Combination of nicorandil and beta-adrenergic receptor blockers in patients with coronary heart disease: a real-world observational study

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Funding Acknowledgements: None.

Background and objective: Nicorandil and beta-adrenergic receptor blockers (BBs) are commonly used anti-anginal drugs. However, the effect of combined nicorandil and BBs compared with that of BBs alone on long-term clinical outcomes in patients with coronary heart disease (CHD) remains undetermined. Accordingly, a real-world observational study was performed to assess the long-term potential of nicorandil combined with BBs in Chinese patients with CHD.

Methods: A multicenter retrospective cohort study involving two tertiary healthcare institutions in our city was performed. Adult patients who had been hospitalized for CHD and treated for angina with a combination of nicorandil and BBs or BBs alone between August 2002 and March 2020 were included. The effect of different treatments on the cumulative incidence of major adverse cardiovascular events (MACE) and their components (myocardial infarction [MI], stroke, and all-cause mortality) within a follow-up duration of 2.5 years were analyzed using Kaplan–Meier survival curves. An inverse probability of treatment weighting (IPTW) method was used to adjust for the possible effect of confounding factors. The hazard ratio (HR) and corresponding 95% confidence interval (CI) were calculated using a Cox regression analysis. Sensitivity analyses based on IPTW with trimming or limited to patients admitted after January 1, 2012, were performed to evaluate the robustness of the findings.

Results: Overall, 4,669 patients receiving the combined treatment and 12,243 receiving BBs alone were included. After IPTW, the results demonstrated that the combined treatment was associated with a significantly reduced incidence of MACE (HR 0.80, 95% CI: 0.73–0.87, P < 0.0001)(Figure 1) and stroke (HR 0.48, 95% CI 0.42–0.54) but not of MI (HR 1.03, 95% CI 0.92–1.15) or all-cause mortality (HR 0.93, 95% CI 0.64–1.37). Interaction analyses were performed for the following subgroups: age (younger than 65 or is and older than 65 years), gender, acute coronary syndrome (ACS), smoking, drinking, revascularization, diabetes and hypertension, and showed a favorable consistency with the primary outcome (Figure 2).

Conclusion: A combined anti-angina treatment of nicorandil and BBs may be more effective than a treatment of BBs alone in reducing the long-term incidence of MACE in patients with CHD.
The forest plot of the subgroup analysis