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When coronary angiography is not enough: the role of cardiac magnetic resonance in differential diagnosis of atypical chest pain and left ventricular systolic dysfunction

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A 42-year-old man presented to the outpatient clinic for episodes of atypical chest pain, which started some months before and were not related to physical exercise. He denied any significant cardiovascular risk factors and had no other relevant comorbidities, apart from a recent history of diffuse paraesthesias and scintillating scotomas, with evidence of non-specific gliosis at cerebral magnetic resonance.

The electrocardiogram showed sinus rhythm with little inferolateral Q-waves.

At blood samples, the patient had mildly elevated inflammation markers

A moderate dilation and systo-diastolic global dysfunction of the left ventricle (LV) was revealed by echocardiogram.

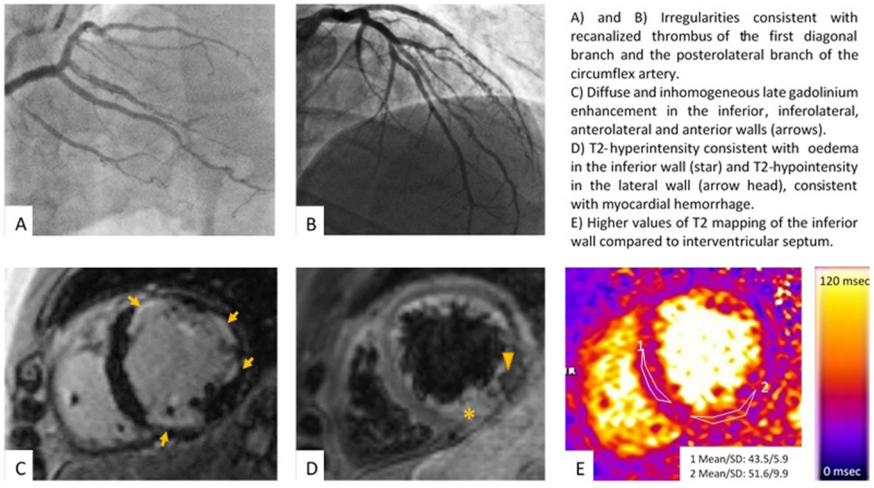
The patient underwent coronary angiography, with evidence of non-critical lesions of the posterior interventricular branch, the first diagonal branch and the posterolateral branch of the circumflex artery, consistent with thrombus recanalization.

Given the diagnostic suspicion of dilated cardiomyopathy with no coronary artery disease, the patient was referred to cardiac magnetic resonance (CMR).

CMR confirmed LV moderate systolic dysfunction, with akinesis of the inferior wall, hypokinesis of the anterior and anterolateral wall and dyskinesis of the medium-apical inferolateral wall. STIR T2-weighted sequences revealed oedema in the inferior wall, confirmed by T2 mapping (50 msec vs 40 msec of the interventricular septum). In the same sequences, there was evidence of hypointensity in the lateral wall, likely due to the presence of myocardial hemorrhage. The late gadolinium enhancement (LGE) was diffuse and non-homogeneous in the inferior, inferolateral, anterolateral and anterior walls, following an ischemic pattern. T1 mapping showed diffuse high values, with a subsequent high estimated extracellular volume (1040 + 20 msec, 32% respectively). Oedema and LGE pattern were highly suspected of multiple and repetitive thrombotic events, and suggested a possible vasculitic origin of the disease. Indeed, further laboratory analysis demonstrated the positivity of anticardiolipin IgG, anti-beta2 glycoprotein IgM-IgG and Lupus Anticoagulant.

Antiphospholipid syndrome is a systemic autoimmune disorder of acquired hypercoagulability, characterized by obstetrical complications and diffuse thrombotic events in patients positive for antiphospholipid antibodies. Ischemic events are highly prevalent in these patients and may be the first presentation of the disease especially in the young. In this case, CMR tissue characterization played a pivotal role in the differential diagnosis and management of the patient, highlighting the fundamental role of CMR in patients with atypical chest pain and LV dysfunction with non-significant coronary artery disease.

Abstract P118 Figure.



A) and B) Irregularities consistent with recanalized thrombus of the first diagonal branch and the posterolateral branch of the circumflex artery.
C) Diffuse and inhomogeneous late gadolinium enhancement in the inferior, inferolateral, anterolateral and anterior walls (arrows).
D) T2-hyperintensity consistent with oedema in the inferior wall (star) and T2-hypointensity in the lateral wall (arrow head), consistent with myocardial hemorrhage.
E) Higher values of T2 mapping of the inferior wall compared to interventricular septum.