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.

Atherosclerosis 336 (2021) 49–50

Contents lists available at ScienceDirect

Atherosclerosis

journal homepage: www.elsevier.com/locate/atherosclerosis

Reply to: "Mortality and in-stent thrombosis in COVID-19 patients with STEMI: More work ahead"

ARTICLE INFO

Keywords
COVID-19
Stents
Thrombosis

To the Editor,

In the letter to the editor by Zuin et al. [1], the authors raise several interesting points concerning the uncertainties linking coronavirus disease 2019 (COVID-19) to thrombosis, especially in the settings of acute coronary syndromes (ACS).

Despite the SARS-CoV-2 infection has been suggested to favour the occurrence of thrombotic phenomena in both the arterial and venous districts, the underlying pathophysiological mechanisms are still poorly understood, considering the complexity of data collection during the pandemic and the modest availability of experimental and clinical experience.

The ISACS-STEMI Registry [2,3] provided, in this sense, a unique opportunity to assess the real impact of COVID-19 on the presentation, treatment and outcomes of ST elevation myocardial infarction (STEMI) patients undergoing primary percutaneous coronary intervention (PCI). In the recent study commented by Zuin et al. De Luca et al. [4] performed a sub-analysis restricted to SARS-CoV-2 positive patients compared with a matched cohort of non-COVID patients. The main finding was an enhanced rate of in-hospital in-stent thrombosis (IST) and a 5-fold increased risk of mortality among the COVID-infected patients, despite the achievement of similar PCI results and post-procedural thrombolysis in myocardial infarction (TIMI) flow.

Indeed, as noted by Zuin et al. [1], the reduced number of cases and the non-randomized identification of the control group, limited the strength of the conclusions of the study, certainly requiring further research.

However, several factors point at an increased pro-thrombotic state in COVID-positive patients, in addition to the higher rate of IST. In fact, De Luca et al. observed a higher trend for the use of GPIIbIIIa inhibitors and cangrelor, suggesting an enhanced thrombotic burden at presentation that could have promoted stent malapposition and inadequate sizing, and therefore the recurrence of ischemic events [5]. Deferred stenting has recently been proposed as a valid option in case of large thrombus persistence [6], although this strategy could have been considered less applicable for infected patients, where the rapid stabilization of coronary lesions and conferment to COVID-units was required.

Nevertheless, a formal quantitative assessment of thrombus was not routinely performed due to the emergent nature of the PCI, preventing a large-scale use of intracoronary imaging.

Moreover, other clinical conditions promoting IST and mortality, as the rate of cardiogenic shock, were numerically higher in SARS-CoV-2 positive patients, although only a minority (less than 20%) required admission to the intensive care unit and less than 15% needed mechanical ventilation, probably not translating into a significant prognostic difference as compared to the control population.

In addition, other factors potentially increasing the risk of stent thrombosis, such as left main bifurcation lesions [7], were comparable or even more common in non-COVID patients.

Thus, considering the interesting and clinically relevant implications of the results of the ISACS-STEMI Registry and in similar cohorts of patients [2–4,8], further large studies are certainly needed to confirm whether SARS-CoV-2 patients undergoing PCI would potentially be at a different risk of IST and in-hospital mortality and to investigate the long-term outcomes.

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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DOI of original article: https://doi.org/10.1016/j.atherosclerosis.2021.06.926.

https://doi.org/10.1016/j.atherosclerosis.2021.09.008
Received 28 August 2021; Accepted 8 September 2021
Available online 15 September 2021

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