

Coronavirus disease and cardiovascular disease: A literature review

Vijaya Krishna Prasad Vudathaneni, Swetha Bharathi Nadella, Rama Brahman Lanke,
Ramanarayana Boyapati

Corresponding author
Ramanarayana Boyapati

*Department of Periodontology, Sibar Institute of Dental Sciences, Takkellapadu, Guntur ,
Andhra Pradesh, PIN CODE- 522509, India.*

Handling editor:

Michal Heger

Department of Pharmaceutics, Utrecht University, the Netherlands

Department of Pharmaceutics, Jiaxing University Medical College, Zhejiang, China

Review timeline:

Received: 21 September, 2020

Editorial decision: 8 December, 2020

Revision received: 31 December, 2020

Editorial decision: 28 February, 2021

Published online: 24 March, 2021

1st Editorial decision
08-Dec-2020

Ref.: Ms. No. JCTRes-D-20-00098

COVID-19 AND CARDIOVASCULAR DISEASE: A LITERATURE REVIEW

Journal of Clinical and Translational Research

Dear Dr Boyapati,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below. The editorial board kindly requests that you pay particular attention to all the comments of reviewer 1. Language issues are very common in manuscripts from non-native speakers, and these should be addressed before a final decision on the paper can be made. This principle is explicitly addressed in our author guidelines.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Also, please ensure that the track changes function is switched on when implementing the revisions. This enables the reviewers to rapidly verify all changes made.

Your revision is due by Jan 07, 2021.

To submit a revision, go to <https://www.editorialmanager.com/jctres/> and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Reviewers' comments:

Reviewer #1:

This manuscript reviewed relationship between COVID-19 and cardiovascular disease, from respective of epidemiology, clinical and molecular mechanism. While this work seems fairly comprehensive, overall readability and understanding are hindered by English language issues. Besides, the authors should do more work on pathophysiological research about COVID-19 specific effect on cardiovascular system. This paper should be rejected or suitable for other publications.

Major comments:

- 1) The reason for increasing AngII in COVID-19 patients and how it work on the cardiovascular system need more explanation.
- 2) In the "pathophysiological mechanism" part, almost every pathological change can occur in common virus infection, there is less direct relationship between SARS-Cov-2 and cardiac disease. Supplement with more evidence on COVID-19 patients autopsy or molecular research will be more convincing.
- 3) This manuscript mostly provides basic concepts of COVID-19 and cardiovascular disease, which may be inadequate in scientific and innovative perspective.

Reviewer #3: Cardiovascular disease (CVD) is a common threat, and studies on association of CVD and COVID-19 are worthwhile to publish, even if there are discrepancies in the studies.

Please cite to the most recent WHO report on COVID-19.
It would be useful to have more background data on CVD prevalence and mortality in COVID-19 pandemic, and their association.

Authors' response

At the outset, we would like to extend our sincere thanks to the reviewers for the positive comments received and for highlighting the potential areas where the submission could be improved. We have highlighted the revisions made in our revised submission and a comment-wise response for reviewers' comments is given below.

Reviewer #1:

- 1) The reason for increasing AngII in COVID-19 patients and how it work on the cardiovascular system need more explanation.

We concur with the reviewers' suggestion that a thorough explanation of the upregulation of Ang-II among COVID-19 infected is essential, and its influence on the CVS along with downregulation of ACE2 and associated increase in Ang-II has been explicitly mentioned in the revised submission.

- 2) In the "pathophysiological mechanism" part, almost every pathological change can occur in common virus infection, there is less direct relationship between SARS-Cov-2 and cardiac disease. Supplement with more evidence on COVID-19 patients autopsy or molecular research will be more convincing.

It is undeniable that the pathological changes discussed overlap generally with common viral infections. However, given the ambiguity associated with COVID-19 and the fact that we are in the preliminary stages of unraveling COVID-19 from different viewpoints, these observations are worth reviewing and summarizing.

Furthermore, we have taken this opportunity to include additional discussion on the elevated expression of several cardiovascular biomarkers in severe COVID-19 cases. Studies disseminating autopsy findings, where cytokine storm induced by the systemic inflammatory response syndrome to COVID-19 was discussed to have resulted in cardiac interstitial mononuclear inflammatory infiltrates, have been included.

- 3) This manuscript mostly provides basic concepts of COVID-19 and cardiovascular disease, which may be inadequate in scientific and innovative perspective.

While we do concur with the reviewer's comment that the submission has limited innovation, we believe that the scientific evidence referred to in this process is exhaustive and adds to the cause of comprehensively summarizing the scientific evidence available. We also opine that given the factual observations from COVID-19 epidemiological studies that CVD is a common threat, summarizing the association between COVID-19 and cardiovascular disease at any given level of evidence is important and that was the very reason why the review was thought to be done.

Reviewer #3:

- 1) Cardiovascular disease (CVD) is a common threat, and studies on association of CVD and COVID-19 are worthwhile to publish, even if there are discrepancies in the studies.

We thank the reviewer for the positive comment made and agree with notion that cardiovascular disease has become a common and considerable threat.

- 2) Please cite to the most recent WHO report on COVID-19.

We understood that the figures we have provided may not be contemporary at this time and revised the information based on WHO's recent weekly epidemiological update.

- 3) It would be useful to have more background data on CVD prevalence and mortality in COVID-19 pandemic, and their association.

The following background data has been included in the submission as suggested.

"This association is apparently evident in the context of COVID-19 as well with presence of cardiovascular comorbidities among the COVID-19 affected at an increased frequency. It was reported by the National Health Commission of China that 35% of COVID-19 confirmed cases had hypertension as a comorbidity and 17% of COVID-19 confirmed cases had coronary heart disease [15]. Yang J et al. conducted a meta-analysis to document the

prevalence of comorbidities among COVID-19 patients and found that hypertension, diabetes mellitus, and CVD are among the common comorbidities among the infected patients. It was reported that the 95% confidence interval for the prevalence of CVD was 4% - 7% [16] . Presence of underlying cardiovascular comorbidities was also found to be associated with increased mortality among COVID-19 infected. In a study conducted by Wang D et al. in Wuhan, China 31% of the COVID-19 cases had hypertension and this percentage increased to 58% when patients admitted in ICU were exclusively considered.[17] Similarly, the prevalence of hypertension and coronary heart disease were 30% and 8% in another study conducted by Zhou F et al. in China.[18]”

2nd Editorial decision:
28-Feb-2021

Ref.: Ms. No. JCTRes-D-20-00098R1
COVID-19 AND CARDIOVASCULAR DISEASE: A LITERATURE REVIEW
Journal of Clinical and Translational Research

Dear authors,

I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Clinical and Translational Research.

You will receive the proofs of your article shortly, which we kindly ask you to thoroughly review for any errors.

Thank you for submitting your work to JCTR.

Kindest regards,

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Comments from the editors and reviewers: