Reply: Objective nutritional index as a simple and effective tool for the assessment for mortality risk after cardiac surgery

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Impact of preoperative malnutrition assessed by CONUT score on 1-year mortality

Higher CONUT score was associated with higher 1-year mortality.

*CONUT score, Controlling Nutritional Status score
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Central Picture Legend: Higher CONUT score was associated with higher 1-year mortality after cardiac surgery.
We thank Victorio C. Carosella for his thoughtful and valuable comments regarding our article. We agree that a risk score cannot replace clinical judgment in predicting a patient's risk before surgery and that it would be ideal to conduct an omnidirectional evaluation for a more accurate prediction. As Carosella commented, although nutritional assessment, one of four parameters of frailty, is an important measure for risk assessment, this assessment might be further improved by assessing mobility, cognitive status, and activities of daily living as well. However, evaluation of mobility, cognitive status, and activities of daily living take significant resources and time. They require patient cooperation and are not possible for patients with communication disabilities. In addition, the complexity and subjectivity of these measures hinder their routine application in preoperative evaluation.

In contrast, the Controlling Nutritional Status (CONUT) score, Prognostic Nutritional Index, and Geriatric Nutritional Risk Index are simple and objective nutritional risk screening tools, based on standardly available laboratory parameters (serum albumin, lymphocyte, and cholesterol). Our study shows that these nutritional indices are independent predictors for 1-year mortality after cardiac surgery, and the CONUT score combined with the EuroSCORE II significantly improves the predictive accuracy for mortality compared to the EuroSCORE alone. Our findings demonstrate the validity of objective nutritional assessments in cardiac surgical patients, and therefore, we suggest that a nutritional assessment using these simple nutritional indices should be performed before surgery. We do not claim that a nutritional index alone is better than a comprehensive battery of tests related to frailty. However, frailty and malnutrition coexist as geriatric syndromes and are closely related. A correlation between frailty and nutritional status has been demonstrated in several studies, and malnutrition is strongly associated with frailty, as evaluated by several methods, including Frailty Instrument of the Survey of Health, Ageing and
Retirement in Europe (SHARE-FI)\textsuperscript{4}, FRAIL scale\textsuperscript{3}, and Fried criteria\textsuperscript{5}. As a more accurate assessment of patient risk can better predict prognosis, an objective nutritional index is a simple and effective tool for preoperative assessment that should be an integral component of predictive algorithms for mortality risk after surgery.

**Reference**


