Letter to the Editor

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Statins for Patients with Cardiogenic Shock

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To the Editor,

Sim et al.[1] should be congratulated for their meticulous analysis of a large and complete dataset following patients with acute myocardial infarction for more than 2 years. They concluded from propensity score analyses that statins were associated with decreased in-hospital mortality and 12-month adverse cardiac events. Their conclusions are debatable.

First, the inclusion criterion–Killip 4, a proxy for cardiogenic shock (CS)–is an issue. The population does not reflect real CS as severity indicators (acute kidney injury, <5%; mechanical ventilation, 38%) and mortality (–23%) are low. Furthermore, major prognostic markers such as extra-renal replacement, serum lactates and catecholamine use are lacking. Thus, the study evaluates the prognosis impact of statin prescription in "serious" ST segment elevation myocardial infarction (STEMI) (intraaortic balloon pump, 28%; cardiac arrest, 18%) with a poor definition of CS.[2]

The Kaplan Meyer curve shows that most deaths occur early during the hospital stay, and this is an obvious survival bias. Patients with severe presentation and rapid death may not have received statins. In a large registry spanning over three decades, patients with STEMI with CS were less likely to receive optimal medical treatment with betablockers, aspirin and lipid lowering agents than those without CS (20% vs. 31%, p<0.001).[3] In order to deal with survivor bias, we examined statin prescription in patients with ischemic CS surviving the initial phase of CS. In our retrospective study of 249 patients with CS of varying etiology, hospital mortality was high, 46%.[4][5] Fifty patients survived the acute phase, but died in hospital. Statins were prescribed to 80 patients after an intensive care unit (ICU) stay (chi^2: statins 32/80, no statins, 18/25; p=0.01). Statins were associated with decreased mortality, but this association was no more significant after adjustment. This association and findings from Sim et al.[1] findings are still subject to confounding bias, despite propensity score analysis. However, the results of both studies suggest that statins should be considered in patients with ischemic CS after the acute phase or ICU discharge.

Patients with post-MI CS receive many necessary medications: sedation with midazolam and sufentanyl, anti-thrombotics such as aspirin, clopidogrel and heparin, hemodynamic support with dobutamin and norepinephrine, and often ulcer prophylaxis and antibiotics. Adding a statin as a tenth medication might expose the patient to adverse drug reactions in the acute phase. Statins can cause serious adverse events including muscular necrosis and acute renal failure.[6] The last is an independent factor of morbidity and mortality in the ICU.[7] Before recommending statins for patients with CS, there needs to be careful consideration in the form of a randomized controlled trial in a subset of patients presenting with STEMI who later developed CS. If statins are not associated with adverse outcomes, a prospective, controlled study addressing this issue could provide further information.

In conclusion, statins are associated with decreased mortality in retrospective studies of post-MI CS. Only a prospective, controlled study can explore the prognostic impact of statins in the acute phase of CS. However, administration of statins is strongly suggested as soon as CS is resolved.

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• The authors have no financial conflicts of interest.

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Response

Author's Reply to the Letter from Sébastien Champion

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We are delighted that our article "Effect of Early Statin Treatment in Patients with Cardiogenic Shock Complicating Acute Myocardial Infarction" published in Korean Circulation Journal[1] has aroused interest and comment on the efficacy of statin therapy in patients with acute myocardial infarction and cardiogenic shock (CS).

In the present study, CS was defined as Killip class IV heart failure, based on the presence of systemic hypotension and signs or symptoms of organ hypoperfusion perceived by the physician to be caused by a low cardiac output. However, the cause of CS was not separated in the Korea Acute Myocardial Infarction Registry and the distinction between CS from LV failure and from other etiologies, such as predominant right ventricular shock or mechanical complications, was not possible. This may have led to the lower mortality and less severity indicators mentioned by Dr. Champion.

Since CS patients are excluded in most clinical trials, only a few retrospective studies are currently available on the benefit of statin in patients with CS complicating acute myocardial infarction.[2-4] In our study, all patients received revascularization and early statin treatment mostly within 2 days (90%) from admission. Even though adjustment was made using propensity score analysis including 63 variables, unmeasurable factors may still have existed and affected the study results.

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