JACC: CARDIOVASCULAR IMAGING
VOL. 1, NO. 3, 2008

ISSN 1936-878X/08/$34.00
PUBLISHED BY ELSEVIER INC.

iMAIL

LETTERS TO THE EDITOR

Is Quantitation a Good Value?

Detaint et al. (1) show that averaging up to 3 quantitative measures of aortic regurgitation (AR) provides prognostic value. They note that the association with mortality was significant for quantitative measures ($p = 0.05$), but not for qualitative measures ($p = 0.15$). Although the difference in mortality prediction seems small, and could have been tested directly, it makes sense that quantitative measures are more accurate than qualitative ones. Dr. Carabello (2) bemoans the limited use of quantitation by the community and ponders why this might be. I suggest that clinicians and laboratory managers may question the value of quantitation.

Although the elegant study by Detaint et al. (1) gives us evidence that quantitation has incremental benefit over qualitative reporting, the incremental cost to get this incremental benefit is not described. Where does one reach flat-of-the-curve value with quantitation? Would it not be even more accurate to average the measures of aortic regurgitation on each of 10 beats per patient taken on 3 different days? Detaint et al. (1) could not be expected to address the cost effectiveness of AR quantitation in the space allowed. However, their next step (and that of all who wish to promote any diagnostic strategy) should be to test or model how the improvement in accuracy with a new diagnostic strategy can improve patient outcome, and that any associated increase in cost is worth it to patients and society.

Paul Heidenreich MD, MS

Stanford University, VA Palo Alto Health Care System
Section of Cardiology (111C)
3801 Miranda Avenue, Palo Alto, California 94304
E-mail: heiden@stanford.edu

doi:10.1016/j.jcmg.2008.02.007

REFERENCES

1. Detaint D, Messika-Zeitoun D, Maalouf J, et al. Quantitative echocardiographic determinants of clinical outcome in asymptomatic patients with aortic regurgitation. J Am Coll Cardiol Img 2008;1:1–11
2. Carabello BA. Cardiologists: do we have the right to call ourselves physiologists? J Am Coll Cardiol Img 2008;1:12–4.

REPLY

We thank Dr. Heidenreich for his interest in our Editorial Comment (1) and respond to his query about cost effectiveness. I agree that we should have tested the cost effectiveness of quantitative assessment of coronary stenoses and of accurate measures of contractility long ago, and we did not. We still continue to use 40-year-old techniques to manage coronary disease, and one can only wonder how many needless stents were placed or how many significant lesions were missed that could have been treated more effectively with the use of better tools of assessment. That was the whole point of the editorial. Now we have the chance to apply quantitative techniques to valve disease. It would not seem to take many cases of aortic insufficiency poorly managed because of lesion misevaluation and the cost to society of those mistakes to prove cost effectiveness.

As with all cardiac evaluations, many lesions are so severe or so trivial as not to require quantification. It is the lesions in the middle where 2 to 3+ aortic regurgitation will never be good enough for me or for my patients.

Blase A. Carabello, MD

Veterans Affairs Medical Center, Medical Service (111)
2002 Holcombe Boulevard, Houston, Texas 77030
E-mail: blaseanthony.carabello@med.va.gov

doi:10.1016/j.jcmg.2008.03.002

REFERENCE

1. Carabello BA. Cardiologists: do we have the right to call ourselves physiologists? J Am Coll Cardiol Img 2008;1:12–4.

REPLY

We appreciate the comments of Dr. Heidenreich regarding quantitative assessment of aortic regurgitation (AR) (1). Dr. Heidenreich suggests that clinicians and laboratory managers may question the value of quantitation and expresses concern about the cost involved.

The issue of cost is important and should always be a preoccupation when it does not interfere with our ability to care best for patients. We are not aware of a study on cost of AR evaluation and treatment. Thus, comments on increased cost are conjectural and our practice argues to the contrary. Indeed, the 10 to 15 min involved with AR quantitation may increase the operating cost of echocardiography, reducing net operative income somewhat, but there are other expenses to be considered. In our practice, after AR quantitation, other tests aiming at AR severity assessment, such as repeat transthoracic echocardiography, transesophageal echocardiography, or aortography, are exceptionally required. The cost of any such test far exceeds the additional effort involved in quantitative echocardiography, notwithstanding potential use of magnetic resonance imaging. As an example of such a phenomenon, the decline in additional testing after quantitative valvular disease assessment has been well documented in aortic stenosis (2).

Dr. Heidenreich also raises the question of averaging multiple measurements made on multiple different days. Making multiple measurements during the same examination is quite simple with the current equipment and part of our

routine. We would be greatly concerned with the validity of a test based on a single-cycle measurement or eyeball assessment and would question the value of such a test, irrespective of its cost. Averaging measurements made on several consecutive days is an intriguing suggestion of Dr. Heidenreich. It may be of value with qualitative assessment, which is quite variable (3), but has not been part of the 2003 consensus guidelines on assessment of valve regurgitation (4).

We appreciate the advice of Dr. Heidenreich on future studies in AR, but currently the results of our prospective study are straightforward to apply. For predicting outcome (survival or cardiac events) after diagnosis, quantitative assessment of AR is superior to qualitative assessment. This superiority is not just statistical but also practical, defining a group of patients who are at high risk for complications and who would go undetected otherwise. Thus, for the echocardiographers proficient with these modern techniques, quantitative AR assessment should be part of a high-value clinical practice, will undoubtedly save society's monetary expenses by avoiding duplication of testing, and most importantly has proven its worth for patient management and long-term clinical outcome.

Maurice Enriquez-Sarano, MD

Division of Cardiovascular Diseases and Internal Medicine
Mayo Clinic, 200 First Street SW, Rochester, Minnesota 55905
E-mail: sarano.maurice@mayo.edu

doi:10.1016/j.jcmg.2008.03.001

REFERENCES

1. Detaint D, Messika-Zeitoun D, Maalouf J, et al. Quantitative echocardiographic determinants of clinical outcome in asymptomatic patients with aortic regurgitation: a prospective study. J Am Coll Cardiol Img 2008;1:1–11.
2. Roger VL, Tajik AJ, Reeder GS, et al. Effect of Doppler echocardiography on utilization of hemodynamic cardiac catheterization in the preoperative evaluation of aortic stenosis. Mayo Clin Proc 1996;71:141–9.
3. Gottdiener JS, Panza JA, St John Sutton M, et al. Testing the test: the reliability of echocardiography in the sequential assessment of valvular regurgitation. Am Heart J 2002;144:115–21.
4. Zoghbi WA, Enriquez-Sarano M, Foster E, et al. Evaluation of the severity of native valvular regurgitation with two-dimensional and Doppler echocardiography: a report from the Task Force on Valvular Regurgitation of the American Society of Echocardiography. J Am Soc Echocardiogr 2003;16:777–802.