

Contemporary Mortality Differences Between Primary Percutaneous Coronary Intervention and Thrombolysis in ST-Segment Elevation Myocardial Infarction

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Background: Current ST-segment elevation myocardial infarction guidelines regarding reperfusion strategy are based on trials conducted before the application of routine invasive evaluation after thrombolysis. Modern thrombolysis may affect the previously observed mortality difference between primary percutaneous coronary intervention (PPCI) and thrombolysis.

Methods: In-hospital mortality was prospectively assessed in 5295 patients with ST-segment elevation myocardial infarction admitted to 73 Belgian hospitals from July 1, 2007, through December 31, 2009. A total of 4574 patients (86.4%) were treated with PPCI and 721 (13.6%) received thrombolysis; of these thrombolysis patients, 603 (83.6%) underwent subsequent invasive evaluation. The Thrombolysis in Myocardial Infarction risk score was used to stratify the study population by low (n=1934), intermediate (n=2382), and high (n=979) risk.

Results: In-hospital mortality in the PPCI patients was 5.9% vs 6.6% in the thrombolysis patients. After adjust-

ment for differences in baseline risk profile, a significant mortality benefit was only present in the high-risk groups: 23.7% in the PPCI patients vs 30.6% in the thrombolysis patients. For patients not at high risk, the mortality difference was marginal. For low-risk patients, mortality was 0.3% in the PPCI patients vs 0.4% in the thrombolysis patients. For intermediate-risk patients, mortality was 2.9% in the PPCI patients vs 3.1% in the thrombolysis patients. Subgroup analysis revealed that the mortality benefit of PPCI compared with early thrombolysis (door-to-needle time <30 minutes) was offset if the door-to-balloon time exceeded 60 minutes.

Conclusions: Modern thrombolytic strategies have substantially attenuated the absolute mortality benefit of PPCI over thrombolysis, particularly in patients not at high risk. Our study findings suggest that target door-to-balloon time should be less than 60 minutes to maintain the lowest mortality rates.

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