【 LETTERS TO THE EDITOR 】

Authors' Reply: How to Construct Novel Criteria for Predicting Complication with Infectious Endocarditis

The Authors Reply We greatly appreciate Dr. Imamura providing us very attractive suggestions for our study (1). In our study, multivariate Cox proportional hazards models showed that only the Embolic Risk French Calculator (2) was an independent predictor for the composite of embolic complications, cardiac surgery, or death. Regarding new embolic events, however, in addition to the French Calculator, hypertension, multivalvular/prosthetic valve infection, and an increased B-type natriuretic peptide (BNP) level were also significant predictors, as Dr. Imamura stated. Since hazard ratios were evident for each parameter, we realized we would be able to construct novel criteria for more powerfully predicting new embolic events-this was quite a 'scales falling from the eyes' moment for us! We will immediately begin work creating these novel criteria.

One way in which we plan to do this is to modify the French Calculator by incorporating additional risk parameters, such as hypertension, multivalvular/prosthetic valve infection, and an increased BNP level. However, creating a modified French Calculator seems very difficult, as analyzing the French Calculator algorithm is not simple. Another way of creating novel criteria is to develop the criteria as a risk score using additional risk parameters combined with the conventional French Calculator with the associated hazard ratios. We attempted to calculate the optimal cut-off values of vegetation length to predict composite events as well as new embolic events using receiver operating characteristics curve analyses. Consequently, the cut-off value for predicting composite events was still 10 mm (AUC=0.775, p< 0.0001), while the optimal cut-off value for predicting new embolic events was determined to be 12 mm [area under the curve (AUC)=0.657, p=0.05], although its predictive power seemed a little weak (Figure). We can incorporate this cut-off value into the modified French Calculator or the novel criteria. We are going to reanalyze our data using our own novel criteria in order to achieve more powerful event prediction.

Again, we thank Dr. Imamura for his valuable suggestion.

Composite events

New embolic events

Cut-off value=10
AUC= 0.775
Sensitivity=0.75
Specificity=0.71
p<0.0001

Cut-off value=12
AUC= 0.657
Sensitivity=0.60
Specificity=0.76
p=0.05
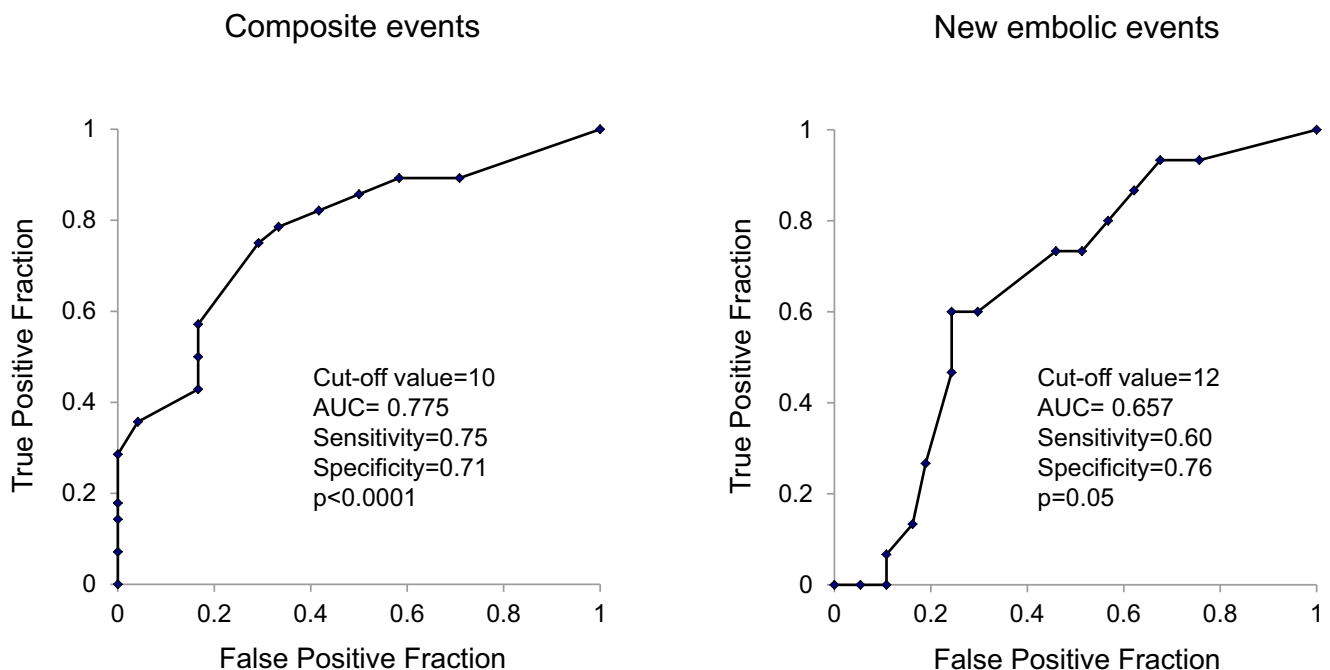
Figure. Receiver operating characteristics curve analyses for predicting composite events (left) and new embolic event (right) by vegetation size.

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References

1. Saito F, Toyoda S, Arikawa T, et al. Prediction of acute-phase complications in patients with infectious endocarditis. Intern Med **58**: 2323-2331, 2019.
2. Hubert S, Thuny F, Resseguier N, et al. Prediction of symptomatic embolism in infective endocarditis: construction and validation of a risk calculator in a multicenter cohort. J Am Coll Cardiol **62**: 1384-1392, 2013.