

Look before you leap! A case report of left main dissection causing myocardial infarction

¡Mira antes de saltar! Reporte de un caso de oclusión del tronco coronario izquierdo por disección de la aorta ascendente

Sriram Veeraraghavan¹  and Bharath R. Kidambi^{2*} 

¹Department of Cardiology, SRM Medical College and Research Centre, Chengalpattu, Tamil Nadu, India; ²Department of Cardiology, Al-Dhannah Hospital, Aldhannah, Abu Dhabi, UAE

A middle-aged woman with no comorbidities presented to the emergency department with chest discomfort and breathlessness. Vitals showed tachycardia, hypotension, and a soft early diastolic murmur, and a chest X-ray revealed acute pulmonary edema. Twelve lead electrocardiogram (Fig. 1A) showed sinus rhythm with ST depression in 2, 3, aVF, V3-V6, ST elevation in aVR, and lead 1 suggestive of an acute coronary syndrome involving the left main coronary artery. A transthoracic echocardiogram showed severe left ventricular dysfunction, global LV hypokinesia, and a tricuspid aortic valve with an oscillating flap-like structure was observed in the ascending aorta; indicating an acute aortic dissection (Fig. 1B-F). The patient was shifted for emergency surgery after computed tomography-Aortography, which confirmed the diagnosis of De-Bakey Type I dissection with a curvilinear dissection flap extending from the ascending aorta, involving the arch of aorta up to the right common femoral artery (Fig. 2D and E). The dissection flap is seen occluding the Left main with hypoperfusion in the left anterior descending and left circumflex (Fig. 2A and B), with the right coronary artery being spared (Fig. 2C). Despite the

surgery, the patient did not survive in the post-operative period.

Acute ascending aortic dissection is a fatal condition with an immediate mortality rate as high as 1-2%/h over the first several hours¹. It can cause complications like malperfusion syndrome, tamponade, or aortic insufficiency. Acute myocardial infarction (MI) due to hypoperfusion of the left main coronary artery is exceedingly rare and potentially fatal and requires very urgent surgical intervention for the patient's survival². According to the 2014 ESC Guidelines, emergency surgery is indicated for type A dissections to prevent rupture and death. The 2013 ACCF/AHA guidelines for STEMI also emphasize distinguishing different causes of acute coronary syndrome to avoid inappropriate treatments^{3,4}. Our case underscores the importance of prompt echocardiography in screening for this lethal disease. Maintaining a high index of suspicion is crucial for diagnosing aortic dissection, often necessitating more than two diagnostic modalities for confirmation. Despite surgical intervention, the mortality rate for aortic dissection involving the ascending aorta causing MI remains high, highlighting the need for early diagnosis to improve patient outcomes⁵.

*Correspondence:

Bharath R. Kidambi
E-mail: drbkid@gmail.com

Date of reception: 21-12-2023

Date of acceptance: 13-07-2024

DOI: 10.24875/ACM.23000269

Available online: 25-07-2024

Arch Cardiol Mex. 2024;94(4):526-528

www.archivoscardiologia.com

1405-9940 / © 2024 Instituto Nacional de Cardiología Ignacio Chávez. Published by Permanyer. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

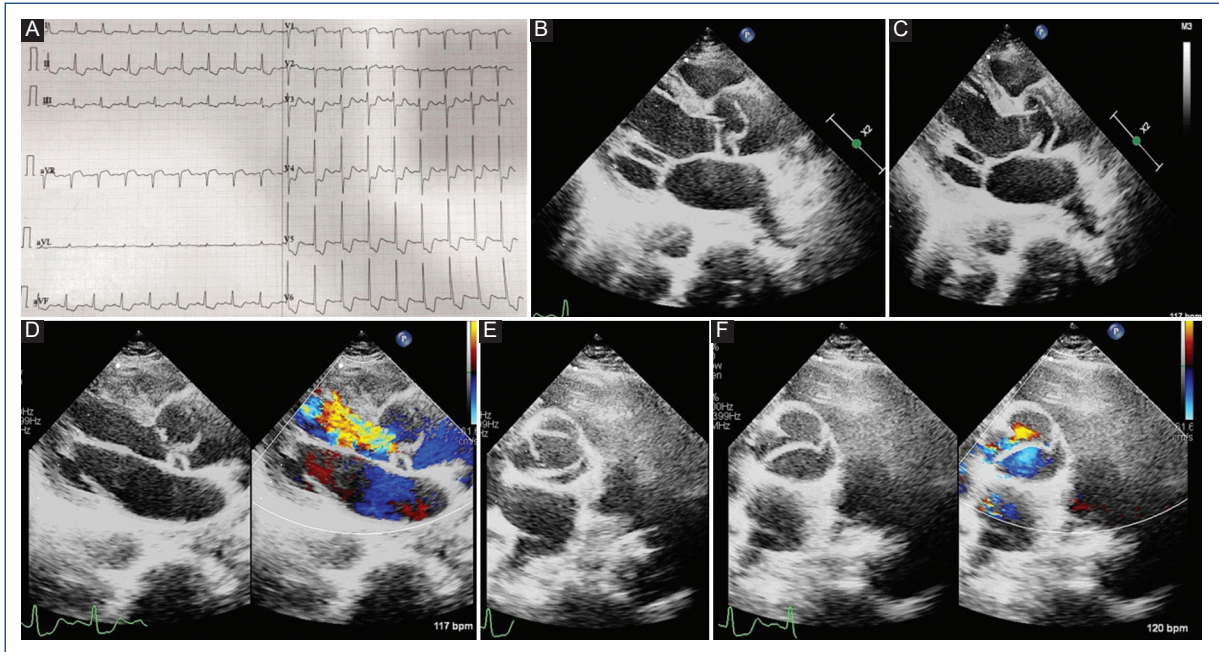


Figure 1. A: 12 lead electrocardiogram suggestive of left main coronary artery occlusion with global ST depression and aVR ST elevation. B-D: 2D transthoracic echocardiogram images in parasternal long axis view showing curvilinear dissection flap in the ascending aorta causing severe aortic regurgitation. E and F: 2D transthoracic echocardiogram images in parasternal short axis view showing trileaflet aortic valve and aortic dissection flap impeding the mobility of aortic valve leaflets.

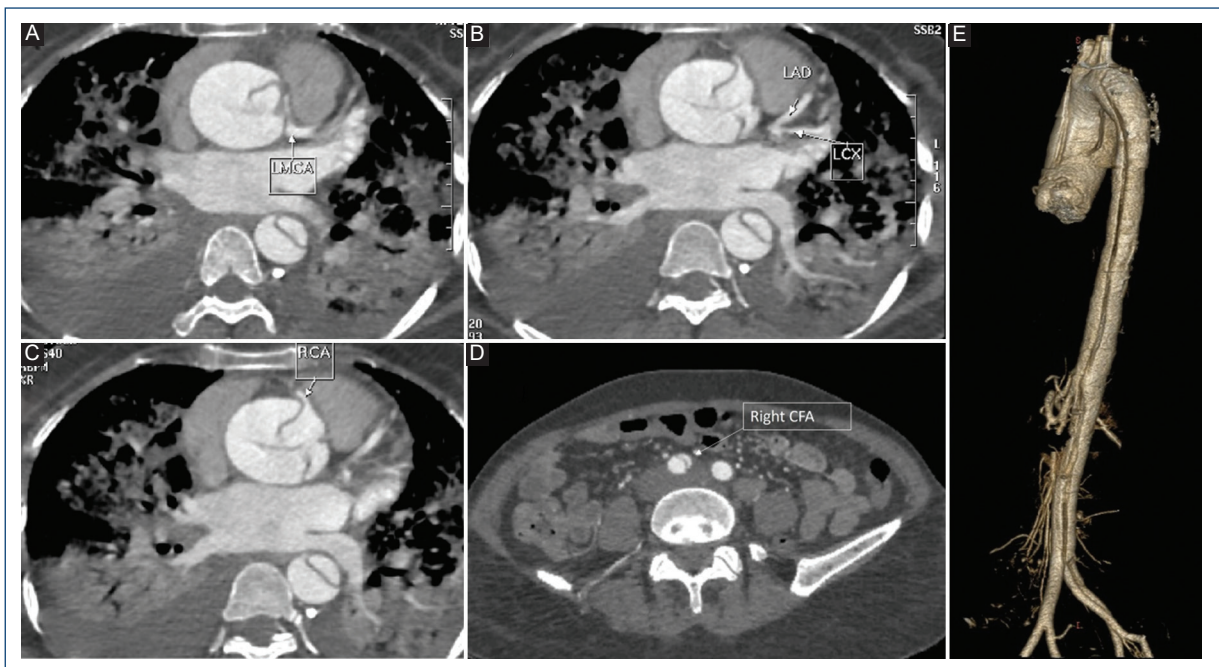


Figure 2. A-D: multidetector computed tomography (CT) aortogram demonstrating aortic dissection flap arising from ascending aorta, occluding the left main coronary artery and extending till the right common femoral artery. E: 3D reconstruction of the CT aortogram showing the dissection flap involving the whole length of the aorta and its extension into the right common femoral artery.

Funding

None.

Conflicts of interest

None.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article. Furthermore, they have acknowledged and followed the recommendations as per the SAGER guidelines depending on the type and nature of the study.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Use of artificial intelligence for generating text.

The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

References

1. Lentini S, Perrotta S. Aortic dissection with concomitant acute myocardial infarction: From diagnosis to management. *J Emerg Trauma Shock.* 2011;4:273.
2. Eren E, Toker ME, Tunçer A, Keles C, Erdogan HB, Anasiz H, et al. Surgical management of coronary malperfusion due to type a aortic dissection. *J Card Surg.* 2007;22:2-6.
3. Hiratzka LF, Bakris GL, Beckman JA, Bersin RM, Carr VF, Casey DE Jr., et al. 2010 ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM Guidelines for the diagnosis and management of patients with thoracic aortic disease. *Circulation.* 2010;121:e266-369.
4. Roffi M, Patrono C, Collet JP, Mueller C, Valgimigli M, Andreotti F, et al. 2015 ESC Guidelines for managing acute coronary syndromes in patients presenting without persistent ST-segment elevation. *Eur Heart J.* 2016;37:267-315.
5. Nienaber CA, Clough RE. Management of acute aortic dissection. *Lancet.* 2015;385:800-11.