



PEER-REVIEW REPORT

Name of journal: *World Journal of Virology*

Manuscript NO: 74323

Title: COVID-19 Vaccination and Myocarditis: A Review of Current Literature

Provenance and peer review: Invited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 05507184

Position: Peer Reviewer

Academic degree: MD

Professional title: Doctor

Reviewer's Country/Territory: United States

Author's Country/Territory: United States

Manuscript submission date: 2021-12-24

Reviewer chosen by: AI Technique

Reviewer accepted review: 2021-12-25 15:45

Reviewer performed review: 2022-01-12 03:43

Review time: 17 Days and 11 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Peer-reviewer	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous



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Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

Drs. Dhaduk and colleagues provide a concise and up to date summary of what is known thus far about COVID-19 vaccination-related myocarditis. The manuscript is well written and easy to follow. I have minor comments/suggestions for the authors: 1) In the first sentence of the Introduction, the sentence should be modified to "viral infection caused by SARS-CoV-2". 2) The second paragraph of the Introduction mentions direct effects of viruses on cardiac myocytes, but does not mention other mechanisms of injury such as autoimmune responses to infectious agents and/or vasculitis leading to ischemic injury. Some mention of these should be included. 3) Post immunization myocarditis has been described with many more vaccines than listed in the second paragraph of the Introduction. Examples include, BCG, typhoid fever, influenza, etc. 4) On page 3, last paragraph, the word "shot" should be changed to "dose". Shot is a slang term that is mentioned twice in the same sentence. 5) On page 4, second paragraph, "fever" is mentioned twice when discussing presentations of COVID-19 vaccine myocarditis. 6) Under "Possible Mechanisms of Myocarditis", there should be some discussion of the role of overexpression of interferon-gamma that drives innate and viral responses to the vaccine booster. 7) Sex differences in the levels of cytokines such as TNF-alpha and interferon-gamma increase at puberty, which may help explain some of the propensity of adolescent boys to get this complication (see Aomatsu et al., *Biochem Biophys Res Commun* 2013;441:220-5).



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Reviewer's code: 05299889

Position: Peer Reviewer

Academic degree: MSc

Professional title: Assistant Lecturer, Pharmacist

Reviewer's Country/Territory: Iraq

Author's Country/Territory: United States

Manuscript submission date: 2021-12-24

Reviewer chosen by: AI Technique

Reviewer accepted review: 2022-02-08 21:26

Reviewer performed review: 2022-02-10 07:38

Review time: 1 Day and 10 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
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SPECIFIC COMMENTS TO AUTHORS

This review article is well-written and comprehensively cover an area of public health interest. From my point of view, authors were able to highlight several aspects of myocarditis caused by COVID-19 mRNA vaccine like statistics, molecular mechanisms and management. The unsolved questions mentioned in the conclusion are truly the potential trends for future researches. I would recommend publishing this review article after taking the following suggestions into consideration: 1- I would suggest to put keywords after the abstract section. 2- In the section of “possible mechanisms of myocarditis”, the following sentence seems to be missing a part that can link it to the rest of the paragraph “The role of molecular mimicry between the spike protein in the SARS-COV-2 virus and self-antigens”. 3- In the section of “possible mechanisms of myocarditis”, I would suggest to rewrite the part that explain the role of nucleoside modification in mRNA vaccine development. Authors are advised to use reference 19 to clarify that innate immune system can recognize genetic materials of pathogen that usually lack RNA modifications. 4- Also, in the section of “possible mechanisms of myocarditis”, authors are advised to more explain the potential role of immune dysregulation in reference 20 as seen in rheumatic arthritis. 5- In “Management and Outcomes of COVID-19 Vaccine Related Myocarditis”, for second sentence “Those patients responded well to medical therapy and rest and recovered”. Please remove redundancy of “and”.