Reviewer's report

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

Version: 1 Date: 10 November 2013

Reviewer: Ivan Stankovic

Reviewer's report:

“Left ventricular torsional dynamics during exercise for LV diastolic function assessment” by Muhammad Asrar ul Haq et al. is in general well written manuscript but I have a few concerns regarding the methodology and the data presentation/interpretation.

Major Compulsory Revisions

1. The title of the manuscript is somewhat inaccurate as LV torsion/twist was not investigated during exercise but during early recovery phase. I would suggest using “post exercise torsional mechanics” in the title and throughout the manuscript.

2. Imaging planes for measuring apical and basal rotation from the parasternal acoustic window should be parallel and perpendicular to the LV axis, i.e. basal and apical images should not be obtained from the same acquisition point, just by changing the probe angulation. This limitation can be circumvented by 3D echocardiography. The authors should describe how the images were obtained in their study.

   - In addition, the acquisition of TDI and 2D STE datasets should be better described anyway. I assume that the first paragraph of Measurements section refers to the wall-by-wall acquisition of TDI data for calculating E/e’ ratio.

3. I would refrain from using E/e’ ratio as a measure of LV filling pressure, but rather as an estimate.

4. Study population should be better characterized. Were they apparently healthy or suspected HFPEF patients? How many patients from each group fulfilled metabolic syndrome criteria? What were the reasons for lower exercise capacity of pts from Group 1?

5. Results section could benefit from better organization. Separate paragraph with E/e’ data should be provided (baseline and post-exercise values of E/e’ across the groups should be added to Table 3 or given in a separate table). Current graphic presentation of these data (graphs without errors bars and separate p-values) are not informative enough. Particularly, was there a correlation between METS and resting E/e’?

Table 2 is redundant and can be omitted.
6. A failure of pts with lower exercise capacity to increase the apical rotation post exercise is the salient finding of the study and the discussion should be organized to highlight this point.

Discussion, in its present form, is difficult to follow and at times is misleading. For instance, the authors cannot claim that they demonstrated that “the abnormalities of LV torsion and twist occurred before the reduction in the LVEF…”, as it was not investigated in the current study.

The authors should be more specific about their findings, especially about potential clinical utility of the investigated parameters. Albeit statistically significant, all observed correlations are rather weak (r<0.4) and virtually inapplicable in clinical practice.

Finally, almost identical strength of correlation between METS and post exercise LV torsion and E/e’ (0.34 and -0.33, respectively, p=0.002 for both), suggests that there is no added value of measuring post-exercise torsional mechanic. In fact, according to presented data, one should preferably calculate E/e’ for several reasons (Doppler data required for E/e’ are by far less dependent on image quality, there is no need for post-processing software and time…).

Minor Essential Revisions

1. All abbreviated terms should be spelled out on its first appearance in the text (e.g. LV in the first line of the Introduction section)

2. Please correct spelling mistakes (an angel [measurements section] to an angle, etc…)

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.