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MYOCARDIAL INFARCTION DUE TO NON-VALVULAR PAPILLARY FIBROELASTOMA OF THE LEFT CORONARY SINUS: THE IMPORTANCE OF MULTIMODAL IMAGING

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**MYOCARDIAL INFARCTION DUE TO NON-VALVULAR PAPILLARY
FIBROELASTOMA OF THE LEFT CORONARY SINUS: THE IMPORTANCE OF
MULTIMODAL IMAGING**

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MYOCARDIAL INFARCTION DUE TO FIBROELASTOMA

A 44-year-old woman who came to the emergency department for syncope and chest pain at rest, electrocardiogram with diffuse ST-segment depression and ST-segment elevation in aVR, positive troponin, and mass adhered to the left coronary sinus on echocardiogram, with obstruction of the ostium at CCTA. She underwent emergency surgery and the histopathological report showed papillary fibroelastoma.

Keywords:

Acute myocardial infarction

Left Coronary ostium

Papillary fibroelastoma

Abbreviations:

PFE: Papillary fibroelastoma

LCA: left coronary artery

CCTA: Coronary computed tomography angiography

A 44-year-old woman with a history of type II diabetes and obesity presents, with a two-month history of syncope. In the week prior to presentation, she reported exertional angina. She presented to the emergency department with a 2-hour history of chest pain at rest (intensity 8/10 on the visual analog scale), that radiated to her left arm. Her blood pressure on presentation was 95/60 mmHg and heart rate was 88 bpm. The initial electrocardiogram demonstrated diffuse ST-segment depression and ST elevation in aVR (**Figure 1**). These findings suggested either left main coronary artery sub-occlusion or multivessel coronary artery disease. The initial troponin I was 917 ng/dL, and the repeat at one hour was 1198 ng/dL. She was diagnosed as a high-risk NSTEMI and started on anticoagulant therapy on enoxaparin.

A bedside transthoracic echocardiogram was performed, showing a mobile and pedunculated mass attached to the surface of the left coronary sinus (**Figure 2A and 2B**), without valvular dysfunction. Coronary computed tomography angiography (CCTA) confirmed the anatomical position of the tumor with partial and intermittent obstruction of the ostium of the left coronary artery (**Figures 2C, 2D, 2E, and 2F. Supplemental Videos S1 and S2**). The CCTA did not show evidence of atherosclerotic lesions or thromboembolic phenomena in the coronary arteries.

In consensus with the Heart Team, she underwent emergency surgery due to persistent angina. She was placed on cardiopulmonary bypass and underwent a transverse resection of the ascending aorta with resection of a 14mm tumor (**Supplemental Figure S1**). Extreme caution was taken not to damage the aortic valve, due to its proximity of the tumor. Postoperative recovery was uneventful, and the patient was discharged on the fifth day after surgery. The histopathological report showed avascular fibrotic epithelial tissue consistent with a papillary fibroelastoma (PFE).

Due to the high mobility and friability of the extracellular matrix, PFE confers a high embolic risk (transient ischemic attack and stroke). Syncope is generally attributed to valvular dysfunction or resultant conduction disorders¹. However, in fibroelastomas of non-valvular location it is an uncommon symptom. In our case, we believe that the mobility and location

of the tumor generated transient obstruction of the left ventricular outflow tract and the left coronary ostium, which caused a drop in coronary flow.

Acute myocardial infarction secondary to PFE located in the aortic valve, coronary sinus, or sinotubular junction has been attributed mainly to ostial coronary artery occlusion or coronary artery embolization^{2,3}. Most left coronary artery occlusion cases are diagnosed by autopsy after sudden death. Survival is rare in this setting and is attributed to intermittent obstruction of the left coronary artery ostium^{2,3}. In these cases, echocardiography, along with the support of CCTA, is an essential tool to assess cardiac structure and evaluate treatment options rapidly.

Currently, cardiac tumor guidelines suggest surgical treatment in symptomatic patients, mobile lesions, and lesions larger than 1 cm due to the excellent postoperative and long-term prognosis when complete resection is successfully performed⁴.

Novel teaching points.

- Transthoracic echocardiography should be performed regularly for any patient with an elevated troponin that presents with atypical symptoms such as syncope or neurological symptoms, due to the possibility of neoplastic pathologies at the cardiac level or in large vessels.
- Papillary fibroelastoma in the coronary sinus is extremely rare, but should be considered on the differential diagnosis for patients with evidence of myocardial ischemia presenting with an unusual clinical presentation.
- Multidisciplinary team decision-making is of crucial importance to facilitate multimodality imaging methods for the timely diagnosis and treatment of cardiac tumors.

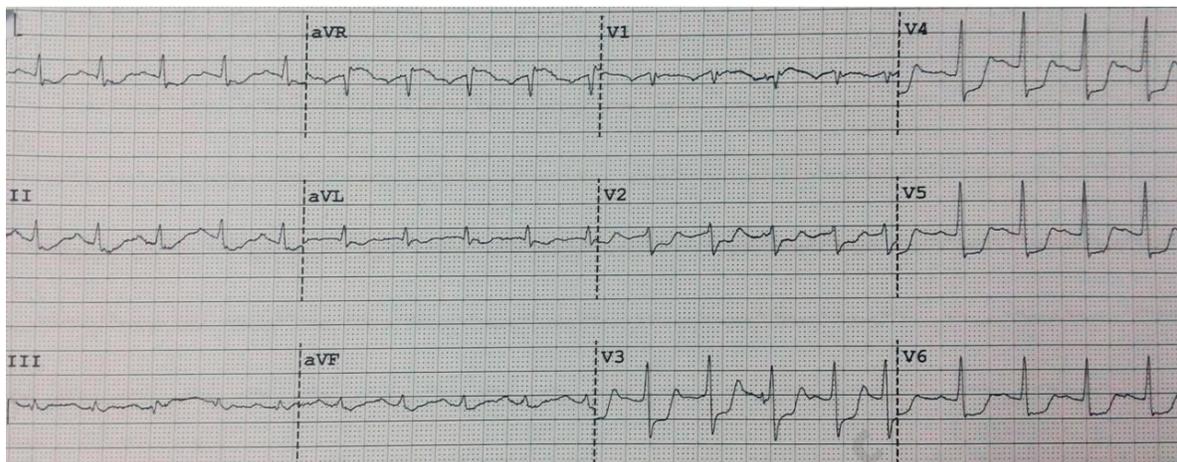


Figure 1: 12-lead electrocardiogram.

Diffuse ST-segment depression and ST-segment elevation in aVR are observed.

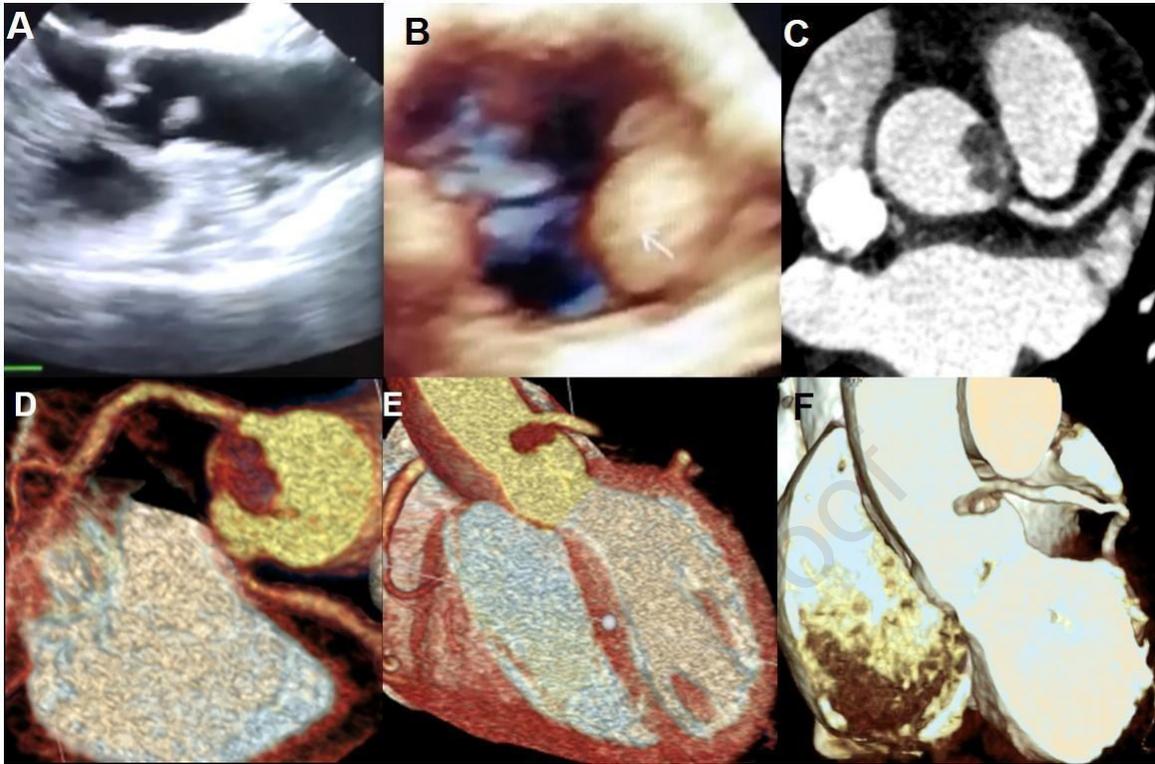


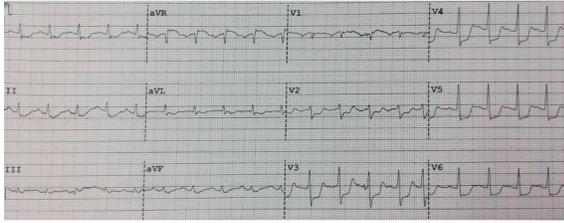
Figure 2: Multimodality Cardiac Imaging in the Diagnosis of cardiac tumor.

A: Transthoracic echocardiogram, parasternal long axis, with mobile, pedunculated image in left coronary sinus. B: 3D echocardiogram, with lesion at the sinotubular junction near the left coronary ostium, aortic valve in diastole. C, D, E and F: Cardiac angiography showing intermittent obstruction of the left coronary ostium.

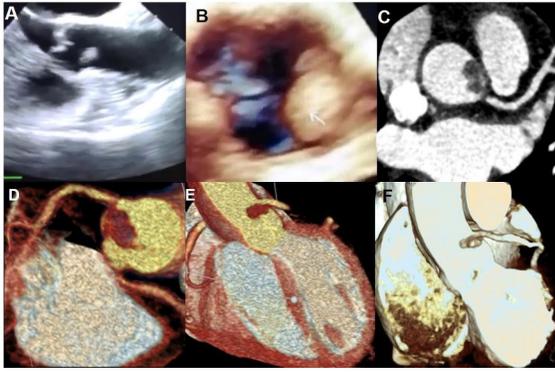
Vídeo 1 and 2. Angio-Tomographic computed

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