



It is time to focus on pre-hospital delays in patients with ST-segment elevation myocardial infarction

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Rapid myocardial reperfusion is the cornerstone of treatment for patients with ST-elevation myocardial infarction (STEMI). A longer total ischemic time (TIT), measured from symptom onset to reperfusion, results in more severe myocardial damage and a poorer clinical prognosis. Indeed, it has been suggested that every 30 minutes of treatment delay increases the death risk by 7.5% [1]. Therefore, minimizing TIT is essential. Although many efforts have been made to reduce in-hospital delays (door-to-balloon time [DTBT]), pre-hospital delays (symptom-to-door-time [STDT]) have not been reduced. A recent study using the Korean Percutaneous Coronary Intervention (K-PCI) registry showed that the median DTBT was 62 minutes and the median STDT 94 minutes [2]; the STDT now principally determines the TIT. Therefore, the identification and control of factors associated with a longer STDT is important.

In this issue of the *Korean Journal of Internal Medicine*, Lee et al. [3] investigated 4,874 STEMI patients whose data were stored in a nationwide registry of acute myocardial infarction, and found that older age, female sex, repeat ischemia, and non-utilization

of emergency medical services (EMS) were associated with a longer STDT; these findings are in line with those of previous studies [4,5]. Symptom awareness is critical; patients then seek help, affecting decision-making in terms of additional early reperfusion therapy [6]. In recent decades, sex and gender differences in terms of ischemic heart disease have received increased attention. In females, the detection and evaluation of ischemic heart disease is more difficult than in males; this has often been attributed to atypical symptoms, less reliable electrocardiographic findings and cardiac markers, and socioeconomic barriers [7-9]. Although the findings remain controversial, many studies have shown that females visit hospitals more often after symptoms occur [9,10]. It is necessary to educate elderly females on the identification of ischemic symptoms and the importance of immediate access to healthcare when a suspicious symptom develops. Effort should also be made to increase EMS utilization; the STDT is reduced by rapid transportation to a percutaneous coronary intervention (PCI)-capable center and by expediting emergency department processes. Therefore, community education should focus not only on the importance of recognizing the symp-

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toms of myocardial infarction, but also on taking early action (calling an EMS). A recent study found that smartphone use effectively reduced the TIT of STEMI patients, especially that associated with the transfer from a non-PCI-capable to a PCI-capable hospital; patients using smartphone social network systems had a shorter, median, first, medical contact-to-device time than others (102.5 minutes vs. 129.5 minutes, $p = 0.031$) [11]. Korea is an information technology powerhouse; pre-hospital triage via telemedicine may effectively reduce the time to life-saving reperfusion therapy in STEMI patients.

In summary, it is essential to reduce the TIT not just within hospitals but by educating the public about the importance of recognizing myocardial infarction symptoms and prompt activation of an EMS. Elderly females require special education.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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