

A RARE CASE OF COVID 19 MYOCARDITIS WITH ACUTE CORONARY SYNDROME

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Case Vignette

A 35-year-old female with a past medical history of endometriosis and gestational hypertension presented to the emergency department (ED) with complaints of exertional, dull, non-radiating, pleuritic left sided chest pain that started 2 days prior. On arrival to the ED, she was hypertensive at 160/110 mmHg. An EKG showed normal sinus rhythm with sinus arrhythmia without acute ST-T wave changes. Laboratory data was pertinent for a troponin T at 0.1 ng/ml which peaked at 0.58 ng/ml, a d-dimer of 0.53 mg/L and a pro-BNP of 461.8 pg/ml. She tested positive for SARS-CoV-2 RNA on screening without active respiratory symptoms.

Given her positive COVID-19 and elevated d-dimer, pulmonary embolism (PE) with right heart strain was high on the differential. A chest computed tomography angiography was negative for PE. A transthoracic echocardiogram showed normal LV systolic function with no regional wall motion abnormalities and no pericardial effusion. As she had no risk factors for coronary artery disease (CAD) a cardiac MRI (CMR) was pursued. CMR showed focal basal to mid lateral and anterolateral resting hypoperfusion with thinning and hypokinesis. There was mild subendocardial late gadolinium enhancement (LGE), as well as subtle mid ventricular LGE in anterolateral wall and mid myocardial LGE noted in the septum. Although, the pattern of mid wall LGE was consistent with myocarditis, the presence of subendocardial LGE was concerning for an ischemic scar. The resting hypoperfusion was also suggestive of microvascular obstruction. Overall, there was normal global left and right ventricular systolic function.

Based on the CMR results, treatment for an acute coronary syndrome was initiated along with colchicine for possible myopericarditis. A cardiac catheterization was subsequently performed. Angiography revealed a 99% occlusion of the first obtuse marginal branch (OM1) with right to left collaterals from the right coronary artery (RCA) and 40% stenosis of the distal left anterior descending artery with no significant obstructive disease of the RCA. The OM1 lesion was predilated, interrogated with an intravascular ultrasound (IVUS) and found to be atherosclerotic in nature with no evidence of spontaneous coronary dissection. She underwent successful IVUS guided percutaneous coronary intervention to OM1 with a single drug eluting stent. Post procedure her chest pain resolved. Antiplatelet therapy and colchicine were continued.

Discussion:

Viral infections are a common cause of myocarditis. In the recent pandemic there has been an increasing association of COVID-19 infections with myocarditis as well as thrombotic coronary occlusions and venous thromboembolism. Our case is unusual for the presence of both myocarditis and discovery of significant atherosclerosis in a young woman with a low pretest probability of coronary artery disease. As there was a scar in the region subtended by the circumflex marginal branch, she may have recently thrombosed this branch leading to a MI in the setting of a hypercoagulable state from COVID. Additionally, myocarditis is uncommon with COVID infection, in the absence of pulmonary and systemic findings. This case highlights the importance of keeping a broad differential for causes of chest pain in COVID positive patients.

