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Why Angiotensin Receptor Blockers Might be Preferred Over Angiotensin Converting Enzyme Inhibitors in COVID-19 Management?

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Received: 19 July 2021; **Revision:** 25 August 2021; **Accepted:** 28 August 2021; **Published:** 30 August 2021

Abstract:

A recent meta-analysis has suggested that angiotensin-converting enzyme inhibitors might possess more benefit over angiotensin receptor blockers regarding the likelihood of COVID-19 infection and non-COVID pneumonia induced mortality. We present a clinical and pharmacological COVID-19 contradictory point of view, and we also recommend extreme caution when clinical recommendations are considered.

Keywords: *COVID-19; Angiotensin converting enzyme inhibitors; Angiotensin receptor blockers; Bradykinin storm*

Abbreviations: *ACEIs: Angiotensin converting enzyme inhibitors; ARBs: Angiotensin receptor blockers; COVID-19: Coronavirus Disease-2019*

Introduction

Numerous studies have confirmed that the widely used angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) are not associated with increased morbidity or mortality of COVID-19 and some have suggested that these drugs might have a mortality benefit [1-3]. Similarly, these drugs were neither associated with an increased likelihood of COVID‐19 infection [4]. However, a recent meta-analysis has suggested more benefits when patients receive ACEIs over those who received ARBs as regards the likelihood of COVID-19 infection and pneumonia-related mortality in non-COVID patients [5] and we would like to warn against this suggestion from a clinical and pharmacological point of view.

Regardless of the important limitations of this meta-analysis that might have affected its results and are expected to be challenged in other meta-analysis studies, ARBs have a COVID-19 huge advantage as they do not increase the levels of the inflammatory bradykinin. Notably, a bradykinin storm has been described to be involved in the pathogenesis of COVID-19 respiratory complications [6,7]. Thus, it is rational to suggest that ARBs are superior to high dose ACEIs for management of COVID-19 patients who complain of serious pulmonary manifestations [8] and a case-control study has suggested that pharmacological inhibition of the kinin-kallikrein system might be used safely to manage COVID-19 [9]. Moreover, we would like to repeat our recommendation that the clinical interpretation of theoretical suggestions should be done with extreme caution as we cannot afford another catastrophe in COVID-19 management that might cost precious lives [10].

Conclusion

Though ACEIs and ARBs are currently acknowledged for being equally safe in the management of COVID-19, ACEIs high doses might contribute to the bradykinin storm described in serious COVID-19 cases, and thus, a clinical and pharmacovigilant personalized risk-benefit ratio might prefer ARBs over ACEIs in COVID management of high-risk groups.

Competing interests

None.

Acknowledgments

This research received no external funding.

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