Palliative Medicine & Care International Journal
ISSN: 2688-3821

Juniper Publishers
key to the Researchers

Short Communication
Volume 3 Issue 4 - June 2020
DOI: 10.19080/PMCIJ.2020.03.555617

Palliat Med Care Int J

Updating the Treatment with Renin-Angiotensin-Aldosterone System Inhibitors in Covid-19 Patients

Eduardo Rivas Estany*

Chief Cardiac Rehabilitation and Prevention Centre, Institute of Cardiology and Cardiovascular Surgery, Cuba

Submission: June 13, 2020; **Published:** June 17, 2020

***Corresponding author:** Eduardo Rivas Estany, Chief Cardiac Rehabilitation and Prevention Centre, Institute of Cardiology and Cardiovascular Surgery, Cuba

Keywords: SARS-CoV-2; Covid-19; Renin-Angiotensin-Aldosterone System; Angiotensin-converting enzyme 2; Angiotensin converting enzyme inhibitors; Angiotensin receptor blockers

Abbreviations: RAAS: Renin-Angiotensin-Aldosterone System; ACE2: Angiotensin-Converting Enzyme 2; ACEIs: Angiotensin Converting Enzyme Inhibitors; ARBs: Angiotensin Receptor Blockers

Short Communication

The main objective of this scientific commentary has been to update the behavior and treatment of patients carrying Covid-19 with the drugs known as Renin-Angiotensin-Aldosterone System (RAAS) inhibitors, as well as its effects in these cases. Since the outbreak of pneumonia caused by a new coronavirus occurred in Wuhan, China in December 2019, the disease has spread rapidly throughout the world. After the virus was identified (SARS-CoV-2), the World Health Organization (WHO) named it as coronavirus disease 2019 (Covid-19) and the outbreak was soon declared a Public Health Emergency (pandemic). Since then, an unprecedented challenge has been presented to scientists around the world trying to identify effective drugs for the prevention and treatment of such a disease.

It is suggested that both the virus called SARS-CoV-1 causing the epidemic known to be SARS between 2002 and 2004, and SARS-CoV-2, responsible for the current pandemic, interact with RAAS through the angiotensin-converting enzyme 2 (ACE2) which acts as a receptor for both SARS viruses [1-3]. Such viral and enzymatic interaction is proposed as a factor that increases the infective capacity of the virus, which has raised concerns about the use of RAAS inhibitors that by producing variation in the expression of ACE2 could be responsible for the high virulence of the current pandemic due to Covid-19 [4-6]. Accordingly, it has been stated in some places the discontinuation of treatment with angiotensin converting enzyme inhibitors (ACEIs) and with angiotensin receptor blockers (ARBs), both in the setting of suspected Covid-19 and prophylactically. Currently, there are few data to support or refute the mentioned hypothesis and, on the contrary, it is proposed as an alternative that ACE2 may be beneficial in patients with lung damage and that it may also be dangerous to withdraw RAAS inhibitors in high-risk patients with suspected or confirmed Covid-19 [1].

Initial reports from China drew attention to the high frequency of high blood pressure among patients with Covid-19, with a prevalence of 15%, however other factors that coexisted, such as age, seem to have been more frequent even in those cases with worse evolution, even among those who died. Therefore, age, rather than the probable indication of RAAS inhibitors in these hypertensive cases, seems decisive considering also the low frequency of indication of these drugs in the general population in China [7,8].

After analyzing the effects of the interrelationship between SARS-CoV-2 and RAAS, it was concluded that new human research is needed to better define such effects as current studies offer heterogeneous and sometimes contradictory results [9,10]. It was also noted that ACE inhibitors in clinical use do not directly affect ACE2 activity [11]. It is further argued [1] that despite the uncertainties related to the pharmacological regulation of ACE2 and its probable influence on the infectivity of SARS-CoV-2, it is risky to withdraw SARS inhibitors in patients who are in a stable clinical condition due to potential damage that can probably occur.

Covid-19 is particularly severe in patients with underlying cardiovascular disease, who can develop additional myocardial damage during viral infection. The RAAS inhibitors protect the myocardium and the kidney; when they are removed there may be clinical instability, especially in high-risk patients, furthermore knowing that the prevalence of heart failure in critically ill patients with Covid-19 can be high (> 40%), as reported in the United States [12]. It is confirmed that the abrupt withdrawal of RAAS inhibitors in high-risk patients, including those with myocardial infarction or heart failure, may result in clinical decompensation with an evolution with adverse results. Therefore, until new data becomes available, it is suggested that RAAS inhibitors should be maintained in stable patients at risk or suspected of Covid-19.

This statement coincides with the recommendation of the Panel of Experts of the National Institutes of Health (NIH), of the United States [13] and of other important international Cardiology societies [14] that also recommend maintaining ACEIs or ARBs in patients with Covid-19 who have them previously prescribed by suffering cardiovascular disease or some other indication, however they are not recommended even as a form of Covid-19 treatment.

The Covid-19 pandemic represents the largest global health crisis of the current generation. No therapy has been shown to be effective so far, and the best prevention strategy for future epidemics would be the development of a vaccine that produces long-term immune protection, however it still takes several months to spread it widely [15]. Therefore, the current recommended management continues to be the application of prevention and control measures to prevent the outbreak and its consequences, as well as support measures in the presence of complications.

References

1. Vaduganathan M, Vardeny O, Michel T, McMurray JJV, Pfeffer MA, et al. (2020) Renin-Angiotensin-Aldosterone System Inhibitors in Patients with Covid-19. N Engl J Med 382: 1653-1659.
2. Li W, Moore MJ, Vasilieva N, Sui J, Wong SK, et al. (2003) Angiotensin-converting enzyme 2 is a functional receptor for the SARS coronavirus. Nature 426(6965): 450-454.
3. Hoffmann M, Kleine-Weber H, Schroeder S, Krüger N, Herrler T, et al. (2020) SARSCoV-2 cell entry depends on ACE2 and TMPRSS2 and is blocked by a clinically proven protease inhibitor. Cell 181(2): 271-280.
4. Sommerstein R, Grani C (2020) Preventing a COVID-19 pandemic: ACE inhibitors as a potential risk factor for fatal COVID-19. BMJ 368: m810.
5. Esler M, Esler D (2020) Can angiotensin receptor-blocking drugs perhaps be harmful in the COVID-19 pandemic? J Hypertens 38(5): 781-782.
6. Diaz JH (2020) Hypothesis: angiotensin-converting enzyme inhibitors and angiotensin receptor blockers may increase the risk of severe COVID-19. J Travel Med 27(3): taa041.
7. Wang Z, Chen Z, Zhang L, Wang X, Hao G, et al. (2018) Status of hypertension in China: results from the China Hypertension Survey, 2012-2015. Circulation 137(22): 2344-2356.
8. Lu J, Lu Y, Wang X, Li X, Linderman GC, et al. (2017) Prevalence, awareness, treatment, and control of hypertension in China: data from 1*7 million adults in a population-based screening study (China PEACE Million Persons Project). Lancet 390(10112): 2549-2558.
9. Ferrario CM, Jessup J, Chappell MC, Averill DB, Bridget Brosnihan k, et al. (2005) Effect of angiotensin-converting enzyme inhibition and angiotensin II receptor blockers on cardiac angiotensin-converting enzyme 2. Circulation 111(20): 2605-2610.
10. Burchill LJ, Velkoska E, Dean RG, Griggs K, Patel SK, et al. (2012) Combination renin-angiotensin system blockade and angiotensin-converting enzyme 2 in experimental myocardial infarction: implications for future therapeutic directions. Clin Sci (Lond) 123(): 649-658.
11. Rice GI, Thomas DA, Grant PJ, Turner Aj, Hooper NM, et al. (2004) Evaluation of angiotensin-converting enzyme (ACE), its homologue ACE2 and neprilysin in angiotensin peptide metabolism. Biochem J 383(pt 1): 45-51.
12. Arentz M, Yim E, Klaff L, Lokhandwala S, Riedo FX, et al. (2020) Characteristics and outcomes of 21 critically ill patients with COVID-19 in Washington State. JAMA 23(16): 1612-1614.
13. , https://covid19treatmentguidelines.nih.gov/
14. https://www.acc.org/latest-in-cardiology/articles/2020/03/17/08/59/hfsa-acc-aha-statement-addresses-concerns-re-using-raas-antagonists-in-covid-19
15. Sanders JM, Monogue ML, Jodlowski TZ (2020) Pharmacologic Treatments for Coronavirus Disease 2019 (COVID-19). A Review. JAMA 323(18): 1824-1836.

DOI: 10.19080/PMCIJ.2020.03.555617

How to cite this article: Rivas Estany E. Updating the Treatment with Renin-Angiotensin-Aldosterone System Inhibitors in Covid-19 Patients. Palliat Med Care Int J. 2020; 3(4): 555617. DOI:10.19080/PMCIJ.2020.03.555617