Reviewer's report

Title: Gated myocardial perfusion SPECT underestimates left ventricular volumes and shows high variability compared to cardiac magnetic resonance imaging - a comparison of four different commercial automated software packages

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Reviewer: Stephan Nekolla

Reviewer's report:

The compact paper by Hedeer et al. compares the results from automated commercial analysis packages using gated SPECT data with manually derived values utilizing MRI data in predominantly normal patients. The study does not add new information as comparisons like this were done before confirming only a modest correlation with large individual deviations. However, it expands the number of included commercial programs and underlines again the importance of using only one analysis algorithm when used in sequential studies.

The manuscript would improve substantially if more sophisticated reproducibility analysis would be added. In a clinical context, a systematic error but high reproducibility could be more relevant in serial studies as high technical accuracy but poor reproducibility die to manual analysis.

Specific comments:

p.5: the authors used the standard setting in the SPECT programs but iteratively reconstructed data. As most of these programs were developed using standard filtered backprojected data being much smoother than iterative data, one could speculate that the results differ for that reason.

p.6: in contrast to SPECT, the analysis of the MRI data was fully manual. As also the definition of short axis MR data is not automated, an inter- and intraobserver as well as inter study assessment of MRI appears to be warranted. Adding another MRI analysis program would be another important issue to improve this manuscript.

p. 6, fig 2: how was the contour information from the long axis data integrated with the short axis data in the MRI analysis?

p. 7: the study population shows a high degree of relatively normal subjects. As both modalities perform better in such a group, the clinical relevance of the conclusions would benefit from a focus on problematic cases (e.g. SPECT: defects, MRI: patients with problems holding their breath)

p.8: Underestimation EDV: why did Exini perform different in this study as compared to a previous one?

p. 10: As pointed out by previous publications in this area, one should underline
the relevance of using only one analysis algorithm when used in sequential studies.