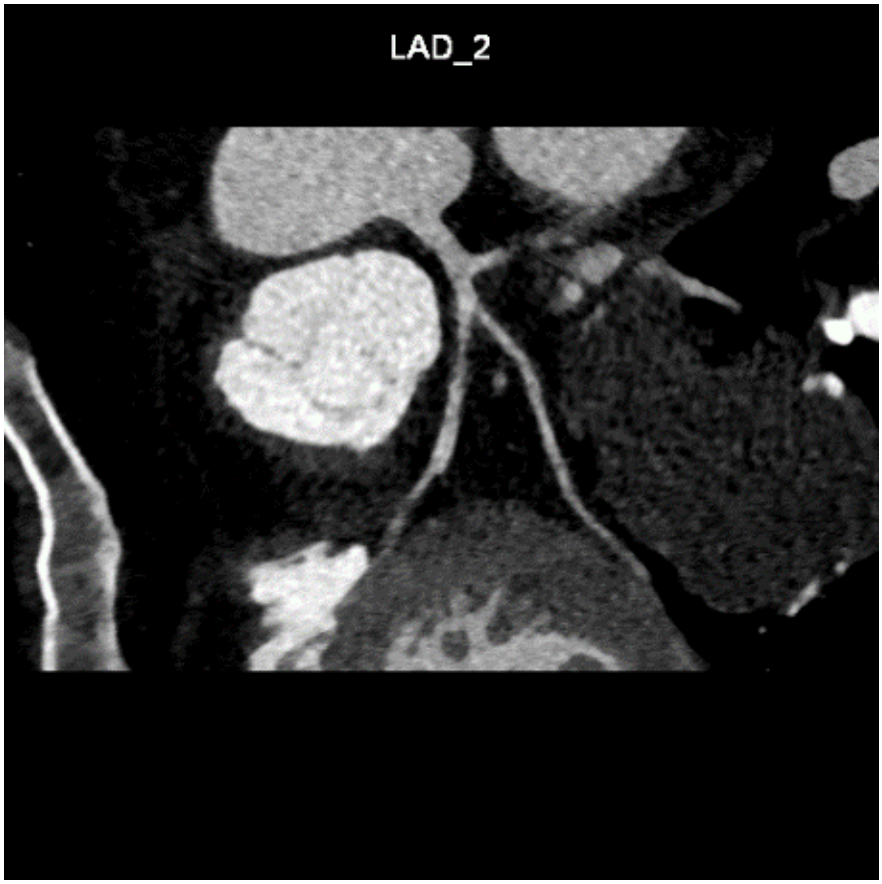
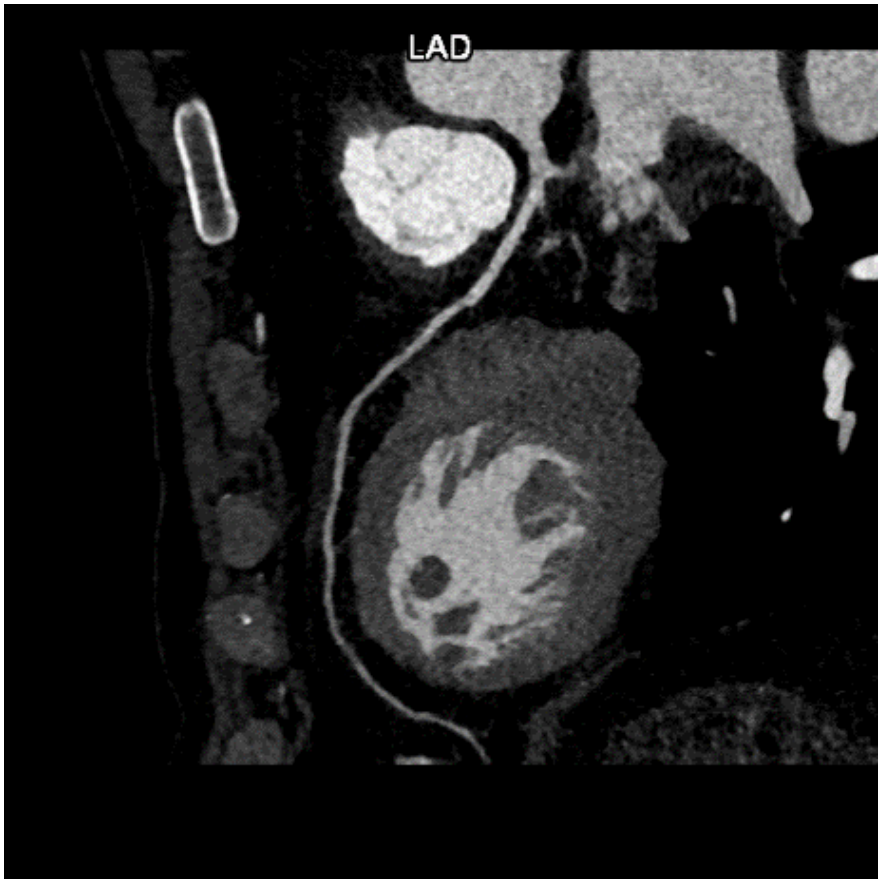


Figure 2 – Thrombus in the LV apex in transthorasic echocardiography

Since thrombus formation in the normal left ventricle is a very rare condition, computerized tomography (CT) of the heart and coronary arteries was done as a second imaging modality to verify the intracardiac mass and see the coronary status for a possible thrombectomy operation. The coronary arteries were normal (Figure 3), and the thrombi were seen as a filling defect in the apex of the left ventricle in the CT (Figure 4). In addition to the heart findings, there were giant masses in the lungs which were interpreted as the sarcoma's metastatic masses as described by the patient (Figure 5) .

The baseline biochemical tests did not show any hypercoagulable state, further tests as protein C, S, Factor V Leiden mutations, glycoprotein immunoglobulin antibodies, anticardiolipin antibodies could not be done because of the patient's non-collaborative status. Lung sarcoma was accepted as the underlying reason of the spontaneous thrombus in the left ventricle.





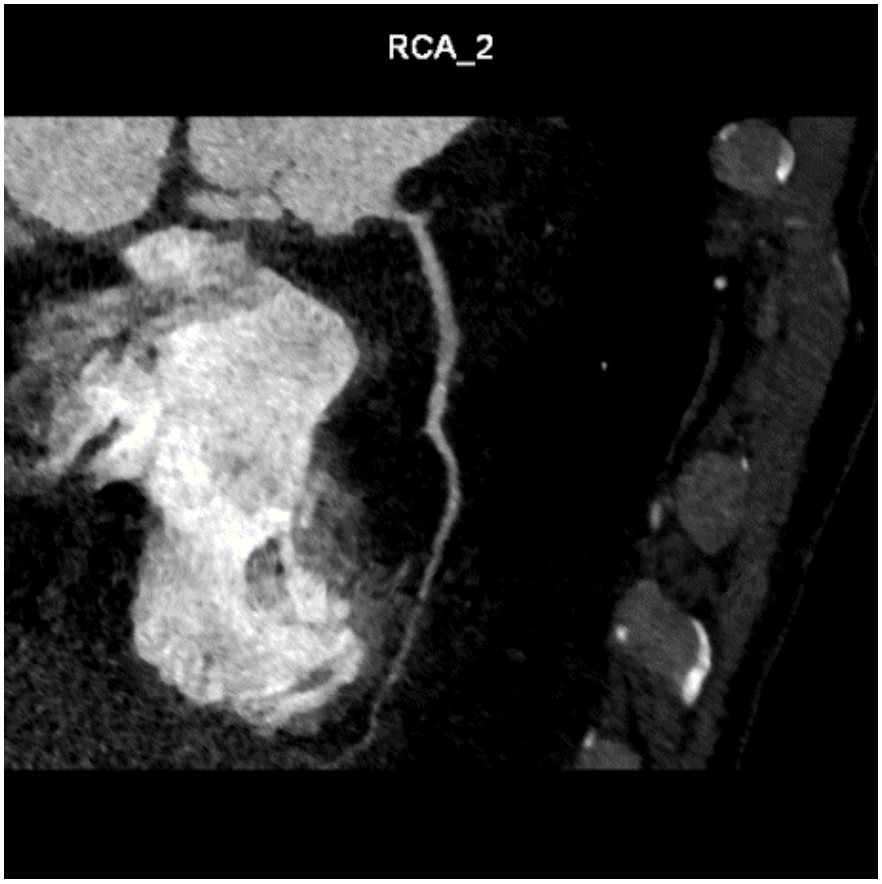


Figure 3 (A, B, C, D) – Normal coronary arteries as A-B: Left anterior descending artery (LAD) , C: Circumflex artery (Cx) and D:Right Coronary Artery (RCA)

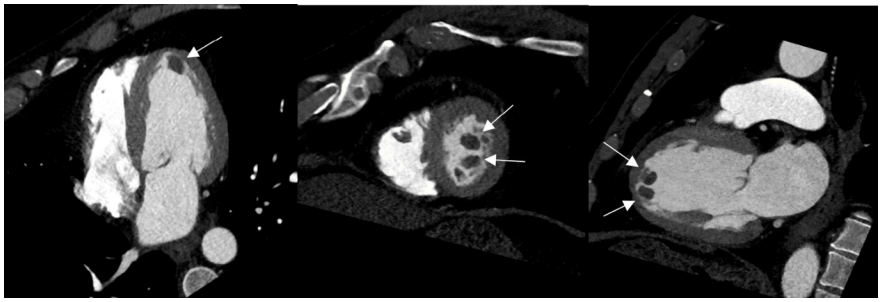


Figure 4: Intraventricular filling defect in apical area (shown with white arrows)

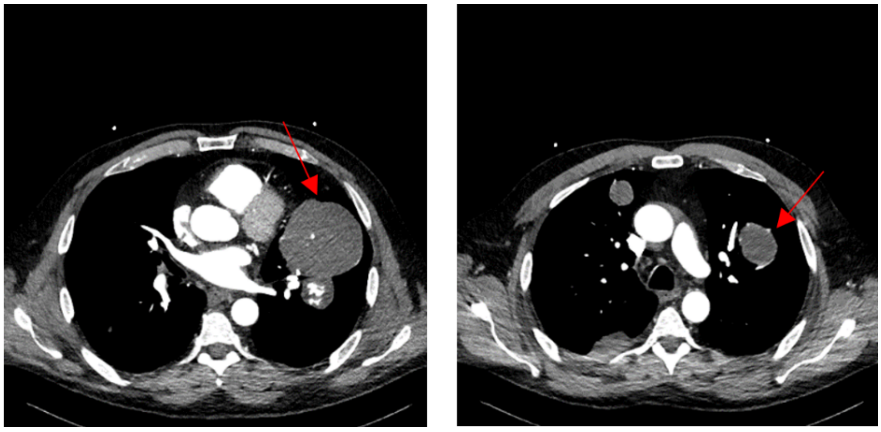


Figure 5: Metastatic masses of the sarcoma (shown with red arrows)

Because a thrombus located in the left ventricle with normal systolic functions is more likely to embolize, the patient was recommended a thrombectomy operation by the cardiovascular surgeon. The patient refused to have the surgery and asked for medical therapy instead. Because of the recent surgical operation he had, enoxaparin 6000 IU twice daily was ordered, and the patient was discharged at his own request to come for a follow-up one week later. However, it was learned that he was hospitalized in another hospital with ischemic cerebrovascular attack two days after discharge.

Discussion

Left ventricular thrombus with normal systolic functions is a very rare condition. Only 31 cases were reported with male predominance (%58) (1). The predisposing factors are inflammatory conditions, malignancies, blood dyscrasias, hypercoagulable states as lupus anticoagulant and diagnostic work-up for these situations are advised (1). The apex of the left ventricle is the most common site of thrombus in the ischemic and non-ischemic myocardium and although there are no guidelines or recommendation reports for the treatment of left ventricular thrombus in patients with normal systolic functions, anticoagulation therapies with or without surgical removal is recommended for these patients. The anticoagulation algorithms advised for intracardiac thrombus in the reduced left ventricle functions might be used. As the United States guidelines recommend the usage of a vitamin K antagonist with a target level of INR between 2.0-2.5 or dabigatran, rivaroxaban or apixaban for 3 months, European guidelines recommend the treatment up to 6 months (2-6).

Conclusion

Patients with chronical inflammatory conditions, malignancies, blood dyscrasias, hypercoagulable states as lupus anticoagulant have the potential of intracardiac thrombus even if it is a rare condition in normal LV systolic function. Regular follow-up of these patients with echocardiography may ensure that the thrombus is detected without embolism. Surgical procedures supported with anticoagulant treatments appears to be beneficial in current practice.

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