Reviewer's report

Title: Automated quantification of left atrial size using three-beat averaging real-time three dimensional echocardiography in patients with atrial fibrillation

Version: 1 Date: 13 July 2015

Reviewer: Eustachio Agricola

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General comments

The study is interesting and potentially clinically useful. I have some remarks that should be considered in any revision, regarding particularly the patients selection and the interpretation of the results.

Major Specific Comments

About the patients selection: the exclusion criteria included decompensated heart failure, tachycardia (heart rate over 100 beats per minute). The heart rate >100 b/min is a main limitation for the use of such method. It might be useful to know what is the accuracy of LA sizing for HR >100 b/min, if the authors tested this method in a small subset of this population and how many patients were excluded for HR >100 b/min.

For practical reasons, it might be useful to know the mean time employed for the dataset acquisition and analysis.

The CT scan was used as reference standard, I personally believe that contrary to what one believes the CT is in fact overvalued and some doubts remain about the use of a reference standard. In fact, as reported by the authors in the discussion, CT overestimated LA volume compared to MRI in patients with permanent AF. However, this aspect should be most stressed by the authors to emphasize the results of the study.

On the other hand the results are suboptimal in fact an underestimation of 30.5 mL is not negligible and potentially clinically important. Therefore, in my opinion it is important to discuss very well the comparison between the values obtained with 3D and CT.

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