Letters

COMMENT & RESPONSE

Myocardial Injury in COVID-19—Can We Successfully Target Inflammation?

To the Editor One of the most intriguing issues that rapidly arose in the clinical management of patients with coronavirus disease 2019 (COVID-19) was concurrent myocardial injury with or without corresponding symptoms. Therefore, we read with great interest the work by Guo et al,[1] which presented valuable data regarding the significance of cardiac involvement in patients with COVID-19. Remarkably, in this cohort of 187 patients, those without known underlying cardiovascular disease (CVD) but with myocardial injury had worse outcomes compared with those with underlying CVD but normal troponin levels.[1] Furthermore, N-terminal pro-B-type natriuretic peptide kinetics suggested a potentially clinically significant association with cardiac function beyond merely biochemical myocardial injury.[1]

These findings, combined with the observed positive correlation of troponin level with C-reactive protein level, were interpreted as a potential indication that, among other mechanisms such as hypoxemia, the COVID-19–related inflammatory cascade could affect the myocardium directly. In a study by our research group,[2] inhibition of inflammation by colchicine was associated with significant cardioprotective effects (evaluated both by total troponin output and magnetic resonance imaging) in the context of acute myocardial infarction. Colchicine effects include inhibition of the NLR family pyrin domain containing 3 (NLRP3) inflammasome, which is presumed to be involved in ischemia-reperfusion injury.[3] Interestingly, severe acute respiratory syndrome coronavirus (SARS-CoV) infection has been implicated with NLRP3 inflammasome activation[4]; notably, SARS-CoV and SARS-CoV-2 are highly homologous in genome.[1] On the basis of this pathophysiological premise and given the negative prognostic significance of COVID-19–related myocardial injury and other inflammation-related complications, we have proposed the use of colchicine in this context and are going to evaluate it in a prospective randomized study (ClinicalTrials.gov identifier: NCT04326790).

Undeniably, in view of the findings of Guo et al,[1] the importance of effective myocardial injury prevention will be even greater in the subset of patients with COVID-19 and known CVD, who in this cohort presented with the highest mortality. The issue in question here is whether we will be able to do the obvious—that is, could we use treatments specifically targeting the COVID-19–associated inflammation storm to improve outcomes or even just buy time for our patients? "The true mystery of the world is the visible, not the invisible."[5]

Georgios Giannopoulos, MD, PhD
Dimitrios A. Vrachatis, MD, MSc, PhD
Spyridon G. Deftereos, MD, PhD

Author Affiliations: General Hospital of Athens "G.Gennimatas," Athens, Greece (Giannopoulos); Department of Cardiovascular Medicine, Humanitas Clinical and Research Hospital, Milan, Italy (Vrachatis); Attikon Hospital, 2nd Department of Cardiology, National and Kapodistian University of Athens Medical School, Athens, Greece (Deftereos).

Correspondence Address: George Giannopoulos, MD, PhD, General Hospital of Athens "G.Gennimatas," 154 Mesogeion Ave, Athens 11527, Greece (ggiann@med.uoa.gr).

Published Online: July 15, 2020. doi:10.1001/jamacardio.2020.2569

Conflict of Interest Disclosures: Dr Vrachatis is personally supported by a scholarship from Hellenic Society of Cardiology. No other disclosures were reported.

1. Guo T, Fan Y, Chen M, et al. Cardiovascular implications of fatal outcomes of patients with coronavirus disease 2019 (COVID-19). *JAMA Cardiol*. Published online March 27, 2020. doi:10.1001/jamacardio.2020.1017

2. Deftereos S, Giannopoulos G, Angelidis C, et al. Anti-inflammatory treatment with colchicine in acute myocardial infarction: a pilot study. *Circulation*. 2015;132(15):1395-1403. doi:10.1161/CIRCULATIONAHA.115.017611

3. Kawaguchi M, Takahashi M, Hata T, et al. Inflammasome activation of cardiac fibroblasts is essential for myocardial ischemia/reperfusion injury. *Circulation*. 2011;123(6):594-604. doi:10.1161/CIRCULATIONAHA.110.982777

4. Wang H, Naghavi M, Allen C, et al; GBD 2015 Mortality and Causes of Death Collaborators. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet*. 2016;388(10053):1459-1544. doi:10.1016/S0140-6736(16)31012-1

5. Wilde O. *The Picture of Dorian Gray*. Gillespie MP, ed. 2nd ed. W. W. Norton & Co; 2006.