Author's response to reviews

Title: Multiple quantitative parameters versus visual assessment in stress echocardiography: value in clinical practice

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Author's response to reviews: see over
Reviewer's report:
The Authors investigated the diagnostic value of several parameters derived by pulsed wave Doppler myocardial imaging, color coded Doppler myocardial imaging, and speckle tracking myocardial imaging applied simultaneously during dobutamine-atropine stress echocardiography in 151 patients with no prior infarction. A vessel stenosis >50% was the criterion for significant CAD. No single quantitative parameter applicable in each myocardial segment demonstrated powerful diagnostic capability (AUC from 0.60 to 0.67). In addition, the diagnostic information derived by combining several velocity and strain/strain rate parameters into integrated regression model was at least comparable to that of standard visual assessment. These results are of potential clinical interest, evidencing the inability by new time-consuming technology to improve the performance of visual analysis of regional function during stress echo.

Comments.
1. The paper is too long and difficult to read. I suggest to shorten it consistently, avoiding to repeat in the result section data already reported in the tables. Furthermore, the discussion should focused on the main results obtained and their implication in clinical practice.

_The paper is shortened substantially by cutting the data on the combined quantitative models from the results and discussion section._

2. It is unclear what was the overall diagnostic value of dobutamine stress. Please, provide the number of ischemic results in the study group as well the sensitivity, specificity and accuracy of the test.

_New wall motion abnormalities by traditional visual assessment were found in 87 tests. Sensitivity, specificity and accuracy of visual evaluation was 92%, 76% and 84%, respectively, Youden index 0.68. (page 9 in the results section.)_

3. Please clarify when the test was interrupted (all patients seem to have reached the highest dose)

_The 85% age-predicted maximum heart rate was achieved in 137 (90.7%) patients. Other reasons for terminating dobutamine challenge were as follows: chest pain in 8 (5.3%) patients, wall motion abnormalities (1 patient), hypotension (2 patients), intolerable symptoms (1 patient) and ventricular arrhythmia (2 patients) (page 8 in results section)._

4. Coronary angiography is an imperfect gold standard but it may be even worse if set at 50% (visual assessment). All the data should be recalculated by using the conventional 70-75% stenosis severity

_Performing statistical analysis we checked the value of parameters in predicting 50% and 70% stenosis. As the results for predicting 70% stenosis did not appear better than for 50% stenosis, we left the results for 50% threshold in the manuscript by analogy with major volume of literature on stress echocardiography (f.e., MYDISE investigation, references 1, 21, 24, 25, 28 in present paper). Coronary angiography as the reference method and qualitative assessment of coronary stenosis are pointed out as the limitations of the study in the study limitations section (page 13)._
5. The overall massage of the study is clear and important but it should be given and written in a clearer way.

*Title, abstract, results and discussion are changed in order to give clearer message.*

Level of interest: An article of importance in its field
Quality of written English: Needs some language corrections before being Published

**Referee 1:**

This is an interesting study showing that quantitative methods for the assessment of stress echocardiography fail to work in the routine clinical practice when compared to conventional wall motion analysis. There are several issues that authors should address:

1. Change title which is unclear and somewhat misleading: a possible suggestion would Quantitative vs. visual stress echocardiography: comparison of different parameters.

*We suggest such title:*

*Multiple quantitative parameters versus visual assessment in stress echocardiography: value in clinical practice*

2. The patient population under investigation should be better detailed: indications to stress echocardiography; reasons to undergo stress echo; symptoms etc.

*The indication for stress echocardiography was suspected or known coronary artery disease (CAD). Exercise ECG could not be performed or did not provide definite results in 105 (69.6%) patients. Typical angina was found in 63 (41.7%) patients, while remaining patients presented atypical angina or other ischemic equivalents. This is added on the page 3 in Methods section. Other characteristics of patient population – risk profile and medical therapy – are presented in Table 1.*

3. The abstract conclusions should be modified: It is misleading to state that a model incorporating many parameters works better than visual assessment.

*The abstract conclusions is modified:*

*Visual assessment appears to be more accurate than single velocity and strain/strain rate markers in the diagnosis of coronary artery disease.*

4. In line with the previous comment, it is necessary to describe in detail how the model with more parameters was built and how the different cut-off were chosen. The results section should be modified and only the single parameters vs. visual assessment should be given.
The results section is modified, and only the single parameters vs. visual assessment are left. In order to make the paper message more clear and to avoid complicated comparison of integrated models to visual models, we decided to exclude segmental and territory models completely.

5. Sensitivity and specificity should be reported with the relative 96% CI. This is done for single parameters in Table 3.

6. Please state clearly when coronary angiography was performed in this set of patients relative to stress echocardiography.

Coronary angiography was performed in 6-8 weeks after dobutamine stress echocardiography test. (page 7, methods section)

7. There are many studies showing that these methods are not better than visual assessment. Please cite them

The citation is added to discussion on page 12-13.

8. Authors should also cite both EAE and ASE documents that do not recommend the use of these tools for stress echo. Moreover, all these technologies are under scrutiny (see Mor-Avi et al. 2011) since there is no clinical conditions in which these technologies are recommended. Please discuss.

This is done on page 13.

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.Declaration of competing interests:
'I declare that I have no competing interests'