

Acute myopericarditis post intravenous injection of COVID-19 mRNA vaccine differs from viral myocarditis

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Dear Editor,

We find the findings reported in the article by Can Li, et. al. [1] to be very interesting. The authors show a significant pericardial reaction that is grossly visible even one day post injection (dpi). Microscopically at 2dpi the pericardial reaction appears as calcifications, which raises the question of what was there before it calcified. There may have been an exuberant pericardial inflammatory reaction with rapid cellular necrosis and damage to the underlying myocardium. Figure 2D shows calcified debris with pallor of the underlying myocytes, but not the obvious myocardial inflammation that is seen in figure 2C. Figure 2C shows significant myocyte damage and interstitial edema, admixed with an inflammatory infiltrate in the pericardial side of the myocardium. Figure 2G shows a patchy infiltration of the myocardium by inflammatory cells and significant infiltration in the pericardium by lymphocytes and few macrophages. Histologically, the findings have a distinct pattern of inflammation and myocyte damage that appears targeted at the pericardial side of the myocardium. The observed pathology does not have the diffuse inflammatory infiltrate involving the entire thickness of the myocardium as seen in typical viral myocarditis, as for example that highlighted in a recent NEJM article [2]. We would be very interested in examining the immunopathology in the early hours post intravenous injection, before the pericardial reaction calcifies, to determine the nature of the initial inflammatory response.

#### Potential Conflicts

JHS reports receiving consulting fees to help create a clinical trial in boys with Duchenne muscular dystrophy from Esperare; reports serving as Co-Chair, SCMR Pediatric Research Committee. JMD reports support from CDC. CBC reports support from National Institutes of Health, Merck Vaccines, and Centers for Disease Control and Prevention; reports royalties from UpToDate; reports personal consulting fees, unrelated to the current work, from the following: Horizon Pharma, Altimune, Vir Pharmaceuticals, Premier Healthcare, NAHA Health, and GSK; reports multiple speaking engagements regarding COVID-19 vaccines to schools, businesses, etc. that provided modest honoraria; reports payment for expert testimony from Multiple law firms for general medicolegal expert consultation; reports US Patent for Monoclonal Antibodies for *S. aureus*; reports serving on Advisory Board/DSMB for Astellas (Pneumococcal Vaccine); reports serving as President of Pediatric Infectious Diseases Society and Member of Board of Directors for Cumberland Pediatric Foundation.

References:

- 1- Li C, et. al. Intravenous injection of COVID-19 mRNA vaccine can induce acute myopericarditis in mouse model. Clin Infect Dis. 2021 Aug 18;ciab707. doi: 10.1093/cid/ciab707. Online ahead of print.
- 2- Verma AK, et al. Myocarditis after Covid-19 mRNA Vaccination. N Engl J Med. 2021. PMID: 34407340

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