Myocarditis as a Presentation of MINOCA

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Introduction

Myocardial Infarction with Nonobstructive Coronary Arteries (MINOCA) is defined by its name. Typically affecting younger individuals, MINOCA risks being overlooked or undermanaged when no coronary artery obstruction is found on angiography to explain an MI. Given the many etiologies of MINOCA, effective treatment lies in finding the cause, diagnostic tools are of great importance to the morbidity and mortality of this heterogeneous syndrome.

Case Report

A 30-year-old male with a notable family history of early-onset cardiovascular disease presented with acute left-sided chest pain radiating to the left arm and neck, associated with dyspnea, dizziness, diaphoresis, nausea, and blurry vision. His social history was positive for occasional cocaine use, occasional marijuana use, and chewing tobacco use. He denied cocaine use in the days leading up to admission.

In the ED, his vital signs and physical exam were unremarkable. He had a high sensitivity troponin of 2,293 ng/L and EKG with non-specific ST changes. Bedside ECHO showed a possible anteroseptal wall motion abnormality. Cardiology was consulted and he was taken for an urgent coronary angiogram. Angiography was normal, without evidence of obstructive coronary artery disease, and showed normal LVEDP, consistent with MINOCA. Post-angiogram TTE showed LVEF 50-55% with normal diastolic function, mild impairment of LV systolic function, and hypokinetic basal anterolateral segment. Further workup with cardiac MRI was consistent with myocarditis. The patient was discharged home in stable condition, with resolution of symptoms after initiation of aspirin, atorvastatin, metoprolol succinate, losartan, and a 7-day course of high dose prednisone with sublingual nitroglycerin prn.

Figure 1: Cardiac MRI confirming diagnosis of myocarditis, arrow pointing to linear enhancement of the anterior mid ventricular wall

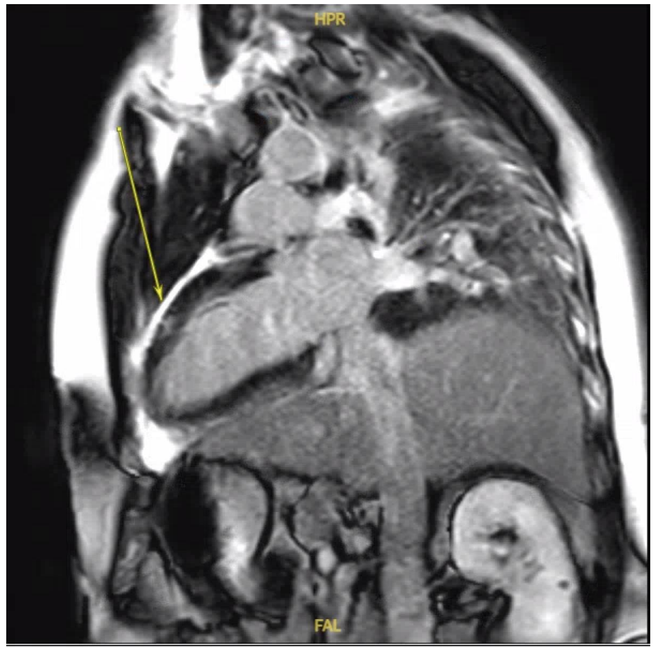
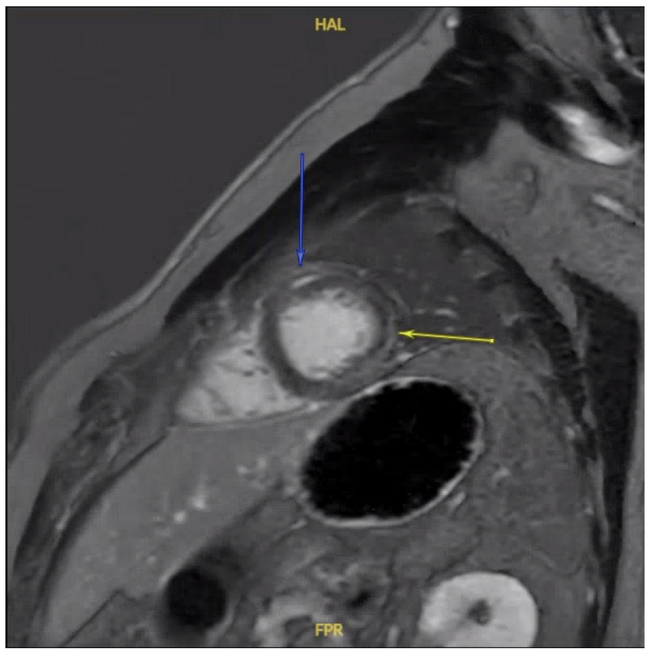


Figure 2: Cardiac MRI showing hyperenhancement of the anterior and lateral mid ventricular wall, suggestive of myocardial edema



Discussion

This case highlights the importance of considering alternative etiologies in patients presenting with NSTEMI-like clinical features without coronary obstruction. In this case, the patient presented with chest pain, elevated cardiac biomarkers, and wall motion abnormality on echo, however, coronary angiography revealed no evidence of obstructive coronary artery disease. As part of MINOCA workup, our differential diagnoses included coronary vasospasm, microvascular disease, and myocarditis. Our patient had a history of cocaine use and a recent infection with Influenza A, raising suspicion for coronary vasospasm versus myocarditis. Myocarditis of unknown etiology was confirmed through cardiac MRI.

Conclusions

This case supports the use of early cardiac MRI in patients without obstruction on coronary angiography to help determine the etiology of MINOCA.

References

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2. *Rodríguez Candelario II, Perez-Aybar AE, Roman-Ramos JA. MINOCA: A Working Diagnosis. Cureus. 2023 Nov 30;15(11):e49695. doi: 10.7759/cureus.49695. PMID: 38161900; PMCID: PMC10757752.*