

## Exploring The Correlation Between SARS-CoV-2 Vaccinations and Increased Myocarditis Diagnoses

Marcus Hutko

Vaccines represent a cornerstone in the struggle against the containment of infectious disease, including SARS-CoV-2, yet a concerning correlation has surfaced between the SARSCoV-2 vaccine and increased cases of myocarditis. Myocarditis diagnoses have increased since the introduction of the mRNA SARS-CoV-2 vaccines in 2020. Myocarditis is a heart condition often triggered by viral infections and has the potential to progress into serious complications such as dilated cardiomyopathy or heart failure if left untreated or undiagnosed for extended periods. The pressure for a short response time to find a solution to the SARS-CoV-2 pandemic originally made long term assessment of the SARS-CoV-2 vaccine impossible, including the identification of possible adverse side effects associated with the vaccine. In the short term, SARS-CoV-2 vaccines have been linked to increased cases of myocarditis in atypical groups not prone to contracting myocarditis: namely adolescent males and young adults ages 12-29 with an estimated incidence rate of 40.6 cases per million whereas women of the same age had an incident rate of 4.2 cases per million. The mechanism which triggers myocarditis is still unclear. Hypothesized mechanisms such as direct immune activation, proinflammatory immune cascades, molecular mimicry, polymorphisms in interleukin-6 and Testosterone-mediated mechanisms have been suggested as possible contributors to the development of myocarditis post SARS-CoV-2 vaccines. Furthering our understanding of the underlying mechanism of SARS-CoV-2 vaccine-related myocarditis is crucial for mitigating these devastating side effects since mRNA SARS-CoV-2 vaccines continue to play a significant role in the control of the COVID pandemic.