

## Letters to the Editor

### **N-terminal Pro B-Type Natriuretic Peptide, High-Sensitivity Cardiac Troponin T, and Hibernating Myocardium in Patients With Ischemic Heart Failure**



#### **To the Editor:**

Zelt et al. examined the relationship between N-terminal pro-B-type natriuretic peptide (NT-proBNP), high-sensitivity cardiac troponin T (hs-cTnT), and the extent of hibernating myocardium and scar tissue in 39 patients with ischemic left ventricular dysfunction and heart failure.<sup>1</sup> For the prediction of hibernation, the area under the receiver operating characteristic curve for NT-proBNP and hs-cTnT was 0.76 and 0.78, respectively. The adjusted odds ratio (95% confidence intervals) of Log (NT-proBNP) and Log (hs-cTnT) for > 10% hibernation was 8.83 (0.15-515.59) and 8.57 (0.90-82), respectively. I have some concerns about the study.

First, the authors concluded that serum NT-proBNP and hs-cTnT were associated with the presence and extent of hibernating myocardium, especially in patients with significant scar tissue. They adjusted for ejection fraction, age, estimated glomerular filtration rate, and reported 7 hibernation events. The low number of events makes it difficult to establish stable estimates in logistic regression analysis.<sup>2</sup> In addition, the coefficient of determination in the multivariate regression analysis, which is the adjusted  $R^2$  value, was not presented for the prediction of hibernation. Furthermore, multiple regression analysis requires  $\geq 10$  subjects per variable for stable estimation.<sup>3</sup> Taken together, further study in which an adequate enough number of events can be analyzed is needed to assess the association between NT-proBNP, hs-cTnT, and the extent of hibernating myocardium.

Additionally, receiver operating characteristic curve analysis is a univariate procedure. Although the area under the curve

by NT-proBNP and hs-cTnT produced moderate accuracy, a significant value does not guarantee the ability to predict the hibernation of myocardium.

Finally, the authors did not simultaneously include NT-proBNP and hs-cTnT in their multivariate analyses. Because the presence of these biological markers might have multiple meanings, the combination of NT-proBNP and hs-cTnT would be useful in the analysis for predicting hibernation. There is a critical report on how to use logistic regression analysis for prediction<sup>4</sup>; the application of the statistical procedures used in this study should be addressed to allow the authors to be able to specify the association.

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#### **Disclosures**

The author has no conflicts of interest to disclose.

#### **References**

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