Lower Targeted Beta-Blocker Dosage in Asian Population: a Pilot Study in Heart Failure and Coronary Artery Disease Patients

Hans Nuari
Joey Martinus Sidarta
Elizabeth Marcella
Karliina Aferinda
Carol Natasha
Vito Damay
Michael Tanaka
Melisa Aziz
Indah Sukmawati

Introduction: It is still being discussed regarding up-titration of beta-blocker as an important therapy of heart failure with reduced ejection fraction (HFrEF) and coronary artery disease (CAD). Up-titration of beta-blocker was associated with lower morbidity and mortality. Do we need to achieve targeted heart rate (50-60 b.p.m.) or maximum dose to obtain desired therapeutic effect? According to high profile studies, bisoprolol was suggested to be up-titrated to maximum of 10 mg daily. Difference in patient characteristics, such as race and age, may associate with heart rate response to beta-blocker. There are less data regarding this in Asia-Pacific, particularly in Indonesia. This preliminary study aims to reveal a real-world heart rate response of beta-blocker dosage in Asian population, particularly in Indonesia, also to discover association between patient characteristic and beta-blocker dosage.

Methods: Samples were outpatient subjects of Siloam hospital (Type-B / Regional hospital), Tangerang. Inclusion criteria were HFrEF and CAD patients treated at least 2 months with a tolerated beta-blocker (bisoprolol) dose, 20-70 year old. Exclusions were fever/systemic infection, respiratory insufficiency, on digoxin/ivabradine therapy, thyroid disease, and pregnancy.

Result: This study enrolled 150 Asian patients. From 94 patients (56 male; 38 female) with heart rate of 50-60 b.p.m. (mean: 56.79 ± 2.90 b.p.m.), 77 patients (81.91%) were treated with less than 5 mg bisoprolol. This result was much lower compared to European studies. There is a significant difference between age and bisoprolol dose by T-test (p: 0.019). Mean age 60.51 ± 9.90 year on bisoprolol <5mg, compared to 54.12 ± 10.32 year on bisoprolol ≥5 mg. Gender and body measurements, however, are not associated with bisoprolol dose.

Conclusion: In this study, most patients (81.91%) need lower than daily 5 mg bisoprolol to achieve heart rate reduction target of 50-60 b.p.m. Elderly is significantly associated with lower bisoprolol dosage to achieve heart rate reduction target. Thus should be part of consideration in real world practices, with respect to dose related benefit of beta-blocker. More study across Asia-Pacific is suggested.