Long-term outcomes of beta-blocker use in elderly patients without left ventricular systolic dysfunction after percutaneous coronary intervention for acute myocardial infarction

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Background: The use of beta-blocker for elderly patients without left ventricular systolic dysfunction (LVSD) after percutaneous coronary intervention (PCI) for acute myocardial infarction (MI) was uncertain. Additionally, limited data was available on long-term outcomes of beta-blocker use in elderly patients who have undergone PCI for acute MI and without LVSD.

Purpose: We aimed to investigate the long-term clinical benefit of beta-blocker use in elderly patients underwent PCI for acute MI and without LVSD.

Methods: Among 13,104 patients with acute MI who have undergone PCI in a nationwide, prospective, and real-world registry, 2,566 elderly (defined as ≥70 years) patients without LVSD (defined as EF <50%) were included. 2,063 patients were prescribed with beta-blocker, and 503 patients were not. The major adverse cardiac events (MACE; cardiac death, recurrent MI, any revascularization, readmission due to heart failure [HF], stroke, or definite/probable stent thrombosis [ST]) and the components of MACE were compared in multivariable Cox regression, propensity score (PS) matched, and underwent PS-adjusted analyses.

Results: During a median follow-up of 998 days, MACE, all-cause death, and cardiac death occurred in 560 patients (21.8%), 374 patients (14.6%), and 224 patients (8.7%), respectively. The beta-blocker group had significantly lower rates of MACE (entire: 20.9% vs. 25.4%, hazard ratio [HR] 0.66, 95% confidence interval [CI] 0.58-0.76, p=0.03; PS-matched: n=986, 20.3% vs. 25.8%, HR 0.69, 95% CI 0.61-0.78, p<0.001), all-cause death (entire: 12.9% vs. 21.5%, HR 0.55, 95% CI 0.44-0.69, p<0.001; PS-matched: 11.8% vs. 20.9%, HR 0.58, 95% CI 0.47-0.72, p<0.001), and cardiac death (entire: 7.7% vs. 13.1%, HR 0.54, 95% CI 0.41-0.69, p<0.001; PS-matched: 7.3% vs. 13.5%, HR 0.57, 95% CI 0.43-0.79, p<0.001) than the no beta-blocker group. There were no significant differences in the risks of recurrent MI, any revascularization, readmission due to HF, stroke, and definite/probable ST between the groups. The lower risk of MACE in the beta-blocker group than in the no beta-blocker group was consistently observed in the subgroup analyses. In patients ≥80 years, beta-blocker versus no beta-blocker groups showed the reduced rates of MACE, all-cause death, cardiac death, recurrent MI, any revascularization, readmission due to HF, stroke, and definite/probable ST, but insignificantly.

Conclusions: We showed that from nationwide registry, the use of beta-blocker was associated with improved long-term clinical outcomes compared to the no use of beta-blocker in elderly patients without LVSD after PCI for acute MI.