

Is diabetes mellitus an independent predictor of in-hospital morbidity and mortality in STEMI patients undergoing primary PCI? The cardio-renal hypothesis.

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Background. ST-segment elevation myocardial infarction (STEMI) patients with diabetes mellitus (DM) have higher in-hospital morbidity and mortality than those without DM. Since reduced renal and cardiac function are the two most important variables associated with short-term outcome in STEMI, we hypothesized that this prognostic disparity may depend on a higher rate of cardiac and renal dysfunction in DM patients.

Purpose: we investigated the role of cardiac and renal dysfunction on in-hospital mortality and morbidity in STEMI patients with diabetes mellitus

Methods. We included 5,152 STEMI patients treated with primary percutaneous coronary intervention (pPCI). Left ventricular ejection fraction (LVEF) and estimated glomerular filtration rate (eGFR) were evaluated in all patients at hospital admission. The incidence of LVEF<40% and/or eGFR<60 ml/min/1.73m² and their relationship with in-hospital outcome were compared in patients with and without DM. The primary endpoint was in-hospital mortality. A composite of in-hospital mortality, cardiogenic shock, and acute kidney injury, was considered as secondary endpoint.

Results. Eight-hundred-seventy-nine (17%) patients had DM. The incidence of cardiac dysfunction (30% vs. 22%; P<0.001), renal insufficiency (27% vs. 18%; P<0.001) or both (12% vs. 6%; P<0.001) was higher in patients with DM than in those without DM. In-hospital mortality was higher in DM than in non-DM patients (6.1% vs. 3.5%; P=0.002; unadjusted OR 1.81 [95% confidence interval 1.31-2.50]; P=0.003). However, DM was no longer associated with an increased mortality risk after adjustment for cardiac and renal function (OR 1.03 [95% confidence interval 0.84-1.35]; P=0.36). Similarly, the incidence of the secondary endpoint was higher in DM patients (18% vs. 13%; P<0.001) with an unadjusted OR of 1.52 (95% confidence interval 1.25-1.85; P<0.001) and a non-significant OR after adjustment for cardiac and renal function (1.05 [95% confidence interval 0.86-1.47; P=0.21]). Conclusions. The study indicates that the increased in-hospital mortality and morbidity of DM patients with STEMI undergoing pPCI is driven more by the underlying cardio-renal dysfunction, rather than to the presence of DM by itself.