

Author Reply to Letter to the Editor: Drug-Eluting Stents versus Bare-Metal Stents in Taiwanese Patients with Acute Coronary Syndrome: An Outcome Report of a Multicenter Registry

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The article entitled “Drug-Eluting Stents versus Bare-Metal Stents in Taiwanese Patients with Acute Coronary Syndrome: An Outcome Report of a Multicenter Registry” was published in the Journal of Acta Cardiologica Sinica in November 2014.¹ Several experts offered constructive comments about this article in the ACS letter to the Editor section, and their comments focused on two primary points. First, that the 1-year survival benefit of drug-eluting stents (DES) group should be adjusted by the patients’ baseline renal function and in-hospital acute kidney injury (AKI). Second, the results regarding mortality differences shown in the article¹ and another systemic review² were inconsistent between patients treated with implanted DES and bare-metal stents (BMS).

Although we could hardly list all variables potentially affecting the outcome in the article, I concur with the experts’ comment indicating that baseline renal function and in-hospital AKI should be adjusted when investigating clinical outcomes between acute coronary syndrome (ACS) patients treated with implantation of DES and BMS. I am unaware of the changes in cardiovascular risks at 1 year after adjustment by baseline renal function and in-hospital AKI because the analytic center

organized for the registry has been terminated. I suppose that the 1-year cardiovascular outcomes determined using Kaplan-Meier analysis should remain unchanged between the DES and BMS groups, even taking into account the estimated glomerular filtration rate (eGFR) at baseline. I would also speculate that the adjusted risks by several variables including baseline eGFR for a variety of cardiovascular composites ($p < 0.01$ for all) would remain statistically powerful between the groups. However, the marginal differences for all-cause mortality ($p = 0.026$) and target vessel revascularization ($p = 0.035$) are likely to be challenged (Table 3). On the other hand, it is well-documented that chronic kidney disease (CKD) is a powerful independent predictor for clinical outcomes in patients receiving stentings.³⁻⁷ Nonetheless, the values of baseline eGFR may be influenced by and/or accompanied by several clinical circumstances during the event of ACS.³⁻⁷ According to the 2012 Kidney Disease Improving Global Outcomes (KDIGO) clinical practice guideline, CKD is defined as kidney damage or $eGFR < 60 \text{ ml/min/1.73 m}^2$ for a period exceeding three months.⁸ Therefore, the researchers did not accurately determine “true” CKD or the stages of CKD merely based upon one value of serum creatinine recorded in each case report form without assessing renal function for 3 months or more. Thus, the incidence of CKD (33.6%) could possibly have been overestimated.^{5,6} A proportional number of cases with CKD previously identified by one value of $eGFR < 60 \text{ ml/min/1.73 m}^2$ may be those cases with “secondary and/or transient” renal dysfunction.

In addition, renal function of $eGFR < 60 \text{ ml/min/1.73 m}^2$ compared with $> 60 \text{ ml/min/1.73 m}^2$ at baseline was reported to be associated with higher rates of negative factors such as elderly, hypertension, diabetes mellitus,

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dyslipidemia, history of cardiovascular diseases, shock on presentation, multi-vessel coronary disease, and so on.³⁻⁷ These negative factors, including renal dysfunction, may account for the worse clinical outcome.³⁻⁷

Moreover, the impact of implanted DES versus BMS on mortality in ACS patients remains controversial.⁹⁻¹² Additionally, physicians should not only be concerned with patient mortality, but other clinical endpoints as well. As described in the "Discussion" section of the article (page 560-561), the differences in mortality as analyzed from the registry studies and randomized controlled trials (RCTs) are inconsistent.⁹⁻¹² It is reasonable that the systemic review the experts referenced that enrolled more than 14,500 patients with coronary artery disease (not all ACS patients) in 47 RCTs showed no statistically significant difference in mortality between DES and BMS groups.² In contrast, the present result regarding survival outcome is compatible with other results from several registry studies.⁹⁻¹² Taken together, the experts provided their constructive comments and highlighted the points which may remind researchers to consider the effect of baseline renal function, CKD and/ or in-hospital AKI on cardiovascular outcome in subsequent study designs. In conclusion, we suggest that there is merit to the idea that the effect of renal function on cardiovascular outcome should be considered, and to assess renal function exceeding 3 months in designing further similar studies.

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