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

J.C. Choe1, S.H. Lee1, J.H. Ahn1, J.S. Park1, H.W. Lee1, J.H. Oh1, J.H. Choe1, H.C. Lee1, K.S. Cha1, M.H. Jeong2

1Pusan National University Hospital, Department of Cardiology, Pusan, Korea (Republic of)
2Chonnam National University Hospital, Department of Cardiology, Gwangju, Korea (Republic of)

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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 13104 patients with acute MI who have undergone PCI in a nationwide, prospective, and real-world registry, 2566 elderly (defined as ≥70 years) patients without LVSD (defined as EF <50%) were included. 2063 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 0.41-0.72, 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.