

18.6.1 - ST-Elevation Myocardial Infarction (STEMI)

First medical contact place determines prognosis in a regional STEMI network. Is time the most important factor?

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Background: Long revascularization times have been associated with worse prognosis in PCI-treated STEMI patients. Thus, efforts have been focused in optimizing revascularization times. In Catalonia, the different first medical contact (FMC) points with the regional STEMI network CODI IAM have been associated with different degrees of delay in reperfusion.

Purpose: we aim to determine if our regional STEMI network achieves better mortality rates in the fastest circuits than in slower ones by optimizing revascularization times.

Methods: since CODI IAM network was launched in June 2009, a prospective registry of all attended cases is conducted. We included in the study all patients with final STEMI diagnosis treated with primary PCI from January 2010 to December 2016. Patients were divided in 4 different groups regarding FMC point: primary care center (PCC), community hospital (CH), PCI-hospital (PCI-H), emergency medical services (EMS)). Clinical data, reperfusion times and 30-day and 1-year mortality were analyzed.

Results: a total of 14,483 patients (PCC 19%, CH 35,7%, PCI-H 12,5%; EMS 32,7%) were included in the analysis. Women proportion was higher in hospital-attended cases ($p < 0,001$), and so was diabetes ($p < 0,001$). Previous history of MI, PCI and CABG were more frequent in both EMS and PCI-H groups ($p < 0,001$). Killip-Kimball Classes III-IV were more frequent in PCI-H and EMS groups (EMS 12,5%, PCI-H 10,4%, CH 7%, PCC 4,6%; $p < 0,001$). All complications (intubation, ventricular fibrillation, ventricular tachycardia, atrial fibrillation, AV block) in first medical assistance were more frequent in EMS group ($p < 0,001$). Median time from ECG to reperfusion was shorter in the PCI-H group (74 min (IQR 56-110), $p < 0,001$) but the shortest median ischaemic time was achieved by EMS group (155 min (IQR 120-215), $p < 0,001$). Global 30-day and 1-year mortality were 5,8% and 9,4% respectively, significantly higher in PCI-H and EMS groups than in CH and PCC groups (30-day m. CH 4,9%, PCC 3,3%, PCI-H 7%, EMS 7,8%), $p < 0,001$). After Cox regression adjusted analysis including sex, age, diabetes, anterior STEMI, Killip-Kimball Class and primary VF, 30-day and 1-year mortality remained higher in PCI-H and EMS groups compared to CH group, both without adjusting by time (HR 1,31 (1,01-1,69), $p = 0,04$ for PCI-H 30-day mortality; HR 1,25 (1,03-1,51), $p = 0,025$ for EMS 30-day mortality), and after adjusting by time ECG-reperfusion > 120 min (HR 1,56 (1,20-2,03), $p = 0,001$ for PCI-H 30-day mortality and HR 1,48 (1,21-1,82), $p < 0,001$ for EMS 30-day mortality).

Conclusions: considering that reperfusion time intervals favour EMS and PCI-H groups, crude between-groups mortality differences might be justified by a selection bias rather than by the pathway itself. Despite this probable selection bias, the STEMI network achieves a reduction of these differences by shortening reperfusion times in EMS and PCI-H groups.

Abstract Figure. 1-year mortality curves

