

Cardiovascular disease and the impact of COVID-19

Dear Editor,

Khan et al¹ reported on cardiovascular outcomes of COVID-19. The study has concluded that appropriate risk stratification and triage is essential in patients with cardiovascular diseases and COVID-19 as their outcomes could be severely affected.

It is, by now, well established that patients with pre-existing cardiovascular diseases, such as hypertension or ischemic heart disease, are more vulnerable and at risk from severe complications due to COVID-19. One of the most important pathophysiology of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is lying in its affinity to renin-angiotensin-aldosterone system (RAAS) through angiotensin converting enzyme inhibitor (ACEi) or utilization of angiotensin receptor blockers (ARBs). Several studies have reported equivocal outcomes in using ACEi and ARBs in patients with COVID-19, whether they were using ACEi/ARBs before contracting COVID-19 or they were initiated/suspended during the course of the infection; yet there is lack of robust evidence supporting the use or discontinuation of RAAS medications.^{2,3} Although, there is a theory that ACEi/ARBs antagonise RAAS which might reduce inflammation in COVID-19 pneumonia, thus reducing mortality.^{2,4}

The study by Zhang et al⁴ reports the conclusion of a lower risk of all-cause mortality in the ACEi/ARBs group compared with the nonusers for hypertension.⁴ Yet, this study is associated with significant confounding variables, foremost being the hypertensive patients unclassified by staging, signs/symptoms, or complications. As well as there was no differentiation between ACEi/ARBs in the cohort or whether the patients in the cohort were novice or chronic users.

Future research and observational studies should eliminate the existing confounding variables in the current studies which are accounted for the controversial outcomes of ACEi/ARBs in SARS-CoV-2 in the presence of cardiovascular diseases, which may

have significant impact on outcomes in COVID-19 patients using ACEi/ARBs.

Anusha Yoganathan¹

Menahel S. Sajjad¹

Amer Harky MSc, MRCS^{1,2} 

¹University of Liverpool, Liverpool, UK

²Department of Cardiothoracic Surgery, Liverpool Heart and Chest, Liverpool, UK

Correspondence

Amer Harky, Department of Cardiothoracic Surgery, Liverpool Heart and Chest, Thomas Drive, Liverpool L14 3PE, UK.

Email: aaharky@gmail.com

ORCID

Amer Harky  <http://orcid.org/0000-0001-5507-5841>

REFERENCES

1. Khan IH, Zahra SA, Zaim S, Harky A. At the heart of COVID-19. *J Card Surg.* 2020. <https://doi.org/10.1111/jocs.14596>
2. Mancia G, Rea F, Ludergrani M, Apolone G, Corrao G. Renin-angiotensin-aldosterone system blockers and the risk of Covid-19. *N Engl J Med.* 2020. <https://doi.org/10.1056/NEJMoa2006923>
3. Lopes RD, Macedo AVS, de Barros E Silva P, et al. Continuing versus suspending angiotensin-converting enzyme inhibitors and angiotensin receptor blockers: impact on adverse outcomes in hospitalized patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). *Am Heart J.* 2020. <https://doi.org/10.1016/j.ahj.2020.05.002>
4. Zhang P, Zhu L, Cai J, et al. Association of inpatient use of angiotensin converting enzyme inhibitors and angiotensin II receptor blockers with mortality among patients with hypertension hospitalized with COVID-19. *Circ Res.* 2020. <https://doi.org/10.1161/CIRCRESAHA.120.317134>