COVID Vaccine-Induced Myocarditis With Complete Recovery

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Category of abstract: Case Vignette

Background: Myocarditis is defined as the gradually increasing inflammation of the middle layer of the heart leading to myocardial injury without the presence of ischemic events. The severity of myocarditis is based on the degree of myocardial inflammation. Introduction of the coronavirus disease 2019 (COVID-19) mRNA vaccines have significantly decreased the incidence of severe COVID-19 infections. While the vaccines have been shown to be effective and safe, there have been a few case reports of acute myocarditis shortly after the administration of its second dose. This case demonstrates the course of myocarditis 2-3 days after the administration of a second dose of COVID-19 vaccination.

Case: This case presents a 17-year old male with past medical history significant for COVID-19 infection, who presented to the emergency department with the chief complaint of chest pain two days after receiving his second dose of Pfizer COVID-19 vaccine. The patient endorsed substernal chest pain which radiated to the chest, 3/10 in intensity, as well as non-specific symptoms of nausea and chills. On presentation, he was afebrile, normotensive with blood pressure of 110/67 mmHg and with regular heart rate at 86 bpm. Physical exam had no pertinent positives, including no murmurs or rubs on auscultation or peripheral edema. Pertinent bloodwork showed peak troponin level at 2,453 ng/L and elevated CRP of 84.7. Transthoracic echocardiogram (TTE) showed EF of 53%, with no regional wall motion abnormalities in the LV, and normal cavity size and wall thickness in the RV, with RSVP of 24 mmHg. Tricuspid valve showed mild regurgitation, with no abnormalities in the aortic, mitral or pulmonic valves. Electrocardiogram (ECG) showed diffuse ST elevation, and cardiac MRI had evidence of myocardial edema at the basal to apical lateral wall and apical anterior wall on T2 mapping, with sub-pericardial enhancement along the antero-lateral, basal to mid inferolateral, and anterior walls of the LV.

Decision-making: Patient was hospitalized for two days, and was managed with colchicine and ibuprofen with uncomplicated hospital course. After discharge, he was advised to continue colchicine for an additional month, with normalization of CRP and Troponin levels and complete resolution of symptoms. Repeat cardiac MRI at 6 months showed resolution of myocardial edema and pericardial enhancement, and electrocardiogram stress test 7 months after diagnosis showed resolution of ST abnormalities.

Conclusion: Vaccine-induced myocarditis has been recently described as an adverse effect of the mRNA vaccines. Review of literature indicates a relatively benign course of vaccine-induced myocarditis with full recovery and rapid resolution of symptoms. Our patient's chest pain improved within 48 hours with complete resolution of symptoms and return to baseline function, with no recurrence at 6 month follow up.