Reviewer's report

Title: Assessment of Left Ventricular Dimensions and Primary Mitral Regurgitation Severity by 2D Echocardiography and Cardiovascular Magnetic Resonance.

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Reviewer: Stefan Buchner

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Title: Assessment of Left Ventricular Dimensions and Primary Mitral Regurgitation Severity by 2D Echocardiography and Cardiovascular Magnetic Resonance

The objective of this investigation by Van De Heyning et al. was to compare LV volume/function and mitral regurgitation severity by 2D echocardiographic and cardiac magnetic resonance imaging in patients with mitral regurgitation. They performed a study with 38 prospectively included patients which have primary at least moderate primary mitral regurgitation without signs of LV dysfunction. They found out that 2d echocardiography significantly underestimates LV volume and overestimates LVEF compared to cardiac magnetic resonance imaging. Furthermore, the measurement of regurgitant orifice with planimetry by CMR shows good agreement with the PISA by 2DTTE.

General comments

This is a well-designed study from a group with expertise in the field and addresses an interesting topic. The main conclusion that 2DTTE significantly underestimate LV volumes and overestimate LVEF in comparison to CMR is reliably and precisely straightforward. This is an important finding because in asymptomatic primary MR the optimal timing for surgery is also depending on LV morphology and function.

Perhaps attention to the following points might further strengthen the paper:

Specific comments
- Have all patients CMR? Sometimes patients are claustrophobic.
- Do you have problems with image quality?
- The authors should present distribution of eccentric jets and how this was handled with the PISA method.
- Could you perform the ARO measurement by CMR in all patients?
- At which time points the measurements of TTE and CMR were performed?
- In Table 2. the authors should present LV end-systolic diameter and LV end-systolic volume.
- The measurement of the regurgitation volume by PISA is very high with 69±38 which underline the PISA problematic regarding volumes. In routine 2D echocardiography you measures often high values which are not plausibly.

**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