

MINI-FOCUS ISSUE: VASCULAR MEDICINE

INTERMEDIATE

IMAGING VIGNETTE: CLINICAL VIGNETTE

Aortic Mural Thrombus and Acute Coronary Syndrome in a Patient With Cannabinoid Hyperemesis Syndrome



Lyana Labrada, MD,^a Aadhar Patil, MD,^a Vladimir Lakhter, DO,^b Kenji Minakata, MD, PhD,^c Sabrina Islam, MD^a

ABSTRACT

A 36-year-old woman with cannabinoid hyperemesis syndrome presented with chest pain and was found to have single-vessel coronary artery disease and an aortic mural thrombus. This case describes unique management with coronary artery bypass and surgical thrombectomy because of the patient's inability to tolerate uninterrupted antiplatelet therapy given her cannabinoid hyperemesis syndrome. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2021;3:694-6) © 2021 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

CASE DESCRIPTION

A 36-year-old woman with a history of obesity, cannabinoid hyperemesis syndrome, hyperlipidemia, and tobacco use presented with emesis and chest discomfort. Electrocardiogram demonstrated no ischemic changes, but her troponin I level was elevated at 32 ng/ml (Siemens 99th percentile 0.045 ng/ml). Transthoracic echocardiogram demonstrated preserved left ventricular systolic function, with hypokinesis in the left anterior descending (LAD) artery distribution. Coronary angiogram demonstrated proximal LAD artery occlusion consistent with acute plaque rupture (**Figures 1A and 1B**). Because the patient had cannabinoid hyperemesis syndrome, there was concern for her inability to tolerate uninterrupted dual antiplatelet therapy. Additionally, the patient was not amenable to cannabis cessation. Therefore, a plan was made for single-vessel coronary artery bypass graft (CABG). Computed tomography angiography of the chest performed pre-operatively to rule out pulmonary embolism given the patient's ongoing tachycardia demonstrated a sizable ascending aortic mural thrombus (**Figures 1C and 1D**), proximal to the innominate artery origin. After multidisciplinary discussion between the cardiology and cardiovascular surgery departments, the decision was made for CABG and open thrombectomy of the aortic mural thrombus.

Intraoperatively, a ball-like mural thrombus was found inside the aorta (**Figures 1E and 1F**), carefully excised, and confirmed to be thrombus on pathological examination. CABG was performed with the left internal thoracic artery to LAD. Post-operatively, the patient was started on therapeutic anticoagulation, with plans for outpatient hypercoagulable workup.

From the ^aLewis Katz School of Medicine Temple Heart and Vascular Institute, Philadelphia, Pennsylvania, USA; ^bSection of Interventional Cardiology, Temple Heart and Vascular Institute, Philadelphia, Pennsylvania, USA; and the ^cDepartment of Surgery, Section of Cardiovascular Surgery, Temple Heart and Vascular Institute, Philadelphia, Pennsylvania, USA.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

Manuscript received January 25, 2021; accepted February 16, 2021.

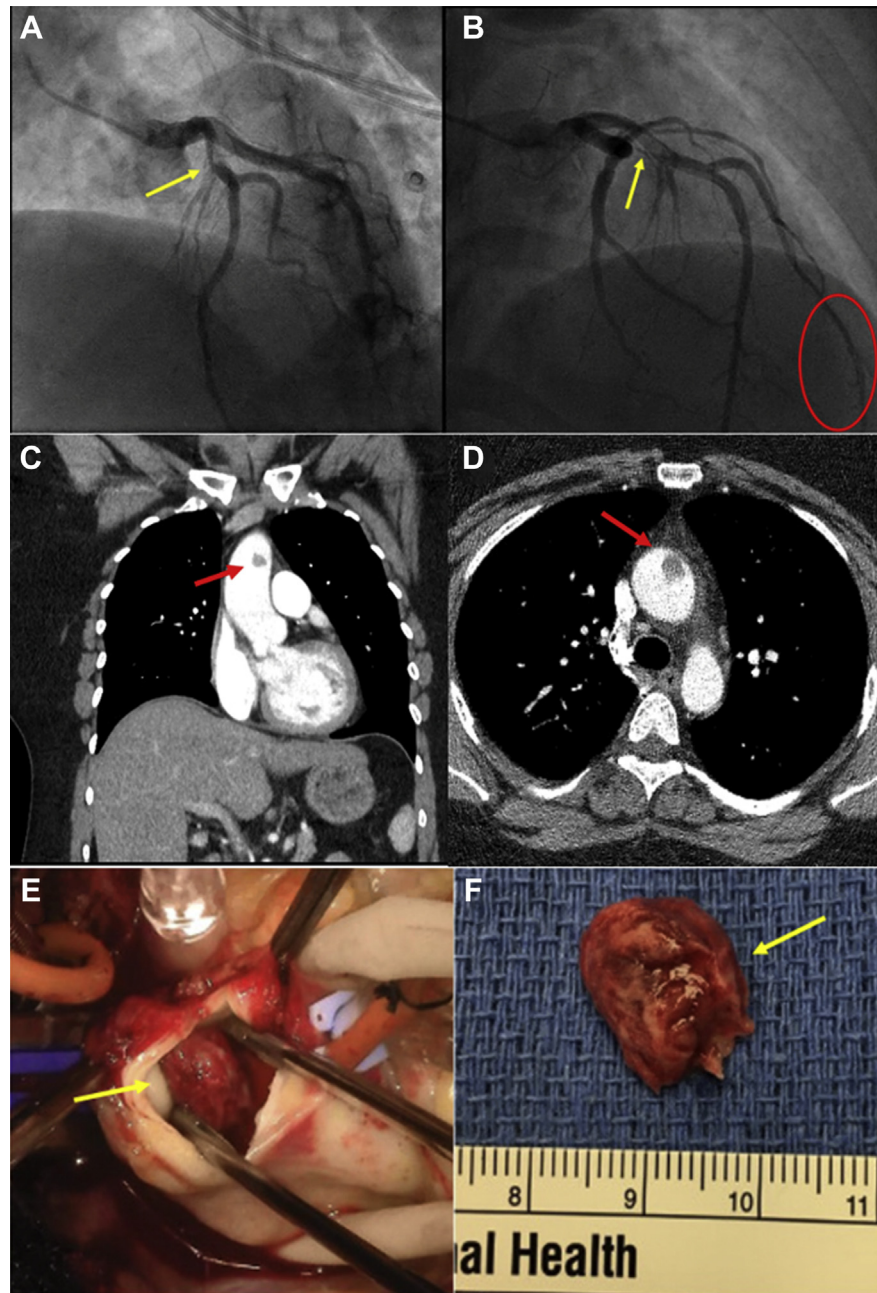
Although CABG for single-vessel coronary artery disease is not the standard of care, this case highlights a novel solution for a patient with acute coronary syndrome and a clinical background of cannabinoid hyperemesis syndrome with inability to tolerate uninterrupted dual antiplatelet therapy. Given the infrequent incidence of aortic mural thrombus, there are no defined guidelines for management. Treatment often depends on the anatomic location of the thrombus and may

**ABBREVIATIONS
AND ACRONYMS**

CABG = coronary artery bypass graft

LAD = left anterior descending

FIGURE 1 Aortic Mural Thrombus and Acute Coronary Syndrome



(A, B) Coronary angiogram demonstrating a thrombotic lesion within the proximal left anterior descending coronary artery (yellow arrows), with embolization to the first diagonal (red circle). (C, D) Computed tomograms from the coronal view (C) and axial view (D) demonstrating an irregular, hypodense filling defect adherent to the anteromedial wall of the ascending aorta (red arrows), suggestive of aortic mural thrombus. (E) Ball-like thrombus noted within the aorta intraoperatively (yellow arrow). (F) Surgical specimen of aortic mural thrombus measuring 13 mm × 12 mm (yellow arrow).

include anticoagulation alone versus invasive management such as endovascular stenting or surgical thrombectomy (1). Although conservative management with anticoagulation was an option, surgical thrombectomy was chosen because the thrombus was proximal to the innominate artery, which is associated with a high risk of stroke, and ongoing discussion for CABG.

Although our patient had many risk factors associated with atherosclerotic occlusive disease, the aorta was minimally diseased, thus raising the question of the etiology of the thrombus and the role of significant marijuana use in the pathophysiology of her disease. A hypercoagulable state was considered. A unifying explanation could be an intracardiac thrombus with embolism to both the LAD and the aorta. However, workup was deferred to outpatient services given the urgency for initiation of anticoagulation and surgical intervention. Additionally, although cannabis use has been tied to coronary vasospasm in patients presenting with atypical chest pain, its overall relationship with accelerated atherosclerosis and cardiovascular health has yet to be determined (2,3). Therefore, further investigations are needed to fully define the role of cannabis use in cardiovascular disease processes.

DISCUSSION

In conclusion, this report describes our institutional management strategy for single-vessel coronary artery disease and aortic mural thrombus in a patient with cannabinoid hyperemesis syndrome. It demonstrates the importance of taking a patient's clinical background into account when the standard of care may not be the best option.

FUNDING SUPPORT AND AUTHOR DISCLOSURES

The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

ADDRESS FOR CORRESPONDENCE: Dr. Sabrina Islam, Lewis Katz School of Medicine at Temple University, Temple Heart and Vascular Institute, 3401 N. Broad Street, Parkinson Pavilion 9th Floor, C-939, Philadelphia, Pennsylvania 19140, USA. E-mail: sabrina.islam@tuhs.temple.edu.

REFERENCES

1. Verma H, Meda N, Vora S, George RK, Tripathi RK. Contemporary management of symptomatic primary aortic mural thrombus. *J Vasc Surg* 2014;60:1524-34.
2. Page RL, Allen LA, Kloner RA, et al. Medical marijuana, recreational cannabis, and cardiovascular health: a scientific statement from the American Heart Association. *Circulation* 2020; 142:131-52.
3. Pierard S, Hantson P. Coronary vasospasm complicating cannabinoid hyperemesis syndrome. *J Cardiol Cases* 2017;15:115-8.

KEY WORDS chest pain, coronary angiography, thrombosis