Inter-hospital transfer for primary PCI has worse outcome compared with direct admission to a heart attack centre: an study of 25,315 patients with STEMI from the London Heart Attack Group

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On behalf: London Heart Attack Group

Topic(s):
Coronary Intervention: Primary and Acute PCI

Citation:

Background and Aims
In patients with ST-segment elevation myocardial infarction (STEMI), mortality is directly related to time to reperfusion with guidelines recommending patients are delivered directly to centres for primary percutaneous coronary intervention (PPCI). The aim of this study was to describe the impact of inter-hospital transfer on reperfusion time and to assess whether or not treatment delays influenced clinical outcomes in comparison with direct admission to a PPCI centre in a large regional network.

Method and results
We undertook an observational cohort study of patients with STEMI treated with PPCI between 2005 and 2015 at the eight PPCI centres in London, UK. Patient details were recorded at the time of the procedure in databases using the British Cardiovascular Intervention Society PCI dataset. The primary end-point was all-cause mortality at a median follow-up of 3.0 years (interquartile range 1.2-4.6 years). Secondary outcomes were in-hospital major adverse cardiac events (MACE). Of 25,315 patients, 17,580 (69.4%) were admitted directly to a PPCI centre and 7,735 (30.6%) were transferred from a non-PPCI centre. Patients in the direct admission group were older and more commonly had left ventricular impairment than the inter-hospital transfer group. Median time from call for help to reperfusion in transferred patients was 52 minutes longer compared to patients admitted directly (p <0.001). However, call to first hospital admission was similar. Kaplan-Meier analysis demonstrated significantly lower mortality rates in patients who were transferred directed to a primary PCI centre compared to patients who were transferred from a non-PPCI centre (17.4% direct vs 18.7% transfer, P=0.047) Figure 1. After regression adjustment, which incorporated the propensity score as a covariate in a proportional hazard model, transfer of patients for PPCI was still a predictor of all-cause mortality, irrespective of whether symptom to balloon time was included (HR 0.80; 95% 0.61-0.96) or not included (HR 0.84; 95% CI 0.65-0.98) in the model. Furthermore, after propensity matching, direct admission for PPCI was still a predictor of all-cause mortality (HR: 0.86 95% CI: 0.68-0.91).

Conclusions
In this large registry of over 25,000 STEMI patients treated by PPCI survival was better in patients admitted directly to a cardiac centre versus patients transferred for PPCI, most likely due to longer call to balloon times in patient transferred from other hospitals.
Abstract: Interhospital transfer for primary PCI has worse outcome compared with direct admission to a heart attack centre: an study of 25,315 patients with STEMI from the London Heart Attack Group.


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![Graph showing cumulative incidence of all cause mortality over years since procedure.](image)