Predictive factors of a prolonged total ischemic time in patients presenting with ST-segment elevation myocardial infarction

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Funding Acknowledgement: Type of funding source: None

Introduction: Total ischemic time (TIT), the time from symptom onset to therapeutic reperfusion of infarcted myocardium is a key factor in the treatment of patients with ST-segment elevation myocardial infarction (STEMI). The identification of the predictive factors of a prolonged TIT will allow design specific strategies to optimize this time and improve the quality of care of these patients. Our objective was to evaluate independent factors predicting prolonged TIT.

Methods: We performed a prospective observational study, with consecutive inclusion of all patients presenting within 24 hours of symptom onset of STEMI (n=546), transferred to our center for primary percutaneous coronary intervention (pPCI).

Results: The median TIT was 190 (137–281) minutes. No significant differences were found according to the year of study. In the univariate analysis, age showed a slight trend (p=0.05); for each year that is increased, the TTI increases 1.3 minutes. Women had higher TII than men [219 (145–332) vs. 187 (133–270) minutes; p=0.02]. No statistically significant differences were found in relation to the presence of cardiovascular risk factors. Patients treated during non-working hours had shorter TIT than those treated during working hours [179 (130–252) vs. 202 (142–307) minutes; p=0.03]. The distance to a 24h-PCI hospital was an independent predictive factor. Those patients whose first medical contact (FMC) was in a non-PCI-capable hospital or in a clinic showed the highest TIT [226 (147–336) and 205 (146–304) minutes, respectively; $p<0.001$]. Patients with initial non-diagnostic ECG presented a significantly longer TIT ($p<0.001$) than patients correctly diagnosed since the beginning, with a median difference of 188 minutes. A trend was observed for the Killip-Kimball classification variable (p=0.07). Patients with previous infarction had shorter TIT compared to those who have never had it (p=0.02). In the multivariate binary logistic regression analysis, the variables: initial non-diagnostic ECG, FMC (in a non-PCI-capable hospital or clinic) and the distance to 24h-PCI hospital (>90 km) were independent predictive factors of a TIT >180 minutes. An initial non-diagnostic or misinterpreted ECG sextuples the risk of a prolonged TIT.

Conclusions: In our area, the total ischemic time is determined by a non-diagnostic or misinterpreted EKG, the first medical contact and the distance to a 24h-PCI hospital.