Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Infection as a Trigger for Cardiovascular Disease

SEE RELATED ARTICLE, page 1437.

A variety of clinical infections, including the current pandemic, and a variety of physical events such as bee stings and trauma, have been documented as triggers of acute cardiovascular illness such as venous thromboembolism, myocardial infarction, and stroke.[1-12] A number of factors, alone and in combination, have been proposed to explain this association between infection and acute cardiovascular disease, including activation of various inflammatory molecules and platelets, endothelial dysfunction, and augmented sympathetic nervous activity with release of high levels of catecholamines into the circulation.[1-12] Indeed, it is possible that all of these elements may be occurring simultaneously, leading to atherosclerotic plaque instability and a concomitant hypercoagulable state.

In the current issue of ***The American Journal of Medicine***, Sebastian and colleagues document again the heightened risk for cardiovascular disease entities in patients with infection.[13] These investigators used a case cross-over analysis with conditional logistic regression to estimate odds ratios for the association between different infection types and cardiovascular events during 3 case periods (30, 60, and 90 days before the index event) compared with control periods (exactly 1 year before). With each type of infection, there was an increased likelihood of venous thromboembolism, with the greatest association being for skin infections. The association between myocardial infarction and skin infections was also positive but of lesser magnitude. Of considerable interest is the fact that skin and pulmonary infections were particularly prone to be associated with cardiovascular problems. In fact, for these patients, the risk of an associated cardiovascular problem was increased by a factor of more than 5. Clearly, this demonstrates the importance of infection as a trigger leading to acute cardiovascular disease events.

Despite the investigation of Sebastian and colleagues and the multiple studies cited in this commentary, attempts to prevent cardiovascular complications in patients with infection are lacking. Infection with COVID-19 is a good example of our ignorance in this area. Patients with this viral infection frequently have a coagulopathy with low platelet counts and other evidence of intravascular coagulation, such as very high D-dimer levels in the blood. Cardiovascular complications, undoubtedly related to the coagulopathy, are commonly observed. Nevertheless, studies of prophylactic anticoagulation are lacking.[14] I recently questioned members of our clinical team who were caring for the large volume of COVID-19 patients in our hospital concerning their use of prophylactic systemic anticoagulation. The universal answer was that systemic anticoagulation was only given to those patients in whom a definite thrombotic complication had been documented. Evidently, this is an area that requires clinical investigation in order to ascertain whether such prophylaxis could prevent cardiovascular disease events and thereby improve the prognosis for these very ill individuals.[15] Positive outcomes in the COVID trials could result in studies involving other forms of infection.

As always, I look forward to hearing from readers concerning this and other commentaries that I have written. I can be reached at jalpert@shc.arizona.edu or on our blog at amjmd.org.

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