Reviewer’s report

Title: Cardiac Left Ventricular Myocardial Tissue Density, evaluated by Computed Tomography and Autopsy

Version: 0 Date: 25 Sep 2018

Reviewer: Jonathan Lessick

Reviewer’s report:

The authors compare postmortem LV mass by CT vs autopsy and calculate myocardial tissue density as a ratio of autopsy mass vs CT volume. They conclude that LVM correlates highly and that tissue density is higher than that reported.

This type of study is appreciated since it is indeed important to verify algorithms based on imaging with "true" values based on actual tissue.

However there are several methodological limitations.

I find it hard to understand why the authors did not compare their density findings with true density calculated as the ratio between LV mass at autopsy and its displaced volume which could have been measured as accepted by water displacement techniques. Since CT measures volumes and not mass, it would be necessary to first show that myocardial volumes are accurately determined.

Results of CT thresholding techniques are highly dependent on the threshold used. It is unclear how thresholds and window width were chosen nor whether different values were compared. It is essential to examine how these factors may affect results. In my opinion this is the probable reason for the density results obtained. Optimal thresholds may also differ for the endocardial and epicardial borders.

Naturally partial volumes effects may be important. What slice thickness was used when marking the myocardial borders?

Also, in the absence of contrast medium, it is difficult to reliably and consistently visualize the boundary between muscle and blood. In Figure 1, for example, I would definitely have marked the blood pool further towards the apex.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

'I declare that I have no competing interests'

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report
including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal