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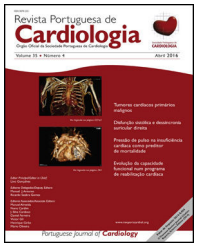

EDITORIAL COMMENT

On-site percutaneous coronary intervention: Does it matter when treating patients with acute coronary syndromes?

Intervenção coronária percutânea *on site*: importante quando se tratam doentes com síndromes coronárias agudas?

José Ferreira Santos

Serviço de Cardiologia, Hospital da Luz, Setúbal, Portugal

In patients with acute coronary syndromes (ACS), early coronary angiography followed by revascularization when feasible, has gained wide acceptance in clinical practice, due to improvements in prognosis and reduced mortality. In ST elevation acute myocardial infarction (STEMI), the main objective is to perform primary angioplasty in less than 60 minutes, or less than 90 minutes, depending on whether the patient is admitted to a hospital with or without on-site percutaneous coronary intervention (PCI) capabilities. Studies have shown that STEMI patients admitted directly to hospitals with PCI capabilities have shorter door-to-balloon times and reduced mortality. In a real world setting, this requires a well-organized regional network with pre-hospital triage and expedited decision-making.[1] In non-ST-elevation ACS (NSTE-ACS) an immediate (<2 h) or early invasive (<24 h) strategy is also recommended in very high or high risk patients, precluding an immediate or same day transfer to a hospital with PCI capabilities.[2,3] However, in patients with NSTE-ACS, transfer to a hospital with PCI capabilities is less well established as a marker for risk of adverse events.

E-mail address: jfsantos@me.com

In the paper from Miranda H et al.,[4] the authors aim to compare the outcomes of patients admitted to hospitals with and without on-site capabilities, included in the nationwide Portuguese Registry of Acute Coronary Syndromes (ProACS). During an eight-year period, from October 2010 to December 2018, 28 hospitals included 17 789 patients, 7396 (41.5%) of whom were in non-PCI capable hospitals. More than half of the patients, 56.7%, had NSTE-ACS, and the remaining 43.3% had STEMI. Overall, patients admitted to PCI-capable hospitals had more prior history of cardiovascular disease and higher use of pre-hospital services triage, probably reflecting tertiary center patient selection biases and/or greater knowledge of symptoms and emergency protocols for chest pain. The majority of STEMI patients had primary PCI, with only 2.1% receiving fibrinolysis in PCI-capable hospitals and 12.9% in non-PCI-capable hospitals. However, door-to-balloon times were sub-optimal in most patients, with a median time of 42 minutes in PCI-capable hospitals, compared to 140 minutes in non-PCI hospitals. In patients with NSTE-ACS, more than 80% had an invasive strategy and around 50% had subsequent revascularization performed. Interestingly, patients admitted to non-PCI hospitals had statistically significant higher rates of an invasive strategy and revascularization by PCI (86.8% and 82.2% for

the former and 54.6% and 50.4% for the latter, comparing non-PCI to PCI hospitals). The authors do not report data on invasive strategy timing according to risk in NSTE-ACS, but patients admitted to non-PCI hospitals underwent a coronary angiography a median of one day later than those admitted to PCI hospitals.

The authors used a propensity score analysis for adjusting the differences between groups admitted to PCI and non-PCI capable hospitals. Slight differences were observed in in-hospital pharmacological treatment, which were probably due to chance and did not have a meaningful impact on the overall results. When outcomes were compared between patients admitted to PCI and non-PCI-capable hospitals, patients in the former group were more prone to present with heart failure, cardiogenic shock or resuscitated cardiac arrest. Only mechanical complications and sustained ventricular tachycardia (VT) were more frequent in patients presenting to non-PCI hospitals. After adjustments for the propensity score, STEMI patients had a lower rate of sustained VT and NSTE-ACS had a higher rate of heart failure during hospitalization in PCI hospitals. But overall, no differences were found between groups in in-hospital death.

The study from Miranda et al. reinforces the expected finding that door-to-balloon times are higher in STEMI patients admitted to non-PCI-capable hospitals. Surprisingly, the reported difference on reperfusion timings, did not translate into lower in-hospital mortality, probably due to the fact that STEMI patients in PCI-hospitals presented with a higher rate of heart failure, cardiogenic shock and resuscitated cardiac arrest, differences impossible to adjust even when using a propensity score analysis.[5,6] On the other hand, catherization laboratories are not available in every hospital and the study from Miranda et al. reinforces that transferring STEMI patients for primary PCI is a feasible and safe option.[2]

In NSTE-ACS patients, an early invasive strategy is increasingly pursued, particularly in very high and high-risk patients.[3] In the paper from Miranda H et al., 84% of patients had an invasive strategy and, in the majority, the coronary angiography was performed in the first 72 hours, with more than 50% of those in the first 24 hours. This reflects a high compliance with the guidelines, whether patients are admitted to non-PCI or PCI-capable hospitals. More than 50% of NSTE-ACS patients were revascularized and as expected there were no differences in in-hospital death rates. Patients with NSTE-ACS admitted to non-PCI hospitals might derive a similar benefit when compared to patients in PCI hospitals, and early referral and transfer has shown to be safe and effective, as reinforced by the Miranda H et al study.[7] Also worthy of merit is the fact that NSTE-ACS patients admitted to non-PCI hospitals were not under-treated as has been reported elsewhere, which should be celebrated in this nationwide registry population.[8]

The study by Miranda et al. uses the largest and longest registry in Portugal, the ProACS, and derives some important findings. The management of ACS patients in non-PCI hospitals compared to PCI-capable hospitals, shows a similar use of guideline-driven therapies and similar in-hospital mortality. In STEMI patients, the transfer to PCI-capable hospitals is feasible, but the reperfusion times need improvement, whatever the admission hospital type. This opportunity has already been identified for the pre-hospital and regional network management.[1] In NSTE-ACS the use of an almost universal and early invasive strategy translates into lower rates of adverse outcomes and even non-PCI hospitals show high adherence to guideline-recommended therapies. Whether treating ACS patients in PCI or non-PCI hospitals, doctors should aim to implement guideline-recommended therapies that have shown to improve prognosis.[9]

Conflicts of interest

The author has no conflicts of interest to declare.

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