

Acute Myocardial Infarction: Patient Care before Hospital Arrival

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Management of patients with suspected acute ST-elevation myocardial infarction (STEMI) before hospital arrival is crucial and directly related to survival. The prehospital treatment includes intravenous access, supplemental oxygen, pulse oximetry, administration of aspirin and nitroglycerin, telemetry and prehospital electrocardiogram (ECG). Most deaths caused by STEMI occur within the first hour and are attributable to ventricular fibrillation. Patients with STEMI, however, do not seek medical attention until 1.5-2 hours after symptom onset with little change in this interval over the last decade (1,2). Delay is greater in women, older patients, low socioeconomic and ethnic minority groups, and in patients with off-hour presentation (3-6). To minimize the patient delay between symptom onset and first medical contact (FMC), the public should be made aware of how to recognize common symptoms of acute MI and to call the emergency medical services (EMS) (7,8). In delay between FMC and diagnosis, the time taken to record the first ECG is a good index of the quality of care, which should be ≤ 10 minutes.

The system delay between FMC and reperfusion therapy is an indicator of quality of care and a predictor of outcomes (9). If the reperfusion therapy is primary percutaneous coronary intervention (PCI), the goal is to achieve FMC to balloon ≤ 120 min and if fibrinolysis is chosen, the goal is to reduce FMC to needle to ≤ 30 min (10). Prehospital ECG interpretation has been shown to reduce door-to-balloon time by permitting paramedics to bypass non-PCI hospitals and enabling the emergency department staff to activate the catheterization laboratory before patient arrival (10). Furthermore, the time delay from symptom onset to treatment can be shortened by administration of prehospital fibrinolysis by an appropriately trained and staffed EMS unit (8). In the real world, however, these guideline-recommended time goals are often difficult to achieve (11). Analysis of data from the Korea Acute Myocardial Infarction Registry showed that only 45.8% of patients (26.1% of transferred patients) receiving primary PCI achieved the FMC-to-balloon time ≤ 120 minutes, even though the median door-to-balloon time at STEMI receiving hospitals (80 minutes) was within the recommended 90 minutes. In patients receiving fibrinolysis, only 25% of patients achieved the FMC-to-needle time ≤ 30 minutes. These findings go to show that the number of STEMI patients treated with delays >120 minutes still remains substantial in real-world circumstances. Fibrinolytic therapy is, however, underutilized among eligible patients and its administration is often delayed. Presently, the best alternative to primary PCI when treatment delay is >120 minutes should be pharmacoinvasive strategy where fibrinolytic therapy is performed either in a pre-hospital setting or at a non-PCI capable hospital, followed by immediate transfer to a PCI capable hospital for either rescue PCI in case of failed fibrinolysis or routine coronary angiography and PCI, if required, in case of successful fibrinolysis within 3-24 hours (12-14).

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