



EDITORIAL COMMENT

Early reperfusion in myocardial infarction requires widespread access to prehospital emergency care[☆]



A reperfusão precoce no enfarte agudo do miocárdio implica acesso generalizado à emergência pré-hospitalar

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Time to reperfusion in ST-elevation myocardial infarction (STEMI) is critical to maximizing the benefit of reperfusion therapy in maintaining the viability of jeopardized myocardium and preserving left ventricular systolic function, and thus affects short- and long-term survival.¹ The importance of this factor was established in the era of pharmacological reperfusion with fibrinolytic agents, subsequently superseded by primary percutaneous coronary intervention (PPCI), which is more effective in delivering reperfusion and hence improves survival,² with apparently less dependence on time to reperfusion than with fibrinolysis.³

However, as the indications for PPCI were extended to higher-risk patients, it soon became clear that its benefits are also significantly affected by time to reperfusion,⁴ and a system delay (measured from first medical contact to reperfusion) of ≤ 60 min for high-risk patients presenting within two hours of symptom onset and ≤ 90 min for other patients is now recommended.⁵ Nevertheless, these times are not achieved in a significant proportion of patients undergoing PPCI, particularly those who do not use the pre-hospital

emergency medical system (EMS), and the situation is even worse for centers without PPCI facilities.⁶

System delay is thus an important quality indicator in myocardial infarction (MI)⁷ and as such should be continuously monitored and used as the basis for measures to help achieve the goals set in the guidelines.⁵

In the current issue of the *Journal*, Silveira et al.⁸ analyze system and total delays in reperfusion times in 764 patients with STEMI undergoing PPCI in their center between January 2008 and July 2015, as well as in-hospital and one-year clinical outcomes. Median total time to reperfusion was 240 min and median system delay was 85 min. With regard to compliance with the guidelines, the authors report that system delay was ≤ 60 min in 39% of patients and ≤ 90 min in 61%. In-hospital mortality was 9.2% and one-year mortality was 3.3%.

Most of the study population arrived at the hospital by their own means (46%) or by non-EMS ambulance (7%). A third were transported by the EMS and the others were transferred from other institutions (14%). Those who used the EMS had significantly shorter times to reperfusion (195 vs. 286 min, $p < 0.001$) and system delay (61 vs. 90 min, $p < 0.001$) than those who did not, which was reflected in the proportion of patients reperfused with a system delay of ≤ 60 min (50% vs. 34%, $p < 0.001$) and ≤ 90 min (74% vs. 55%, $p < 0.001$). One-year mortality was lower in patients transported by the EMS, but this was not statistically significant. However, reductions in

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mortality due to access to the EMS in MI patients have been demonstrated by other studies in Portugal.⁹

Analysis of changes over time showed that the proportion of patients using the EMS increased from 30% in 2008 to around 50% in 2015, with a corresponding decrease in the proportion of those traveling by their own means. Although the authors did not analyze changes in reperfusion times, these can be expected to have improved, given the favorable impact of access to the EMS on time to PPCI. At the national level, access to the EMS increased from 2.1% in 2002 to 38% in 2012,^{10,11} and access to PPCI trebled between 2002 and 2013, from 106 to 338 procedures per million population.¹²

This progress in management of patients with MI is based on information on the situation in Portugal that has been collected since the 1990s, firstly with the establishment of fibrinolysis registries, followed in 2002 by the creation of the National Center for Data Collection in Cardiology, which enabled the formation of the National Registries of Acute Coronary Syndromes and of Interventional Cardiology^{10,12} and the implementation of referral networks with continuous monitoring such as Stent for Life.¹¹ The contributions of single-center series^{8,9} should also be noted, the results of which are in agreement with those of multicenter national registries^{6,11,12} and demonstrate unequivocally that early reperfusion for MI in Portugal requires more widespread access to the EMS.

Conflicts of interest

The author has no conflicts of interest to declare.

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