LBBB After *MODERNA* COVID-19 Booster

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LOS ROBLES HEALTH SYSTEM

Introduction

- Adoption of the COVID-19 vaccinations has marked a significant milestone in global effort to combat the pandemic, leading to a marked reduction in mortality rates associated with the viral disease [1].
- Attention has turned intermittently to the identification of rare adverse effects that may accompany receipt of the novel vaccinations.
- CDC reports occurrence of myocarditis at a rate of approximately 1/1 million doses of 2nd dose mRNA vaccinations in females of 30 years of age or older [2].
- In light of this, we present a compelling case of a 63-year-old female who presented with acute onset severe chest pain following her Moderna booster vaccination prompting investigation into potential vaccine induced cardiac pathology

Case

- 63-year-old female with a past medical history of intermittent asthma presented to the ED with severe substernal chest pain the morning after receiving booster vaccination.
- Flu-like syndrome evening after receiving vaccination
- Following morning – pressure-like, 10/10, WWE, also occurring at rest, waxing and waning, lasting minutes
- No change in CP with position, no history of CP
- VS in ED: 99.8, 126/72, HR 75, RR 16, O2 97%
- Physical exam was unremarkable
- The patient's initial ECG revealed inversion of T-waves in V1-V5 (figure 1)
- Subsequent ECGs showed a new-onset LBBB (wide QRS, dominant S wave in V1, broad notched R waves in lateral leads (such as I and V6)
- Started on ASA + Carvedilol, and Cardiology was consulted - patient was to be taken for catheterization
- Angiography showed insignificant 20% stenosis of LAD.
- Ventriculography demonstrated a mildy reduced EF of 45% with additional noted mild anterolateral hypokinesis of the left ventricle
- Follow-up showed EF to 55%, no effusion, and resolution of the previously noted regional wall-motion abnormality
- Acute phase reactants later returned and were noted to be above the upper range of normal with ESR of 36 mm/hr and CRP of 18 mg/dL.
- Cardiac biomarkers remained negative throughout hospitalization
- Patient's presentation was thought to be most likely secondary to vaccine-associated myocarditis
- Prior to discharge the patient denied any of her previous symptoms
- Recommended to continue her beta-blocker and ASA, limit strenuous physical activity, and follow-up closely with her cardiologist

EKGs

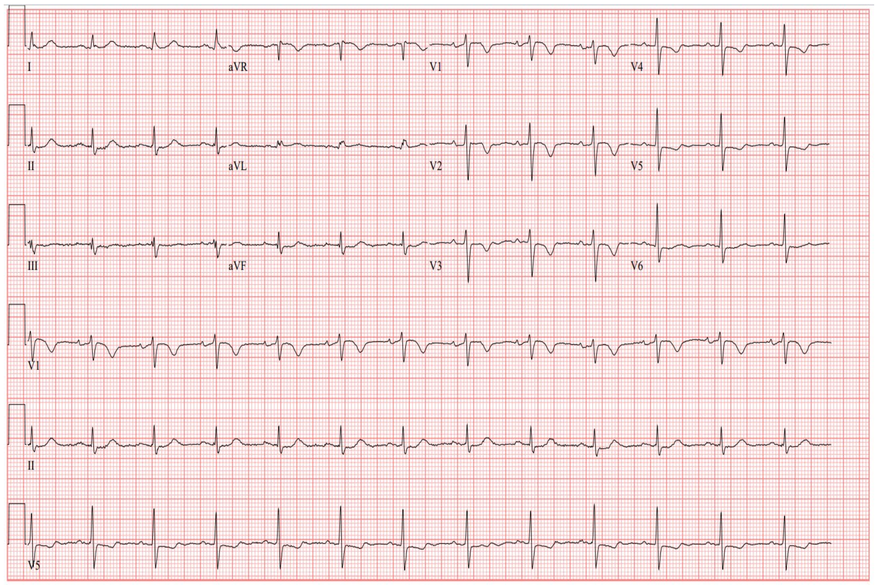

Figure 1: 12 lead EKG demonstrating T- wave inversion in V1 to V5

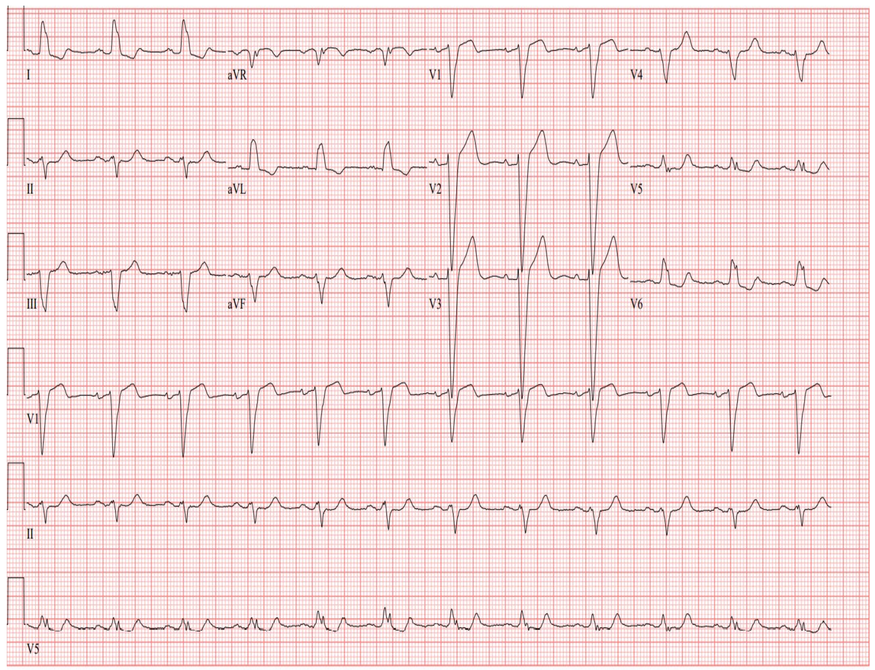

Figure 2: 12 lead EKG demonstrating a new left bundle branch block with a wide QRS complex.

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Discussion

- Adoption of the COVID-19 vaccinations led to a marked reduction in mortality rates associated with the viral disease [1].
- Several documented incidences of myocarditis and pericarditis post reception of the Pfizer and Moderna mRNA vaccinations [2]
- Cases of unusual thrombotic events post J&J viral vector vaccination [3]
- Reported cases of STEMI post-Covishield [5] viral vector vaccination (used overseas)
- Previously documented cases of myocarditis and pericarditis are mainly pediatric and adolescent population [2, 3]
- The precise mechanisms underlying vaccine-induced myocarditis remain poorly understood, especially with respect to the novel booster doses [4, 6, 7]
- Patient's negative angiogram and the absence of cardiac biomarker elevation argue strongly against a vaccine-induced acute coronary event
- Possibility of vaccine-induced myocarditis remains as a likely explanation given the presence of elevated inflammatory markers, segmental/focal regional wall and conduction abnormalities, and clinical improvement with supportive therapy
- In conclusion, as global COVID-19 vaccination efforts continue, ongoing vigilance regarding rare but important adverse reactions such as vaccine-induced myocarditis, pericarditis, and acute thrombotic events is important
- Although these events are very infrequent and the benefits of vaccination far outweigh the described risk, it is important to continue investigations for adverse associations and understand their potential clinical presentations in the context of recent COVID-19 vaccination

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