Is Angiotensin II Unopposed a Good Thing?

To the Editor

I am writing this letter in regard to the article by Chow et al.[1] In the article, the authors propose the mechanism of action of angiotensin II as a vasoactive agent in Coronavirus Disease 2019 (COVID-19)–associated vasodilatory shock. If ACE-2 expression was not impaired in COVID-19 infections, administering exogenous angiotensin II would be less worrisome. Unfortunately, several studies have shown that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), on binding to the ACE-2 transmembrane receptor, reduces its expression.[2] This reduction in intracellular ACE-2 leaves angiotensin II's downstream actions unopposed. They include vasoconstriction, cytokine release, and complement system activation to name but a few.[3–5] One could surmise that it is because of the reduction of the intracellular activity of ACE-2 that SARS-CoV-2 in part exhibits its effects on the pulmonary, renal, cardiac, and coagulation system. In fact, mouse models with ACE-2 deletion show evidence of renal and cardiac impairment.[6] Further laboratory studies with ACE-2 deletion or SARS-CoV-2–infected cells would help determine if unopposed exogenous angiotensin II is safe and has an overall benefit besides increasing vascular tone in the setting of COVID-19.

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