EDITORIAL

A physiologist observing and reporting supra-pharmacologic dobutamine stress testing: can we trust them, and can we trust the results?

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Abstract

In a study, published in this issue of *Echo Research and Practice*, Ntoskas *et al*. retrospectively analyzed the safety of a cardiac physiologist performing, and interpreting, Dobutamine stress echocardiography (DSE) in of 300 patients undergoing DSE for the detection of inducible reversible ischemia, myocardial viability and valvular heart disease. While safety during the tests themselves did not appear to be compromised with this unsupervised approach, the interpretation of these DSEs causes concerns regarding broad patient safety relative to misread results.

Key Words

- coronary artery disease (CAD)
- stress echocardiography
- dobutamine
- cardiac physiologist
- safety

Dobutamine stress echocardiography (DSE) has been utilized extensively in the detection of coronary artery disease (CAD) and prediction of patient outcome (1, 2, 3, 4). Its safety has also been thoroughly investigated in the contemporary era of contrast utilization (4). The test, though, does require giving supra-pharmacologic doses (up to 40 µg/kg/min) of an inotrope to patients with potentially significant CAD. The addition of atropine (up to 2 mg) is associated with other risks associated with anticholinergic side effects. Despite all these potential complications, the administration of these agents to thousands of patients has been shown to be safe, with a low likelihood of myocardial infarction or life-threatening arrhythmias (5). With this degree of safety, the question has been raised as to whether the test could safely be performed in the absence of a physician. In a study, published in this issue of *Echo Research and Practice*, Ntoskas *et al*. retrospectively analyzed the safety of a cardiac physiologist performing, *and interpreting*, the DSEs of 300 patients undergoing DSE for the detection of inducible reversible ischemia, myocardial viability, and valvular heart disease (6). Although the expected complications of arrhythmias and hypotension were observed, the team of cardiac physiologists managed these conditions appropriately, and safety did not appear to be compromised with this unsupervised approach (6).

The COCATS 4 Training Guidelines in the United States have given specific instructions for who can perform and supervise stress echocardiograms (7). This requires the minimum performance of 150 echocardiograms and the interpretation of 300 echocardiograms before one can be expected to achieve reasonable competency in the area of regional wall motion analysis. In addition to this, one must also perform 100 stress echocardiograms in the presence of an experienced level III echocardiographer who has experience in running a stress echocardiography laboratory. The main concerning aspect of the study is that *interpretation* of the study was also done by the cardiac physiologist. Although median duration of follow-up was not reported, case notes for hospital follow-up (but not overall follow-up)

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were reviewed at 18–24 months. The majority of the referrals were for CAD assessment. Most of the studies appeared to be in patients with low to intermediate pretest probability. Although abnormal studies had high positive predictive value for detecting angiographically relevant CAD, there were seven patients in whom the study was read as negative who returned with significant complications due to multivessel CAD. Although we cannot determine the true false-negative rate in this study population, the results of this small pilot retrospective study tell us that there is a danger with the entire process of a physiologist-run program, if the interpretation of the studies is left in their hands. The authors of this study do not give us the specific training background of the cardiac physiologists in this study, and as imaging cardiologists, we are all aware of the difficulties inherent in interpreting wall motion. Although supra-pharmacologic doses of dobutamine have some potentially dangerous consequences, the pilot study by Ntoskas *et al*. reminds us that the biggest danger associated with DSE is in misinterpreting the data obtained from the study.

Declaration of interest
The author declares that there is no conflict of interest that could be perceived as prejudicing the impartiality of this editorial.

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