



# Heart on Fire: Due to a rare cause?

**Ali Raza Shaikh MD<sup>1</sup>, Hamza Muhammadzai MD<sup>1</sup>, Muhammad Shan Ul Abedin MD<sup>1</sup>, Aniq Anwar MD<sup>1</sup>, Connor O'Sullivan DO<sup>1</sup>**  
1. Department of Internal Medicine, Jefferson Abington Health, Abington, PA

## Introduction

Myocarditis or inflammation of the heart muscle can be caused by infectious agents, immune related or inflammatory etiologies. Here we explore a case of myocarditis in a young male which has potential temporal relation and causative etiology to tetanus vaccination

## Case

A 20-year-old male with no past medical history reported to ED with chest pain. Patient had a recent accidental cut on left hand from a razor for which he went to ED three days ago and was administered tetanus toxoid for prophylaxis and given Cephalexin on discharge. He started feeling unwell by the next day and started to have headache, sore throat, generalized weakness and fatigue. By next afternoon, patient reported having acute onset chest pain with shortness of breath and syncope. He was hemodynamically stable on admission. EKG performed was notable for diffuse ST elevation in anterolateral leads without reciprocal ST depression. Initial troponin was 22,303.

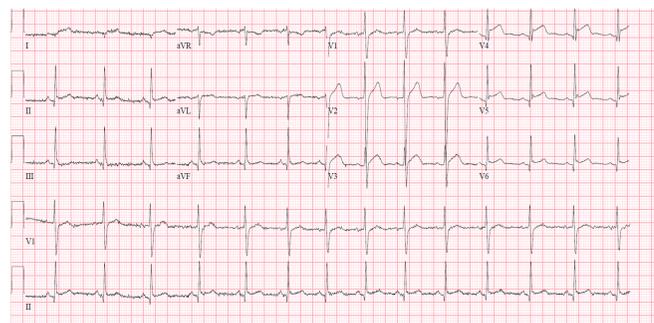


Figure 1 : Initial EKG

## Case

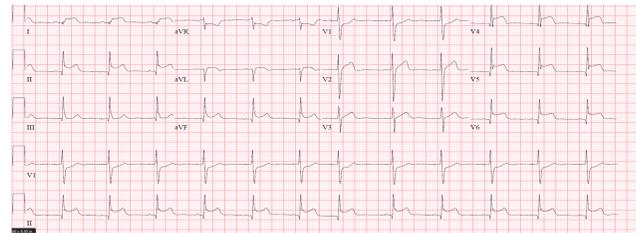


Figure 2 EKG approx. 12 hours post presentation

ECHO performed noted normal LVEF, no wall motion abnormalities, no valvular dysfunction, and no concern for pericardial effusion with no derangement in other parameters. COVID and influenza swab was negative (patient unvaccinated for COVID). Labs were significant for WBC count of 12.3, AST 109. Overnight, troponins up trended to 33,373. Chest pain resolved after administration of IV ketorolac. Patient was observed over telemetry and supportive care was provided His troponin down trended next day to 15,136.



Figure 3 Cardiac MRI

## Case

Cardiac MRI obtained showed findings of myocardial edema in basolateral walls consistent with myocarditis. Labs were noted to show CRP of 1.80, ESR 14, IgE of 274, serologies for coxsackie, CMV, HIV, varicella, screen for mononucleosis negative. ANA titers reported 1:80 and pattern speckled positive. Patient remained asymptomatic and was discharged eventually..

## Discussion

Acute myocarditis can occur from several etiologies including viral being very common. A temporal relationship, however, was noted between the onset of symptoms to administration of the tetanus toxoid. Case reports have been seen in literature about vaccine associated myocarditis (VAM) of which there have been prior documented reports of tetanus toxoid associated myocarditis as well [1]. While most studies including our case cannot establish a definitive diagnosis, a case of biopsy proven myocarditis related to vaccination has also been reviewed [2]. Prior to making diagnosis for a vaccine related effect, workup to exclude common viral agents as well as factors that may predispose patient to inflammatory/autoimmune predisposition should be excluded. Given the presentation and the timing of symptom onset, VAM remains our top suspect of this presentation. Mechanism of VAM has been elusive and not detailed.. Possible pathogenesis may include an immunogenic/hypersensitivity response to vaccine components. Moreover, mentions of mechanism secondary to an eosinophilic response have been reported.

## References

- Dilber E, Karagöz T, Aytemir K, Özer S, Alehan D, Oto A, Çeliker A. Acute myocarditis associated with tetanus vaccination. In Mayo Clinic Proceedings 2003 Nov 1 (Vol. 78, No. 11, pp. 1431-1433). Elsevier.
- Yamamoto H, Hashimoto T, Ohta-Ogo K, Ishibashi-Ueda H, Imanaka-Yoshida K, Hiroe M, Yokochi T. A case of biopsy-proven eosinophilic myocarditis related to tetanus toxoid immunization. Cardiovascular Pathology. 2018 Nov 1; 37:54-7.

## Follow Us on Instagram!



To find out more about our residency program, scan this QR code!

@abingtonjeffersonIM