

## Editorial



# Role of $\beta$ -Blockers in Chronic Coronary Artery Disease Management in the Percutaneous Coronary Intervention Era: Good Symptom Control or Something More?

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$\beta$ -blockers provide survival benefits to patients with myocardial infarction (MI) or heart failure with reduced ejection fraction and effectively reduce the mortality and/or incidence of cardiovascular events.<sup>1-4)</sup> However, there is no definite evidence of survival benefits of  $\beta$ -blockers in chronic coronary artery disease (CAD). Nevertheless,  $\beta$ -blockers are recommended as Class IA treatment on the current chronic CAD guidelines for effective symptom control mediated by a reduction in the myocardial oxygen demand with left ventricular wall stress through heart rate and myocardial contractility reduction.<sup>5)</sup> Regarding the indications for revascularization in patients with chronic CAD, the persistence of symptoms despite optimal pharmacotherapy and significant CAD is confirmed by anatomical and/or functional assessment.<sup>6)</sup> However, only a few observational studies have assessed the clinical benefits of  $\beta$ -blockers in patients with chronic CAD undergoing percutaneous coronary intervention (PCI).<sup>7)8)</sup>

Park et al.<sup>9)</sup> demonstrated that the  $\beta$ -blockers were not associated with outcome improvement, including mortality, in patients with chronic CAD undergoing PCI. Even different doses and types of  $\beta$ -blockers showed no significant differences in the outcomes, including mortality. However, in patients with previous MI,  $\beta$ -blockers provided benefits of mortality reduction in that study. The strength of their study was that patients who were maintained on  $\beta$ -blockers after discharge were included and their data were analyzed according to the different doses and types of  $\beta$ -blockers during the study follow-up. These meticulous efforts could be the basis for the evaluation of the clinical benefit of continuous  $\beta$ -blocker administration in patients with chronic CAD undergoing PCI, not to whether they received  $\beta$ -blockers at specific time-points, such as at discharge or immediately after PCI. Moreover, a subgroup analysis of this study showed that  $\beta$ -blockers could provide the clinical benefits of reducing mortality in patients with previous MI with or without revascularization. Although the observational study had inherent limitations, its results suggest that  $\beta$ -blockers should be prescribed for chronic CAD patients with prior MI with or without revascularization for survival benefits, not just for symptom control.

**Conflict of Interest**

The authors have no financial conflicts of interest.

**Data Sharing Statement**

The data generated in this study is available from the corresponding author upon reasonable request.

**Author Contributions**

Conceptualization: Roh JW, Kim Y; Data curation: Roh JW, Kim Y; Formal analysis: Roh JW, Kim Y; Funding acquisition: Kim Y; Investigation: Roh JW, Kim Y; Methodology: Kim Y; Supervision: Roh JW, Kim Y; Validation: Roh JW, Kim Y; Visualization: Roh JW, Kim Y; Writing - original draft: Roh JW, Kim Y; Writing - review & editing: Roh JW, Kim Y.

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However, there are no data on the role of symptom control by  $\beta$ -blockers in patients with chronic CAD in the current study. Nonetheless,  $\beta$ -blockers are highly effective in reducing symptoms of angina, improving the exercise capacity, and diminishing the requirement for sublingual nitroglycerin in chronic CAD, regardless of PCI.<sup>10</sup> Therefore,  $\beta$ -blockers should be prescribed to patients with chronic CAD undergoing PCI who require control of heart rate and symptoms regardless of previous MI or revascularization. In addition,  $\beta$ -blockers are recommended in patients with heart failure with reduced ejection fraction (<40%), although this study did not show the clinical benefits of  $\beta$ -blockers in those patients. Therefore, this suggests a need for conducting randomized control trials that accurately evaluate whether  $\beta$ -blockers provide any benefit in chronic CAD in PCI era.

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