Reviewer's report

Title: Novel echocardiographic techniques to assess left atrial size, anatomy and function.

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Reviewer: Gianni Pedrizzetti

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OVERVIEW: This is a review paper describing the possible usage of two image post-processing tools –originally designed for the LV- for the evaluation of left atrial (LA) global and regional EF (by TomTec 4DLVA), and LA global and segmental strain (by 2D Speckle Tracking). The clinical significance of these measurements is briefly outlined for diastolic dysfunction (including HF) and atrial fibrillation.

COMMENT: The topic is interesting and a review on this little known subject is welcome to publish. However, although the literature coverage is good, the manuscript lacks of several elements and it is largely incomplete in the content and not adequately presented.

In my opinion the manuscript requires a very extensive revision before it can be reconsidered for publication.

MAJOR POINTS:

1. The clinical relevance of the measurement (EF, Strain) obtained with the described new technologies is discussed with some superficiality and in terms of such measurements only. Strain and sizes are not discussed in terms of their added value in conjunction with other clinical assessment. This is particularly noticeable in the diastolic function section.

2. The mechanical activity of LA is discussed like that of an independent chamber, not in relation with LV. It has not been accounted that most of LA deformations are consequent of the, normally more important, LV activity. For example the elongation (peak strain – positive in the LA) is mostly due to the downward movement of the mitral plane that is a result of LV myocardial contraction, thus mostly passive not really a LA activity. The LA deformation should be discussed in conjunction with LV dynamics. As a different perspective or a consequence of the overall cardiac dynamics.

3. The presentation is editorially poor. The reader would expect a Methods section (made of the two existing subsections 3DEcho, STE), followed by Result and Discussion sections (together or separate), and a brief Conclusion. My first impression has been that of reading a preliminary version, still to be concluded.

Level of interest: An article of limited interest
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