Reviewer’s report

Title: Longitudinal Tissue Doppler Peak Strain Detects a Smaller Risk Area than Visual Wall Motion Assessment in Acute Myocardial Infarction

Version: 2 Date: 15 December 2009

Reviewer: Pier Giorgio Masci

Reviewer’s report:

The manuscript entitled: "Longitudinal Tissue Doppler Peak Strain Detects a Smaller Risk Area than Visual Wall Motion Assessment in Acute Myocardial Infarction" by Rosendahl et al. investigates the role of conventional WMSI vs tissue-Doppler imaging in assessing infarct transmurality as determined by cardiac MRI after the acute phase. The study denoted that “conventional” WMSI outperformed TDI measures.

Major Compulsory Revisions:

Overall the results are interesting, but should be shown in a more appropriate and concise manner by avoiding redundancy. Several issues have also to be addressed:

Minor Essential Revisions:
- The title seems inappropriate. Please rephrase it
- In the abstract, rephrase “mechanical opening”
- Shorten the abstract. Exclude the long undue list of "r" values for WMSI at global, segmental and regional level
- Page 8, Magnetic Resonance Imaging paragraph: “attempt to cover” does not seem proper. It is always possible to entirely cover the left and right ventricle by a stack of short-axis images
- Page 8, Magnetic Resonance Imaging paragraph: “long-axis planes (apical long-axis, 2-chamber and 4-chamber view)”. Please, explain what is the apical long-axis plane. It does not sound as a conventional long-axis view such as vertical- (or 2-chamber), horizontal(or 4-chamber) and 3-chamber views.
- Page 8, Magnetic Resonance Imaging paragraph: “Enddiastolic volume was measured from the short axis LGE images.” Please, explain this more clearly
- Why left ventricular ejection fraction was not obtained in all patients
- Page 10, Results, Global left ventricular measures: it is better to express infarct size in gram rather than volume
- Page 11, “correlation between WMSI and post PCI transmurality (p=0.88)” The authors intended “r” instead of “p” value, probably
- Page 12, Paragraph “Myocardium at risk”, it is not clear why segments with
longitudinal strain > -11% were defined “abnormal” while those with longitudinal strain < -11% were defined “normal”. Please give comments on this point.

- In discussion, global measurements, please comment on the fact that Tissue-Doppler derived deformation measures depends on angle between ultrasound and the explored myocardium. This might account for the differences between the current study results and those using speckle tracking to derive myocardial deformation.

- In discussion, Myocardial area at risk. It is incorrect to state that the determination of area at risk by SPECT can be delayed after the acute phase. On the contrary, tracer must be administered before reperfusion and myocardium has to image in the ensuing 6-8 hours.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.