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Can COVID-19 vaccines improve cardiovascular outcomes?

We congratulate Diaz-Arocutipa et al. [1] for their insightful systematic review and meta-analysis of randomized controlled trials which evaluated the efficacy of the influenza vaccine on cardiovascular outcomes in patients with coronary artery disease. As mentioned by the authors, influenza infection is associated with a myriad of cardiovascular manifestations, including thrombotic events, myocarditis, pericarditis, acute decompensated heart failure, arrhythmias, and sudden cardiac death. Indeed, since influenza infection is a predisposing factor for atherosclerosis, it can also trigger the occurrence of acute coronary syndromes. Therefore, the systematic review and meta-analysis by Diaz-Arocutipa et al. [1], which reported that influenza vaccination significantly reduced the risk of major adverse cardiovascular events (pooled relative risk = 0.63; 95% confidence interval 0.51 to 0.77) and cardiovascular mortality (relative risk = 0.53; 95% confidence interval 0.38 to 0.74), can serve as a reminder for the clinicians about the importance of influenza vaccination as secondary prevention for acute cardiovascular events.

The findings of the systematic review and meta-analysis by Diaz-Arocutipa et al. [1] have made us wonder if similar investigations can be replicated to shed some light on the efficacy of the COVID-19 vaccines to reduce the risk of cardiovascular outcomes, considering that coronavirus disease 2019 (COVID-19) cases still soaring around the globe. As with influenza infection, patients with acute COVID-19 may present with a broad spectrum of clinical cardiac presentations. For instance, as detected by troponin elevation, myocardial injury is commonly identified in patients hospitalized with COVID-19 [2]. In addition, patients with COVID-19 also have a heightened risk of developing myocarditis [3] and Takotsubo cardiomyopathy [4]. Moreover, studies [5,6] have also suggested that acquisition of COVID-19 increases the risk of developing acute coronary syndromes. For example, in one study [5], there was an increased risk of acute myocardial infarction in patients with COVID-19 compared to non-infected controls (adjusted odds ratio = 1.22; 95% confidence interval 1.08 to 1.38). Indeed, the increased risk of cardiovascular diseases extends beyond the acute phase of COVID-19, in which at one-year after COVID-19, patients still manifested an increased risk of developing major adverse cardiovascular events [7].

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Declaration of competing interest

All authors declare that they have no potential conflicts of interest that might be relevant to the contents of this article.

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Chia Siang Kow*

School of Pharmacy, International Medical University, Kuala Lumpur, Malaysia

Dinesh Sangarran Ramachandram

School of Pharmacy, Monash University Malaysia, Bandar Sunway, Selangor, Malaysia

Syed Shahzad Hasan

School of Applied Sciences, University of Huddersfield, Huddersfield, United Kingdom
School of Biomedical Sciences & Pharmacy, University of Newcastle, Callaghan, Australia

* Corresponding author.

E-mail address: chiasiang_93@hotmail.com (C.S. Kow).