Abstract

Pre-PCI TIMI 3 flow has been identified as a predictor of final TIMI 3 flow and better survival. Yet, pharmacological strategies increasing the rates of pre-PCI TIMI 3 flow resulted in more bleeding, without a benefit in survival. We sought to identify the predictors and implications of spontaneous reperfusion before primary PCI in patients with STEMI in CADILLAC and HORIZONS-AMI. Baseline TIMI 3 flow was present in 932 (17.5%) of 5,332 patients. The independent predictors of baseline TIMI 3 flow were diabetes, longer delay to PCI, smoking, and more extensive coronary disease. Patients with, compared to without, baseline TIMI 3 flow had significantly higher rates of post-PCI TIMI 3 flow (99.1% vs. 91.4%, P=0.0001) and lower 1-year all-cause mortality (2.7% vs. 4.3%, P=0.02). By MV analysis, both baseline TIMI 3 flow (hazard ratio [95%CI] = 1.65 [1.01, 2.71], P=0.046) and final TIMI 3 flow (3.67 [2.45, 5.48], P<0.001) were significant independent predictors of 1-year survival. In conclusion, TIMI 3 flow is present in ~1 in every 6 patients with STEMI prior to primary PCI, and paradoxically, is more common in patients with high risk characteristics. TIMI 3 flow prior to, as well as after PCI, is an independent predictor of greater 1-year survival.

Methods

The CADILLAC and HORIZONS AMI datasets were combined. Endpoints for the present study included the 30-day and 1-year rates of major adverse cardiac events (MACE) defined as death (all-cause and cardiac), reinfarction, stroke, or ischemia-driven target vessel revascularization (TVR) and stent thrombosis, according to Academic Research Consortium (ARC) definitions. Outcomes were then analyzed according to the presence or absence of TIMI 3 flow in the infarct-related artery (IRA) at initial angiography. MV analysis identified independent predictors of mortality.

Results

At baseline angiography, TIMI 3 flow in the IRA was present in 932 patients (17.5%), while TIMI 0-2 flow was present in 4,400 patients (82.5%), including 733 (16.7%) with TIMI 2 flow and 3,667 (83.5%) with TIMI 0 or 1 flow. Patients with TIMI 3 had, in general, higher risk features than those with TIMI 0-2, except for a lower rate of ST-segment elevation. Patients with TIMI 3 flow had significantly longer intervals from symptom onset to first device activation and from hospital arrival to first device activation than those with TIMI 0-2, except for a lower rate of ST-segment elevation. Patients with TIMI 3 flow had significantly longer intervals from symptom onset to first device activation and from hospital arrival to first device activation than those with TIMI 0-2, although these differences amounted to only 15-20 minutes. Final TIMI 3 flow was achieved significantly more often in those with baseline TIMI 3 flow (99.1% vs. 91.4%, P<0.001).

Conclusion

TIMI 3 flow is present in ~1 in every 6 patients with STEMI prior to primary PCI, and paradoxically, is more common in patients with high risk characteristics. TIMI 3 flow prior to, as well as after primary PCI is an independent predictor of greater survival at 1 year. These findings should be considered in the context of the risks and benefits of “facilitated” PCI strategies.