Functional survival: Alive and better

Joseph C. Cleveland, Jr, MD

From the Cardiac Transplantation Program, Department of Surgery, Division of Cardiothoracic Surgery, University of Colorado Anschutz Medical Center, Aurora, Colo.

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Address for reprints: Joseph C. Cleveland, Jr, MD, Professor of Surgery, Vice Chair, Faculty Affairs, Surgical Director, Cardiac Transplantation, Mail Stop C-310 Academic Office Building 1 12631 E 17th Ave, Room 6602, Aurora, CO 80045 (E-mail: joseph.cleveland@ucdenver.edu).

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The complex interaction of aging and the pathobiology of frailty intersect daily in our evaluation and treatment of patients with cardiovascular disease. Although a precise definition of frailty is still lacking, several different frailty assessment tools exist, including the Fried scale¹ and such simple measures such as a timed 5-meter walk test.² Most would agree, however, that frailty is characterized by a limited physiologic reserve to stressors and a heightened vulnerability to these stressors.³ Frailty manifests as slowness, sarcopenia, weakness, reduced mobility, and exhaustion. One of the simplest tests to assess frailty is the 5-meter walk test.^{2,4} If a patient cannot walk 5 meters in less than 6 seconds, this is predictive of a tripling of operative mortality or major morbidity after cardiac operations.

Frailty's relevance to cardiac surgery has been extensively characterized in the surgical and transcatheter valve treatment of aortic stenosis.^{5,6} Across all cardiac surgical operations, however, frailty exerts a strongly negative influence on outcomes. With this background, Lytwyn and colleagues⁷ examine in their article in this issue of the *Journal* whether frailty has any effect on functional survival. Functional survival as defined in this study is perhaps one of the most sought after outcomes by our patients. Functional survival means that one is alive and has a health-related quality of life that is meaningful. Indeed, Lytwyn and colleagues⁷ choose to set the cutoff of a EuroQol-Visual Analogue Scale score greater than 60 as the benchmark for functionality. For reference, values lower than 60 are commonly observed in patients with malignancy and renal failure. Lytwyn and colleagues⁷ cleverly added frailty assessment to a common risk score, the EuroSCORE II. They observed that the presence of frailty consistently improved the accuracy of the EuroSCORE II. When frailty was present, there was a 2.5- to 3.5-fold risk of poor functional survival after cardiac surgery.

What key takeaway messages can we now glean from frailty assessment in cardiac surgical patients? (1)

Two of the pathways leading to the phenotype of frailty.

Central Message

Frailty assessment should be part of the heart team's evaluation. The presence of frailty portends inferior short- and intermediate-term outcomes after cardiac surgery.

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Frailty consistently portends poor short- and intermediate-term (1-year) functional survivals. (2) Frailty is additive as a risk factor to contemporary cardiac surgical risk models, such as the Society of Thoracic Surgeons and EuroSCORE models. (3) The heart team should assess frailty as an important preprocedural step.

Finally, it would be inappropriate to conclude that we should not offer therapies to patients with frailty. We must seek a deeper understanding of the interaction of frailty and cardiac surgery to determine at what point frailty is so dominant in a patient's decline that we approach futility. Clearly, the ability to counsel patients regarding realistic outcomes after cardiac surgery is an important part of ensuring appropriate counseling of patients for therapies. We owe this deeper understanding of frailty to our patients as we evaluate both new and traditional therapies that seek to make our patients alive and better.

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