



Acute pericarditis following Pfizer-BioNTech COVID-19 vaccine in the setting of rhinovirus infection

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Learning Objectives

- Recognize the clinical presentation of pericarditis
- Understand how to manage acute pericarditis
- Recognize that most cases of pericarditis after COVID-19 vaccination may be related to other etiologies.

Introduction

Pericarditis involves inflammation of the fluid-filled sac covering the outer surface of the heart. Known causes include infections, autoimmune disorders, malignancy and most recently, mRNA vaccines. Acute pericarditis can present with a variety of nonspecific signs and symptoms, depending on the underlying etiology. Clinical manifestations of acute pericarditis include:

- **Chest pain** (sharp and pleuritic that improves by sitting up and leaning forward)
- **Pericardial friction rub** (superficial scratchy or squeaky sound best heard over the left sternal border)
- **Electrocardiogram (ECG) changes** (widespread ST elevation or PR depression)

Diagnosis requires the presence of clinical criteria with or without electrocardiography changes, or pericardial effusion.

Preadmission

Prior to admission, patient was hospitalized for bacterial endocarditis for 6 weeks and treated with IV vancomycin after being deemed high risk for surgical resection of valvular vegetation and discharged to continue 1 month of oral doxycycline.

Case Presentation

HPI: 28-year-old female with past medical history of polycystic ovarian syndrome (PCOS), intravenous (IV) drug use, former smoker who was recently treated for bacterial endocarditis with methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia presented with a one-week history of chest pain after receiving initial dose of the Pfizer-BioNTech COVID-19 vaccine.

ED Vitals: T: 98.6 HR: 122 BP: 101/53 RR: 30 99% on room air

Labs: WBC 15 K/uL, ESR 33 mm, D-dimer 0.887 ug/mL FEU, CRP 25.80 mg/dL, HS Troponin I ≤ 3 , Upper Respiratory Panel: positive Rhinovirus.

Imaging:

- Computed tomography angiography (CTA) of the chest noted a large pericardial effusion
- Cardiac magnetic resonance imaging (MRI) with/without contrast was negative for ischemic damage, fibrosis, myocarditis, but pericardial thickening without evidence of constriction and tricuspid valve vegetation was noted.
- Transthoracic echocardiogram (TTE) noted mitral and tricuspid valve regurgitation with thickening of the inferior tricuspid leaflet possibly due to healed vegetation.

Treatment:

- Patient initiated on ibuprofen 600 mg 3 times daily for 2 weeks duration and colchicine 0.6 mg daily for 3 months.



Figure 1. Pulmonary CTA depicting large pericardial effusion



Figure 2. ECG demonstrating PR depression in lead II

Discussion

- Incidence rates of pericarditis following COVID-19 vaccination remain low and the vast majority of cases are mild and resolve within a few days to few weeks.²
- Cases have been predominantly reported in younger individuals within a few days after receiving the 2nd dose.¹ The incidence rate reported is about of about 12.6 cases per 1 million.³
- To date, no known causal relationship between COVID-19 vaccination and pericarditis has established.
- Clinicians must continue to first rule out common etiologies of pericarditis such as a viral etiology. Vaccination should not be the first reason to suspect pericarditis.
- CDC recommends patient receive any FDA-approved COVID-19 vaccine in all patients with history of pericarditis. Patients who present with pericarditis after their 1st dose should proceed with their 2nd dose after resolution of pericardial inflammation.³

Recommendations

Despite reported cases of pericarditis, the benefit-risk assessment for COVID-19 vaccination far exceeds the minimal and rare risks of vaccination-related transient pericardial inflammation. Vaccination against COVID-19 is for all age and sex groups; therefore, COVID-19 vaccination is recommended for everyone ≥ 12 years of age.

References

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