The goal of primary percutaneous coronary intervention (PCI) for patients with ST-segment elevation myocardial infarction (STEMI) is final Thrombolysis in Myocardial Infarction (TIMI) grade 3 in the infarct-related artery, which means improved tissue perfusion. However, it is not always possible to obtain final TIMI3 after adequate PCI for a culprit coronary artery in patients with acute myocardial infarction (AMI). It is well known that post-PCI TIMI flow is related to long-term prognosis in patients with STEMI. On the other hand, the impact of suboptimal post-PCI coronary flow defined as TIMI ≤ 2 on long-term prognosis in patients with non (N)-STEMI has not been fully investigated.

To approach this question, in the current issue of International Heart Journal, Kim, et al. evaluated the long-term prognostic role of post-procedural TIMI flow after PCI from the COnvergent Registry of cAtholic and chonNNam university for Acute Myocardial Infarction (Corea-AMI) Registry. They retrospectively analyzed 4516 patients following the exclusion of 509 patients without post-TIMI flow data. Among them, 2796 were diagnosed as STEMI and 1720 were diagnosed as NSTEMI and they were divided according to the final TIMI flow. They demonstrated that major adverse cardiac events (MACE) and cardiac death occurred more frequently in STEMI patients with TIMI ≤ 2 than in those with TIMI 3 (MACE: adjusted hazard ratio [HR], 1.962; 95% confidence interval [CI] 1.513 to 2.546, P < 0.001, cardiac death: adjusted HR, 3.154, CI 2.308 to 4.309, P < 0.001) over a median follow-up of 3.3 years. However, there was no significant difference between the TIMI ≤ 2 group and TIMI 3 in NSTEMI patients (adjusted HR, 0.932; 95% CI 0.586 to 1.484, P=0.087).

The novel finding in their study is that post-TIMI flow in patients with NSTEMI did not have any long-term effects on survival while good post-PCI TIMI flow in patients with STEMI was associated with favorable clinical outcomes. They considered 3 possibilities regarding this difference between NSTEMI and STEMI: 1) the pathophysiologic differences, 2) the role of ischemic preconditioning, and 3) several heterogeneous characteristics of NSTEMI. First, regarding pathophysiologic differences, post-PCI flow may have less influence on overall survival benefit in NSTEMI compared to STEMI because the incidence of plaque rupture is lower and damage by infarct transmurality is not relatively serious. Second, regarding ischemic preconditioning, subendocardial viability in NSTEMI is thought to be less dependent on collateral circulation and thus more likely to be protected by preconditioning. Third, regarding several heterogeneous characteristics of NSTEMI, patients with NSTEMI underwent emergent, urgent, and delayed PCI. Thus, various medical approaches might be associated with the mortality. In addition, they found that the extent of multivessel disease in NSTEMI was an independent predictor for post-PCI suboptimal coronary flow by multivariable logistic regression analysis (adjusted HR = 2.031, P = 0.002).

Their findings suggest that cautious assessment for early risk stratification should be taken into consideration according to the initial MI patient characteristics although their study has several potential limitations as a nonrandomized study. I look forward to further studies on the optimal timing and aggressiveness of revascularization in MI.

Disclosures

Conflicts of interest: None

References

