

COVID-19 Vaccine Induced Myopericarditis: A Case Report and Literature Review

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Introduction

Myopericarditis is a rare phenomenon that is often triggered by an infectious agent (viral/bacterial/parasitic) or a non-infectious agent such as medication, alcohol, or an autoimmune disorder. We present a case of myopericarditis in a 24-year-old patient after exposure to SARS-CoV-2 vaccine.

Case Presentation

A 24-year-old male with no significant medical history presented to the hospital with sharp and stabbing chest pain in the retrosternal region. He had worsening pain in the supine position but was relieved by sitting up. He had received his second dose of mRNA COVID-19 vaccine three days prior to this event. He denied taking any medications at home and had no history of illicit drug abuse. He also did not have any prior history of infection with SARS-CoV-2. His temperature upon arrival was 36.7°C, heart rate of 58 beats per minute, blood pressure of 128/88 mmHg and had a normal oxygen saturation.

EKG showed sinus bradycardia with diffuse ST segment elevation in all leads. Initial troponin was 4275 ng/L which later doubled after an hour to 9180.3 ng/L and subsequently peaked at 20,779.9 ng/L. Patient underwent CT angiogram of the coronary arteries, that showed a total calcium score of 0 with no evidence of occlusion in the right coronary artery (RCA), left main artery, left anterior descending artery (LAD) or obtuse marginal artery (OM). A 2D echo was done which demonstrated normal left ventricular size with an ejection fraction of 60% and no other abnormalities. Patient tested negative for SARS-CoV-2. A diagnosis of vaccine induced myopericarditis was made based on the vaccine timeline and he was started on Ibuprofen and colchicine with improvement in symptoms. Patient improved symptomatically and was safely discharged.

Discussion

The pericardium is a fibroelastic sac made of two layers (visceral and parietal) separated by a space called the pericardial cavity. The cavity is usually filled with approximately 50cc of plasma derivative. Inflammation of this fibroelastic sac results in pericarditis, whereas concomitant inflammation of the myocardium leads to myopericarditis.

Our case describes a very rare adverse effect of the mRNA vaccine against COVID-19. A retrospective cohort study done at a large hospital in Israel that analyzed 2.5 million vaccinated patients 16 years and above found that the overall incidence of vaccine induced myocarditis was 2.13 cases per 100,000 vaccinated patients [1]. However, in men between 16 to 29 years the incidence was 10.69 cases per 100,000 persons (95% CI, 6.93 to 14.46). Reassuringly majority of the cases were mild to moderate. The authors also found that most

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cases of myocarditis occurred approximately 3 to 5 days after exposure to the second dose of the vaccine

Based on available evidence it appears that myopericarditis is an extremely rare adverse event and is more frequently seen in young men between the age of 12-29 years [2,3]. Data from the US Vaccine Adverse Events Reporting System (VAERS) reported that in those between 12-29 years, the incidence of myocarditis was approximately 40.6 cases per million second doses among males and 4.2 cases per million among females. In individuals >30 years of age, the reporting rates were 2.4 and 1.0 per million second dose for men and women respectively. It also appears that this adverse effect is associated only with the mRNA vaccine, and that vaccines based on other platforms such as the adenovirus vector is safe from a cardiac standpoint. The exact pathophysiology of vaccine induced myocarditis is not known and requires further research.

Myopericarditis secondary to COVID-19 vaccine usually has a mild to moderate course and does not warrant any aggressive intervention. One large study that looked at 136 cases of myocarditis secondary to the vaccine found that more than 95% of patients had an unremarkable hospital course and were discharged after a short time; unfortunately 1 person did develop fulminant myocarditis and had a fatal outcome [4].

Conclusion

Our case highlights that physician must have a strong clinical suspicion for vaccine induced myopericarditis in young men who present to the emergency room with chest pain after the second dose of mRNA SARS-CoV-2 vaccine. Although most cases are mild, these patients warrant close monitoring in the hospital including serial troponin checks and administration of anti-inflammatory agents. Despite the rare association of this adverse event, experts strongly recommend COVID-19 vaccination in age groups 12 years and above given its efficacy to prevent complications of COVID-19 disease.

References

1. Witberg G, Barda N, Hoss S and Richter I, et al. "Myocarditis after Covid-19 Vaccination in a Large Health Care Organization." *N Engl J Med.* 9 (2021): 23-29.
2. Montgomery J, Ryan M, and Engler R. "Myocarditis following immunization with mRNA COVID-19 vaccines in members of the US military." *JAMA Cardiol.* 9 (2021): 45-46.
3. Rosner CM, Genovese L, and Tehrani BN. "Myocarditis temporally associated with COVID-19 vaccination." *J Am Heart Assoc.* 10 (2021): 53-55.
4. Mevorach D, Anis E, Ceda and Bromberg M. "Myocarditis after BNT162b2 mRNA Vaccine against Covid-19 in Israel." *N Engl J Med.* 9 (2021): 85-89.
5. Jessica rose, Peter A. "maclough Report of myocarditis adverse events in the US vaccine adverse events reporting system in association with covid-19 vaccine." *N Engl J Med.* 9 (2021): 76-78.

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