AMERICAN COLLEGE of CARDIOLOGY

HFSA/ACC/AHA Statement Addresses Concerns Re: Using RAAS Antagonists in COVID-19

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ACC News Story

The following joint statement from the ACC, American Heart Association and Heart Failure Society of America was posted online on March 17 and addresses using renin angiotensin aldosterone system (RAAS) antagonists in COVID-19. "The continued highest standard of care for cardiovascular disease patients diagnosed with COVID-19 is top priority, but there are no experimental or clinical data demonstrating beneficial or adverse outcomes among COVID-19 patients using ACE-I or ARB medications," said Richard J. Kovacs, MD, FACC. "We urge urgent, additional research that can guide us to optimal care for the millions of people worldwide with cardiovascular disease and who may contract COVID-19. These recommendations will be adjusted as needed to correspond with the latest research."

Patients with underlying cardiovascular diseases appear to have an increased risk for adverse outcomes with coronavirus disease 2019 (COVID-19). Although the clinical manifestations of COVID-19 are dominated by respiratory symptoms, some patients also may have severe cardiovascular damage. Angiotensin converting enzyme 2 (ACE2) receptors have been shown to be the entry point into human cells for SARS-CoV-2, the virus that causes COVID-19. In a few experimental studies with animal models, both angiotensin converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) have been shown to upregulate ACE2 expression in the heart. Though these have not been shown in human studies, or in the setting of COVID-19, such potential upregulation of ACE2 by ACE inhibitors or ARBs has resulted in a speculation of potential increased risk for COVID-19 infection in patients with background treatment of these medications.

ACE2 is a homolog of angiotensin converting enzyme (ACE). ACE2 negatively regulates the renin angiotensin system by converting Angiotensin II to vasodilatory Angiotensin 1-7, diminishing and opposing the vasoconstrictor effect of angiotensin II. ACE2, ACE, angiotensin II and other renin angiotensin aldosterone system (RAAS) system interactions are quite complex, and at times, paradoxical. Furthermore, tissue expression of ACE2 differ in heart, kidneys and lungs of healthy patients, cardiovascular disease patients, and coronavirus-infected patients, and its role in the setting of COVID-19 infection in patients with cardiovascular disease is unclear. Furthermore, in experimental studies, both ACE inhibitors and ARBs have been shown to reduce severe lung injury in certain viral pneumonias, and it has been speculated that these agents could be beneficial in COVID-19.

Currently there are no experimental or clinical data demonstrating beneficial or adverse outcomes with background use of ACE inhibitors, ARBs or other RAAS antagonists in COVID-19 or among COVID-19 patients with a history of cardiovascular disease treated with such agents. The HFSA, ACC, and AHA recommend continuation of RAAS antagonists for those patients who are currently prescribed such agents for indications for which these agents are known to be beneficial, such as heart failure, hypertension, or ischemic heart disease. In the event patients with cardiovascular disease are diagnosed with COVID-19, individualized treatment decisions should be made according to each patient's hemodynamic status and clinical presentation. Therefore, be advised not to add or remove any RAAS-related treatments, beyond actions based on standard clinical practice.

These theoretical concerns and findings of cardiovascular involvement with COVID-19 deserve much more detailed research, and quickly. As further research and developments related to this issue evolve, we will update these recommendations as needed.

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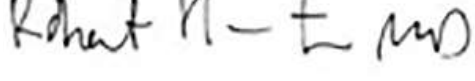

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Clinical Topics: **Anticoagulation Management, Heart Failure and Cardiomyopathies, Prevention, Acute Heart Failure, Heart Failure and Cardiac Biomarkers, Hypertension**

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