

ST-Segment Elevation Myocardial Infarction: Assessment of Quality of Care Before and After the COVID-19 Pandemic

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Short Editorial referring to the article: *ST-Segment Elevation Myocardial Infarction Metrics Before and During the COVID-19 Pandemic: Experience from a Brazilian Center*

In this article, Tavares et al. comparatively analyze quality indicators of care for 193 patients with ST-segment elevation myocardial infarction (STEMI) and relevant clinical outcomes before and during the COVID-19 pandemic.¹

An increase in mortality rates associated with cardiovascular diseases was observed in Brazil after the onset of the COVID-19 pandemic.² Many patients did not leave their homes to seek hospital care, contributing to increased cardiovascular mortality.

Brazilian data on the efficacy of STEMI reperfusion treatment during the pandemic are scarce, and this work represents a significant contribution in that regard.

The study population was mostly male, around 60 years old; therefore, the results do not apply to women or older individuals, who are at higher risk of death during hospitalization. This group consisted of low-risk STEMI patients, without a prior history of myocardial infarction, 90% classified as Killip I, and no cardiogenic shock, which is the main cause of in-hospital mortality due to acute infarction.³

Both before and during the pandemic, the authors obtained similar and short average time metrics: from symptom onset to hospital arrival (60 minutes), from arrival at the emergency unit to electrocardiogram (10 minutes), door-to-needle (15 minutes), and door-to-balloon (60 minutes). All these findings are much shorter than those usually recorded in Brazil,⁴ and they are comparable to international centers, which have established an inverse correlation between these time intervals and short- and long-term mortality.⁵ Unexpectedly, the average total ischemia time was longer before than during the pandemic, which contrasts with international literature.⁶

A reduction in initial care at the hospital center and an increase in care at satellite units was observed, likely reflecting fear of COVID transmission in hospitals, where emergency rooms were crowded. Consequently, there was a reduction in primary percutaneous coronary intervention (PCI) and an increase in fibrinolysis, along with a 10% increase in door-to-device time. Paradoxically, late-presenting patients were infrequent during

the pandemic, though the numbers were too small to detect significant differences. The shorter average hospital stay during this period also aligns with efforts to avoid contagion.

A meta-analysis of 12 studies revealed a 24% increase in in-hospital mortality in patients with STEMI during the initial phase of the pandemic. This was attributed to the greater severity of cases (higher troponin levels, increased coronary thrombosis, and lower left ventricular ejection fraction) and delays from symptom onset to hospital arrival.⁵

Reperfusion time intervals were not homogeneous across the populations studied. In some cases, they were prolonged, similar, or even shortened during the pandemic.⁷

The results of the study in question diverge from the literature.⁵ Infarct severity was similar before and during the pandemic, as shown by no differences in peak troponin levels or left ventricular ejection fraction. Despite this, cardiovascular in-hospital mortality was higher during the pandemic, possibly explained by the reduced rate of primary PCI; however, this difference was not statistically significant.

Another Brazilian study⁸ found a reduction in admission rates of patients with STEMI during the pandemic and an increase in the proportion of late-presenting patients (from 5.9% pre-pandemic to 13.8% during the pandemic), similar to the study in question (2.9% versus 7.3%, respectively). The literature shows that during the pandemic there was a significant reduction in hospital admission rates for STEMI and in the number of coronary interventions, along with an increase in total ischemia time.⁹ STEMI mortality rates increased significantly during the pandemic, especially in lower-income countries.¹⁰

A highly clinically relevant aspect is the marked increase in mortality among patients with STEMI and COVID-19, due to the complex pathophysiology of the disease, with strong activation of the inflammation-thrombosis axis.¹¹ The study in question did not discuss this condition, due to the absence of COVID cases in the study population.

Despite the numerical differences mentioned above, it can be stated that, overall, the quality of coronary reperfusion care for patients with STEMI in this study did not suffer significant changes during the pandemic. However, the small number of patients with STEMI and the low number of severe cardiovascular outcomes limit these conclusions. The implementation of specific measures, such as healthcare worker training, COVID testing at care sites, and activation of hemodynamic labs according to recommendations, may have contributed to maintaining the total reperfusion rate without significantly affecting the mortality rate compared to the pre-pandemic period.

Keywords

COVID-19; ST Elevation Myocardial Infarction; Hospital Mortality.

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