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EDITORIAL

The COVID-19 Collateral Damage in ST-Elevation Myocardial Infarctions in Low/Middle-Income American Regions

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Editorial referring to the article: Performance Measures in STEMI after COVID-19 Pandemic: Results from the RECUIMA Registry

For this issue of the *International Journal of Cardiovascular Sciences*, we would like to discuss the post-coronavirus disease 2019 (COVID-19) pandemic effects on performance measures in patients with ST-segment elevation myocardial infarction (STEMI) in a low/middle-income country.

In the Americas, cardiovascular diseases, mainly ischemic heart disease and cerebrovascular disease (stroke), are the leading causes of long-term disability and mortality.[1] Over three quarters of heart disease and stroke-related deaths occur in low- and middle-income countries. In the Americas region, during the last 3 years, more than 190.3 million people have been diagnosed with COVID-19, and more than 2.9 million people have died, according to Pan American Health Organization statistics from March 2023.[2] As of 12 July 2023, more than 2 billion doses of vaccination against COVID-19 had been applied in the region to about 700 million people with a 3-dose regimen.[3]

During the COVID-19 pandemic, health care for non-COVID-19 cases was affected by restricting resources towards urgent care for patients with COVID-19. Consequently, rates of hospitalization, procedures, and consultations for non-COVID-19 conditions declined substantially, resulting in limited medical care access for patients with acute conditions such as STEMI.[4]

In high-income countries, registries showed an important reduction in metrics related to the quality of care for patients with acute coronary syndromes. In the United States, during the first year of the COVID-19 pandemic, a significant reduction in the number of admissions (−17.20%), volumes for intravenous thrombolysis (−9.47%), and percutaneous coronary intervention (PCI) (−14.36%) was reported, in addition to a delay in first medical contact and door-to-reperfusion time.[5] Consequently, delays throughout acute coronary syndrome care have led to an increase in morbidity and mortality, especially in patients with STEMI, in whom a longer time delay has a significant negative impact on myocardial salvage and maintenance of left ventricular function. Remarkably, registries from Spain[5] showed similar findings with a reduced volume of PCIs (−16%) and a higher mortality rate during the first wave of the COVID-19 pandemic. In Germany, a study showed that hospital mortality increased by 52% in 2020 compared to previous years.[6]

In the Americas, an international survey on interventional cardiology[7] showed an important decrease in the number of procedures such as coronary angiography for acute coronary syndrome (−55.7%) and PCI for STEMI (−51.2%) during the COVID-19 pandemic, conferring a rising risk of mortality and/or morbidity from these pathologies during the pandemic and post-pandemic era.

This issue of the *International Journal of Cardiovascular Sciences* presents a study[8] describing some of 17 performance measures of STEMI care during and after the COVID-19 pandemic in a network of 4 centers located in a middle-income country (Cuba) based on results of the RECUIMA (REgistro CUbano de Infarto Agudo de MiocArdio).

In this study, the COVID-19 period ranged from January 2020 to October 2021, and the post-COVID-19 period from November 2021 to February 2022. Data were obtained from 1106 STEMI patients with a median age of 64.4 (57 to 73) years. Of these patients, 980 were included during the COVID-19 period and 126 during the post-COVID-19

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period. The authors found that the administration of thrombolytics decreased from 71.2% during the COVID-19 period to 51.6% after the COVID-19 period (p = 0.001). Moreover, the delay time in administering them was substantially increased in STEMI patients when comparing COVID-19 and post-COVID-19 periods (median of 30 to 45 minutes, respectively [p = 0.003]). The use of P2Y12 inhibitors also showed a significantly reduced use after COVID-19 (96.4% versus 66.7%). However, there was an increase in the use of beta blockers. Prescriptions of aspirin on arrival and discharge were similar, as well as high-intensity statins, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers.

Despite the low number of STEMI patients who underwent coronary arteriography and PCI (as a gold standard of care), the common use of recombinant streptokinase as a drug of choice for thrombolysis, and the use clopidogrel as the only P2Y12 available in Cuba, we would highlight the following: First, the guidelines for management of acute myocardial infarction during the COVID-19 pandemic from the Consensus Statement[9] from the Society for Cardiovascular Angiography and Interventions, the American College of Cardiology, and the American College of Emergency Physicians reported that primary PCI should remain the default strategy in patients with clear evidence of a STEMI; if a primary PCI approach is not feasible, a pharmaco-invasive approach may be considered. Second, in the post-COVID era, limited access to medication is a worldwide problem, having the most severe impact in low/middle-income countries, including the Americas region.

The COVID-19 pandemic had a profound and multidimensional impact on the population. Latin America and the Caribbean, characterized by high levels of inequality, labor informality, and vulnerability, were particularly affected by the COVID-19 pandemic in terms of health and economy. The COVID-19 pandemic has altered the trend in the cardiovascular health of the world population.[10] Different consequences have been reported, including direct effects (relationship between cardiovascular risk factors and worse outcomes among people with COVID-19 infection; endothelium and cardiomyocyte dysfunction in COVID-19 infection; and post-vaccination cases of myocarditis, thrombotic and multisystemic vascular syndromes) and indirect effects (delayed hospitalization and cardiovascular care for acute cardiovascular events; change in access to medicines, tests, and diagnostic and therapeutic procedures such as angiography and/or PCI; adaptation of the guidelines to protect patients and health workers; and sedentary lifestyle). A quantitative understanding of the global impact of the COVID-19 pandemic considering the broad spectrum of cardiovascular health will improve public health interventions and cardiovascular care in the post-pandemic era.

References

1. Pan American Health Organization. Cardiovascular Disease Burden in the Region of the Americas, 2000-2019 [Internet]. Washington: PAHO; 2021 [cited 2023 Nov 9]. Available from: https://www.paho.org/en/enlace/cardiovascular-disease-burden.
2. Pan American Health Organization. Three Years after COVID-19, Surveillance and Vaccination are key to Ending the Pandemic in the Americas [Internet]. Washington: PAHO; 2023 [cited 2023 Nov 9]. Available from: https://www.paho.org/es/noticias/9-3-2023-tres-anos-covid-19-vigilancia-vacunacion-son-clave-para-poner-fin-pandemia.
3. Pan American Health Organization. COVID-19 Vaccination in the Americas [Internet]. Washington: PAHO; 2023 [cited 2023 Nov 9]. Available from: https://ais.paho.org/imm/IM_DosisAdmin-Vacunacion.asp.
4. Alharbi A, Franz A, Alfatlawi H, Wazzan M, Alsughayer A, Eltahawy E, et al. Impact of COVID-19 Pandemic on the Outcomes of Acute Coronary Syndrome. Curr Probl Cardiol. 2023;48(4):101575. doi: 10.1016/j.cpcardiol.2022.101575.
5. Nogueira RG, Etter K, Nguyen TN, Ikeme S, Wong C, Frankel M, et al. Changes in the Care of Acute Cerebrovascular and Cardiovascular Conditions During the First Year of the Covid-19 Pandemic in 746 Hospitals in the USA: Retrospective Analysis. BMJ Med. 2023;2(1):e000207. doi: 10.1136/bmjmed-2022-000207.
6. Wienbergen H, Retzlaff T, Schmucker J, Marin LAM, Rühle S, Garstka D, et al. Impact of COVID-19 Pandemic on Presentation and Outcome of Consecutive Patients Admitted to Hospital Due to ST-Elevation Myocardial Infarction. Am J Cardiol. 2021;151:10-4. doi: 10.1016/j.amjcard.2021.04.011.
7. Mayol J, Artucio C, Batista I, Puentes A, Villegas J, Quizpe R, et al. An International Survey in Latin America on the Practice of Interventional Cardiology During the COVID-19 Pandemic, with a Particular Focus on Myocardial Infarction. Neth Heart J. 2020;28(7-8):424-30. doi: 10.1007/s12471-020-01440-y.
8. Espinola-zavaleta NG, Michel-vazquez AD, Mata L, Rodriguez-ramos MA. Performance Measures in STEMI after COVID-19 Pandemic: Results from the RECUIMA Registry. Int J Cardiovasc Sci. 2023;36:e20220118: doi: 10.36660/ijcs.20220118.
9. Mahmud E, Dauerman HL, Welt FGP, Messenger JC, Rao SV, Grines C, et al. Management of Acute Myocardial Infarction During the COVID-19 Pandemic: A Consensus Statement from the Society for Cardiovascular Angiography and Interventions (SCAI), the American College of Cardiology (ACC), and the American College of Emergency Physicians (ACEP). Catheter Cardiovasc Interv. 2020;96(2):336-45. doi: 10.1002/ccd.28946.
10. Roth GA, Vaduganathan M, Mensah GA. Impact of the COVID-19 Pandemic on Cardiovascular Health in 2020: JACC State-of-the-Art Review. J Am Coll Cardiol. 2022;80(6):631-40. doi: 10.1016/j.jacc.2022.06.008.