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Newly Proposed Classification of AS Focuses on Baseline Cardiac Damage as Outcome Predictor

Similar to tumor assessment, the strategy uses a staging system to integrate extent of cardiac damage into decision-making.

By L.A. McKeown July 26, 2017

The degree of cardiac damage at baseline may be a good predictor of 1-year survival in aortic stenosis (AS) patients following aortic valve replacement (AVR), a new study suggests. The researchers say categorizing patients based on both the level of their cardiac damage and the severity of their AS could enhance decision-making and guide timing of the replacement.

"With this paper we tried to quantify the cardiac consequences of AS," Philippe Généreux, MD (Morristown Medical Center, NJ), the study's lead author, told TCTMD. "This new staging classification stages an AS patient like [you would] a patient with cancer–stage 0, 1, 2, 3, and 4–based on the cardiac damage."

The proposed staging criteria–ranging from no extravalvular damage to right ventricular damage–are meant to be used synergistically with the currently used valvular grading classification, he said.

However, Ted Feldman, MD (Evanston Northwestern Hospital, IL), who was not involved with the study, noted that "cardiac damage" is an extremely broad term.

"It doesn't resonate with me that cardiac damage is a fair characterization of what these risk factors represent," he said.

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"The phrase 'damage' doesn't help us understand whether they are reversible to some degree. Each of these risk factors may or may not respond to having the valve replaced."

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The paper, published online July 21, 2017, ahead of print in the European Heart Journal, describes the five stages of anatomic and functional cardiac damage: no extravalvular cardiac damage (Stage 0), left ventricular damage (Stage 1), left atrial or mitral valve damage (Stage 2), pulmonary vasculature or tricuspid valve damage (Stage 3), and right ventricular damage (Stage 4).

Researchers applied the metric to 1,661 patients treated for AS in the PARTNER 2A and PARTNER 2B clinical trials. All patients underwent comprehensive echocardiographic assessment before valve replacement, and most (n = 1,107) underwent TAVR. The majority (n = 844) were Stage 2 at baseline.

At 1 year, all-cause death and cardiovascular death increased with each stage of worsening cardiac damage. For example, in a patient classified as Stage 0, the rate of all-cause death was 4.4% at 1 year versus 9.2% for Stage 1, 14.4% for Stage 2, 21.3% for Stage 3, and 24.5% for Stage 4. Furthermore, in multivariable analysis and in multiple models, the stage of cardiac damage was

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one of the strongest predictors of mortality at 1 year (adjusted HR 1.41-1.44 by each stage increase across models). The only other independent predictors of death were frailty and oxygen-dependent chronic obstructive pulmonary disease (COPD).

Généreux and colleagues say the proposed classification may have potential clinical and research utility as a means of improving risk stratification of patients prior to AVR, and by providing a tool for clinicians to better communicate risks, benefits, and post-AVR expectations to their patients. Additionally, they say, "by acknowledging some of the technical challenges, variability, and discordances in echocardiographic acquisition of currently recommended severity grading criteria, the proposed [tool] may synergistically help to better define the optimal timing of AVR by focusing on the consequences and mechanical repercussion of AS." They also suggest that the staging system could be adapted and applied in other types of valvular disease.

To TCTMD, Généreux said the next step is to validate the staging classification in other cohorts and in different degrees of severity of AS.

"The ultimate goal of this is to have an integrative, multiparametric classification of AS, involving a grading system that we already have based on

valve criteria, paired with staging classification that quantifies the extent of the disease," he added. "This is something that will help us to better understand where a patient is from a cardiac damage point of view and stop focusing only on the symptoms because [they] are the last thing to occur."

Too Much Assumption, Perhaps?

According to Feldman, the "score is a very careful and thoughtful analysis of specific predictors of poor outcome in TAVR." But he added, the very idea of "stages" implies there's a "progression of disease, and that's an assumption."

Frailty and oxygen-dependent COPD have consistently been predictors of poor outcome in prior analyses. Feldman said stratifying specific additional cardiac predictors "is really helpful, but I'm not ready to say that 'stages' is the right characterization of these very different risk factors."

He also pointed out a major limitation of the analysis, which the authors acknowledge: many subjects in the two PARTNER cohorts did not have adequate baseline echocardiographic assessments, so the findings cannot be translated to the broader population of TAVR patients, particularly those at lower risk.

Ultimately, Feldman said parsing risks and benefits of TAVR for individual patients "remains a very big challenge." He added that while the concept of

staging patients with AS in this manner is “attractive, it’s not the end of the discussion.”

Note: Généreux and co-author Martin B. Leon, MD, are faculty members of the Cardiovascular Research Foundation, the publisher of TCTMD.

Sources

Généreux P, Pibarot P, Redfors B, et al. Staging classification of aortic stenosis based on the extent of cardiac damage. Eur Heart J. 2017;Epub ahead of print.

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