

Is Shorter Door-to-Balloon Time Associated with a Double Risk of Major Adverse Cardiac Events? Use of Drug-Eluting Stents Should Be Considered

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Ischemic time duration is directly related to myocardial injury and mortality in ST-elevation myocardial infarction (STEMI). While longer door-to-balloon (DTB) time is associated with increased mortality, efforts to lower DTB time have not always translated into decreased mortality.¹ In the recent issue of *Acta Cardiologica Sinica*, Lai et al. divided STEMI patients into four groups by each 45-minute interval of DTB time. The results showed that patients with DTB time < 45 minutes had double the risk of one-year major adverse cardiac events (MACE) than those with DTB time ≥ 45 minutes (adjusted hazard ratio 2.21, 95% confidence interval 1.33-3.68, $p < 0.01$).² Notably, the increased MACE in patients with DTB > 45 minutes mainly resulted from composites of target vessel revascularizations (TVR) and repeated percutaneous coronary interventions. How-

ever, we noted that patients with DTB < 45 minutes received a reduced rate of drug-eluting stents (DES) implantation than other groups (13.9% vs. 17.3%, 21.8% and 20.7%, respectively, $p = 0.04$). In the same registry, the use of DES over bare metal stents showed benefits in one-year mortality, TVR and MACE;³ which implied that different types of stents may have varied clinical impacts. It is important to elucidate whether the significant relationship between 1-year MACE and DTB time < 45 minutes remains after adjusting for use of DES. In our five-year acute coronary syndrome cohort, DTB time was significantly correlated with one-year mortality in 951 STEMI patients undergoing primary PCI (Table 1). This suggested that DTB time is still an important prognostic factor, especially when ischemic time is not long.⁴

Table 1. Risk factors associated with one-year mortality in patients with STEMI undergoing primary percutaneous interventions by logistic Cox-proportional hazard analysis

Variables	Crude HR	95% CI	p value	Adjusted HR	95% CI	p value
Door-to-balloon time (minutes)	1.003	1.002-1.004	< 0.001	1.003	1.001-1.004	< 0.001
TIMI risk score (points)	1.313	1.206-1.430	< 0.001	1.189	1.077-1.312	< 0.001
Male	0.540	0.295-0.990	0.046	1.075	0.556-2.077	1.075
Hemoglobin (g/dl)	0.765	0.698-0.837	< 0.001	0.857	0.750-0.978	0.022
Creatinine (mg/dl)	1.293	1.175-1.423	< 0.001	1.083	0.941-1.245	0.265

CI, confidence interval; HR, hazard ratio; STEMI, ST-segment elevation myocardial infarction; TIMI risk score, thrombolysis in myocardial infarction risk score.

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