Reviewer’s report

Title: Left Ventricular Torsional Dynamics During Exercise for LV Diastolic Function Assessment

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Reviewer: Albert Varga

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The Authors of the present paper tested the hypothesis that post-exercise LV torsional dynamics are more sensitive markers for myocardial dysfunction than resting measures. They studied 88 patients with speckle tracking echocardiography during rest and exercise and concluded that post-exercise LV torsional dynamics correlate with exercise capacity and may be a useful tool for assessing LV myocardial function in subjects with normal LVEF.

The paper is interesting, well written, with some new findings.

I have the following comments and questions which should be addressed before the publication of the paper:

1. Regarding the patients selection the Authors mentioned some exclusion criteria. What was the initial number of the patient population and how many patients did not meet the inclusion criteria?

2. On table 1, the Authors presented the clinical characteristics of the patients, divided in 3 subgroups. Not surprisingly, patients suffering of hypertension and diabetes were more frequent in the “underachieving” population. It would be also interesting to see whether the change in the torsion characteristics differed significantly in these groups from the more “healthier” population. I.e., how were the measured parameters influenced by the hypertension and diabetes? The Authors acknowledged the lack of this analysis in last paragraph of the Discussion section, but I would encourage them to perform the subgroup analysis.

3. The Authors stated that “the change in post exercise E/e’ (14.2 ±5.2, 12.8 ±4.8, 11.1 ±3, p<0.05) was statistically significant between the three groups based on achieved METS.” Please, provide the resting data, as well.

4. Although the Authors found significant correlations between many echocardiographical and clinical parameters, however these correlations were in the majority of the cases rather weak. Therefore, appreciating the enthusiasm of the Authors, I would be a bit cautious with the firm statement that “Post-exercise LV torsional dynamics correlate with exercise capacity and may be a useful tool for assessing LV myocardial function in subjects with normal LVEF.” I’m convinced that further, large scale studies should be performed and validate the usefulness of the proposed methodology.

5. To me, the most interesting finding of the present work was that: “The
increment between the pre and post exercise apical rotation was not significant in people with lower exercise capacity (group 1) whereas the group 2 & 3 patients who achieved more than 100% of their predicted METS had significantly increased apical rotation”. The Authors discussion was also focused onto this finding and the discussion is less related to the correlations.

6. The statement “While resting LVEF did not predict exercise tolerance in our cohort with no systolic dysfunction or prior diagnosis of heart failure, our study demonstrated that post exercise LV torsional dynamics CAN PREDICT exercise capacity.” should be toned down a little bit. I would say: may be associated with, or could correlate with.

7. In the methods section the Authors stated that “Patients were divided into three groups according to the percentage predicted exercise capacity adjusted for age and gender (9, 10) based on the tertiles of achieved metabolic equivalents, METS (#100%, 101-125%, #126%). However, on figures 3 and 4 the correlations were demonstrated using the total achieved METS values. Please, explain!

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests