

## The Benefit of the COVID-19 Vaccine Widely Exceeds the Very Low Risk of Heart Inflammation

Han Naung Tun<sup>1,2\*</sup>

<sup>1</sup>Tufts Medical Center, Boston, United States

<sup>2</sup>Working Group on Myocardial and Pericardial Diseases and National Representative of Heart Failure Specialist of Tomorrow for Myanmar, European Society of Cardiology, France

**\*Corresponding Author:** Han Naung Tun, Working Group on Myocardial and Pericardial Diseases and National Representative of Heart Failure Specialist of Tomorrow for Myanmar, European Society of Cardiology, France.

**Received:** July 23, 2021; **Published:** September 29, 2021

In the United States and North America, at least on dose of COVID-19 vaccine was given to almost 200 million people so far. The safety of COVID-19 vaccines for any health problems that happen after vaccination is under continuously monitored by U.S. Centers for Disease Control [1]. Since the end of the March 2021, Vaccine Adverse Event Reporting System (VAERS) documented that there have been more than a thousand reports related to the cases of the heart inflammation such as myocarditis and pericarditis that were happening after mRNA typed COVID-19 vaccination (i.e. Pfizer-BioNTech, Moderna) in the United States and territories of the US [1,2].

The COVID vaccines may carry small risks as with any vaccine or medicine. Some international medias and headline news showed the very rare adverse reaction related to blood clotting disorder called thrombosis with thrombocytopenia syndrome or TTS caused by the AstraZeneca vaccine, that were particularly seen in adolescents and young adults [3,4]. Some reports of a potentially increased risk of myo-pericardial inflammation following the mRNA COVID-19 vaccines are also noted by CDC and WHO reports. An article recently published in *Circulation* by Biykem Bozkurt., *et al.* described the balance of risk of myocarditis with vaccination vs cardiac and other risks from COVID-19 viral infection [5].

According to the electronic data of U.S. Centers for Disease Control (CDC), approximately 12.6 cases of myo-pericarditis per million doses of second dose mRNA vaccine were noted among 12 - 39-year-olds of the vexers. After the second dose of the vaccine, these cases occurred more often in younger men, typically within few days after vaccination [1,5]. This observational study showed that young males requiring hospitalization for myocarditis without prior history of COVID-19 or comorbidities were predominated. All had mild or moderate elevated cardiac troponin, the highest-level peaking usually 3 days post vaccination. Abnormal ECG with ST elevations was noted in most presentations. An echocardiogram was abnormal only in 40%, with only a small percentage having less than 50% of left ventricular ejection fraction (LVEF) on presentation. In additions, cardiac MRI(CMR) finding showed suggestive of myocarditis such as late gadolinium enhancement and myocardial edema in all tested patients. Cardiac biomarkers such as BNP or NT-proBNP levels were only mildly elevated in approximately two-thirds of the patients when measured. Elevated C-reactive protein (CRP) were discovered in most and decreased along with troponin through the hospital stay. Almost all patients had resolution of symptoms and signs and improvement in diagnostic markers and imaging with or without treatment. Given the known potential risk of complications followed by COVID-19 infection including hospitalizations and death even in younger adults (mortality remains 0.1 - 1 per 100,000 for persons aged 12 - 29 years), the risk-benefit decision remains overwhelmingly favorable for vaccination; therefore COVID-19 vaccination is currently recommended for everyone 12 years of age and older [4-6]. Nevertheless, we need more studies to elucidate the incidence, risk factors including genetic predisposition, prognosis, potential mechanisms, reasons for sex differences, clinical course, treatment strategies and long-term impact of myocarditis following COVID-19 vaccination.

The benefits of the COVID-19 vaccine widely exceeds the very low risk of side effects by the numbers of evidences from the clinical research and scientific communities throughout this pandemic [6]. This is particularly true for the highly effective mRNA-based vaccines as COVID-19 continues to spread around the world [5,6]. Although there has been small risk of rare cases of self-limited peri-myocarditis, the benefit-risk assessment for COVID-19 vaccination shows a largely favorable balance for all age and sex groups; therefore COVID-19 vaccination is currently recommended for everyone 12 years of age and older.

### Declaration of Interest

Declare there is no conflict of interest.

### Bibliography

1. (Fact Sheet for Healthcare Providers Administering Vaccine (Vaccination Providers) Emergency Use Authorization (EUA) of The Pfizer-Biontech Covid-19 Vaccine to Prevent Coronavirus Disease 2019 (Covid-19) (2019).
2. Gargano JW, *et al.* "Use of mRNA COVID-19 vaccine after reports of myocarditis among vaccine recipients: update from the Advisory Committee on Immunization Practices - United States". *MMWR. Early Release* 7 (2021).
3. Su JR, *et al.* "Myopericarditis after vaccination, Vaccine Adverse Event Reporting System (VAERS), 1990-2018". *Vaccine* 39.5 (2021): 839-845.
4. Tschöpe C, *et al.* "Myocarditis and inflammatory cardiomyopathy: current evidence and future directions". *Nature Reviews Cardiology* 18.3 (2021): 169-193.
5. Biykem Bozkurt, *et al.* "Myocarditis with COVID-19 mRNA". *Vaccines* (2021).
6. US CDC, National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases (2021).

**Volume 8 Issue 10 October 2021**

**©All rights reserved by Han Naung Tun.**