Reviewer’s report

**Title:** Noninvasive monitoring of cardiac function in a chronic ischemic heart failure model in the rat: Assessment with tissue Doppler and non-Doppler 2D strain echocardiography

**Version:** 1  **Date:** 13 January 2011

**Reviewer:** Danilo Neglia

**Reviewer’s report:**

In this paper, Dr Holinski and colleagues, apply conventional, tissue Doppler and non-Doppler 2D strain echocardiography to monitor LV regional and global function in rat hearts before and after ligation of the LAD. They document significant changes in parameters of global LV function as well as in parameters of regional function, likely in the territory of LAD, one month after ligation. The authors conclude that tissue Doppler and non-Doppler 2D strain echocardiography is a feasible method to monitor regional LV function in rats to be used to assess efficacy of intervention such as regenerative treatments.

The topic is of interest since, as the authors state, a reliable and easy way to monitor LV regional and global function in the rat ischemic model would be needed. In the present paper the feasibility of the Echo approach is well documented.

**Major Revisions**

Some concerns arise regarding the reproducibility of the measurements. For many parameters the SD values are comparable to the mean values, suggesting either a high intragroup variability and/or intrinsic variability of the measures. To differentiate between these factors, intraobserver and interobserver variability should be provided also in the present series of experiments.

**Specific Revisions.**

1. In table 1 a significant difference is reported for IVSs with identical mean values before and after MI. Please check.
2. In table 1 ranges could be expressed by lowest and highest values
3. Figures are not linked to the text
4. Figures showing individual data points before and after MI could be more explicative than bar charts.

**Discretionary Revisions**

1. In the view of this reviewer, a parallel group of sham operated animals could have been used to better assess reproducibility as well as the relevance of other confounding effects not related to LAD ligation such as those of anesthesia, etc.
2. In the discussion it could be further explained why the effects of LAD ligation on regional parameters such as radial strain extend also in adjacent regions. To this purpose comparison with reference MRI measurements and/or histologic sections, if available, could be relevant.

3. In the discussion, it could be better clarified how the combined use of TDI and non-Doppler 2D strain assessment may have added value in the assessment of regional ischemic dysfunction (and the effects of therapeutic interventions) in the rat model over more conventional measurements of LV regional and global function.

4. A limitation section could be added.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I have no competing interests.