

## Recurrence of Acute Myocarditis Temporally Associated With Receipt of the mRNA COVID-19 Vaccine in an Adolescent Male

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**Background & Objectives:** The U.S. Food and Drug Administration (FDA) issued an emergency use authorization (EUA) for the Pfizer-BioNTech vaccine for the prevention of COVID-19 in persons above the age of 12 years. Authors describe a case of an adolescent male who had recurrence of acute myocarditis temporally associated with receipt of a second dose of the Pfizer-BioNTech mRNA COVID-19 vaccine.

**Case Report:** A 17-year-old male with no significant past medical history came to medical attention in January 2021 with chest pain consistent with myocarditis. Laboratory investigations revealed high serum troponin level with an abnormal Cardiac magnetic resonance imaging (cMRI) and Electrocardiogram (EKG). RTPCR for viral pathogen(including SARS COV2) and COVID IgG were negative. He received supportive care and was discharged after 6 days of hospitalisation with normal cardiac testing, including serum troponin, EKG and echocardiogram at two week follow up.

4 months later, one day after second dose of Pfizer-BioNTech COVID-19 mRNA vaccine, he develops chest pain with abnormal EKG, High Troponin, abnormal LV function on cMRI. SARCoV-2 nucleocapsid IgG and IgA were negative and SARS-CoV-2 IgM antibody for the spike protein was positive, consistent with recent immunization. His symptoms and function improved after conservative management.

# ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



## Rare Association of Myocarditis & Covid-19 Vaccine Awareness Needed Among Physicians, Not Panic

**Discussion:** Authors discuss several other reports from Israel and United States of young adults developing myocarditis following Pfizer-BioNTech COVID-19 mRNA vaccine. All patients had chest pain, elevated serum troponins, EKG abnormalities and cMRI findings consistent with myocarditis. All of these patients were PCR negative for SARS-CoV-2 and none of them met criteria for multisystem inflammatory syndrome in children related to COVID-19.

- The cases were predominantly in adolescents and young adults, more often in males than females, more often following dose #2 than dose #1, and typically within 4 days after vaccination. All resolved with supportive measures.

- Recurrent myocarditis is a rare entity in children with only 2 previous case described in literature.

**Conclusion:** This patient had his first episode of idiopathic acute myocarditis 4 months prior to recurrence. This recurrent episode of myocarditis may have been triggered by the vaccine administration through an auto inflammatory or autoimmune phenomenon. Cardiac MRI during both illnesses demonstrated enhancement after gadolinium administration in the same distribution during both episodes.

**Key message:** This case highlights the possibility that the COVID-19 mRNA vaccine may trigger recurrent acute myocarditis in children and adolescents who have had a previous episode of acute myocarditis.

### EXPERT COMMENT

“On May 10, 2021, the FDA issued an EUA for the Pfizer-BioNTech vaccine for persons 12-16 years of age. Clinicians need to be aware of the potential for myocarditis to occur following COVID19 mRNA vaccination. The cases were predominantly in adolescents and young adults, more often in males than females, more often following dose #2 than dose #1, and typically within 4 days after vaccination. All resolved with supportive measures.”

**Dr Gurudutt**

MRPCH, CCT-UK, Fellowship in Paediatric Intensive Care-UK

Head of PICU and Senior Consultant,

Rangadore Memorial Hospital and Columbia Asia Hospital, Bangalore

With warm regards,

**DR MANINDER S  
DHALIWAL**

**DR. PIYUSH GUPTA**  
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pedpearls@gmail.com

### Reference

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