**Reviewer’s report**

**Title:** The assessment of pressure-volume relationship during exercise stress echocardiography predicts left ventricular remodeling and eccentric hypertrophy in patients with chronic heart failure

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**Reviewer:** Adrian Ionescu

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Fabiani et al. report that, in 155 of patients with heart failure (28% in NYHA III) and with LVEF <45%, myocardial contractility, as assessed by LV elastance at peak exercise, predicted LV remodelling at 6/12 follow-up.

The paper is well written and its message clear. Its interest is somewhat restricted to the group of imaging specialists with a deep interest in heart failure. I think it is worthy of publication subject of a few (minor) modifications:

My concern is with the methodology. The outcome measure in this work is LV remodelling, defined on the basis of LV volumes and RWT. These measurements were performed by echocardiography, and the magnitude of changes in these parameters at follow-up is small enough to fall into the intra- and inter-observer margin of error for echocardiographic measurements (there is a huge literature supporting this statement - see the Pelikka paper form 2018 in Ann Int Med for the largest patient population - in the STITCH trial - looked at from the point of view of reproducibility of LV metrics). Who performed the scans? The same person each time? What is the intra- and inter-observer variability coefficient for the laboratory? These are essential questions that need clear answers before this paper can be published.

I am also puzzled by the fact that most patients 'got better' (i.e. had a decrease in LVEDV for instance) during just 6/12 of follow-up. How did this happen? Was their treatment optimised during this time? Were some of them revascularised in the mean time? Do the author mean to imply that this is explained by the 'natural history' of heart failure? If these trends were to continue across time the patients with favourable remodelling would end up normalising their LVEDV in another 12 months, and we all know that does not happen. Why choose the 6/12 cut-off for follow-up? Unless there has been some intervention, then one This touches upon another topic, which is inclusion criteria: Were these patients stable? Why was LVEF <45% (rather than 40%, or 50%) used as the inclusion criterion? Why did these patients have an echocardiogram? Was it clinically indicated or purely for research? Also, the patient population is heterogeneous. Is it certain that none had an MI during the preceding year? LV remodelling can continue for more than 1 year after the event (see, for instance, https://www.ncbi.nlm.nih.gov/pubmed/20865262).

I would also suggest referencing the consensus paper on LV remodelling (2000 - see https://www.sciencedirect.com/science/article/pii/S0735109799006300 ) rather than the 1995 paper by Jay Cohn (who is the 1st author of the consensu paper too).
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