

Ventricular Arrhythmia and Covid-19 Vaccine-Associated Myocarditis

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Background

Covid-19 vaccine-associated myocarditis has poorly understood long-term outcomes.

Case Presentation

- A 17-year-old male presented with nausea, vomiting, and headache 3 days after receiving the 2nd Pfizer BioNTech mRNA Covid-19 vaccine.
- No chest pain or viral prodrome
- Vital signs** were normal
- Chest x-ray** was normal

Lab	Value	Ref Range
Troponin	10.4 ng/mL	<0.04 ng/mL
ESR, CRP	Normal	
COVID-19 PCR	Negative	
NT-pro BNP	205 pg/mL	<125 pg/mL

- EKG:** NSR 64 bpm, no ST abnormalities
- TTE:** Normal biventricular size and function, no coronary artery abnormalities
- Cardiac MRI:** Subepicardial delayed gadolinium enhancement in the basal, mid, apical inferior lateral walls extending into the basal inferior wall

Hospital Course

- Maximum troponin 11.6 ng/mL
- 4-beat run of non-sustained VT and a ventricular couplet.
- Discharged home after 3 days with 30-day event monitor (normal)



Figure 1. Late gadolinium enhancement on initial cardiac MRI (short-axis)

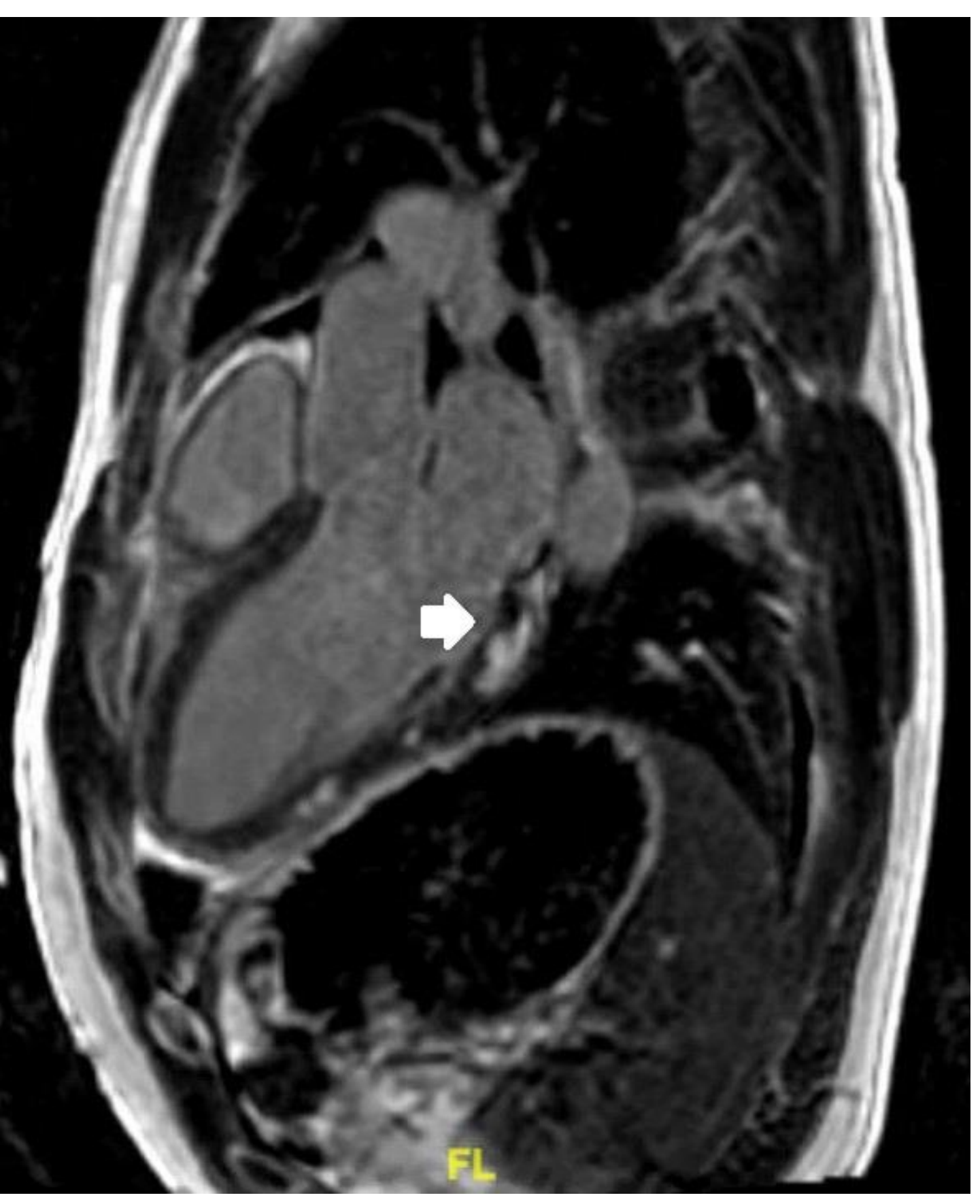


Figure 2. Late gadolinium enhancement on initial cardiac MRI (orthogonal)

Post-Hospital Course

- 6 months:** cMRI with improved intensity of subepicardial delayed gadolinium enhancement
- 7 months:** "Chest tingling" with exercise
- EST:** 3-beat run of NSVT at peak exercise
- Complete sports restriction
- 12 months:** Normal repeat EST



Figure 3. Three beats of NSVT at peak exercise (rate 230bpm)

Discussion

- Estimated incidence of Covid-19 vaccine-associated myocarditis in children 16-17 years old is 0.008%
- Predominantly adolescent males
- Typically seen after the second dose, usually presents as chest pain, elevated troponin and inflammatory markers
- Suggested treatments: NSAIDS, IVIG, steroids, colchicine
- 70% can have EKG abnormalities
- 5% can have NSVT
- Long term ventricular arrhythmia associated with Covid-19 vaccine-associated myocarditis has not yet been described
- Should these patients get 24-hour Holter and EST 3-6 months after presentation?

Conclusion

Large-scale research into long term effects of Covid-19 vaccine-associated myocarditis is required. This patient had ventricular tachycardia up to 6 months after initial diagnosis.

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