Reviewer's report

Title: The prognostic value of mechanical left ventricular dyssynchrony in patients with acute coronary syndrome.

Version: 1  Date: 18 August 2013

Reviewer: Ivan Stankovic

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Using conventional dyssynchrony parameters, Westholm et al. investigated the role of LV dyssynchrony in patients with ACS and concluded that it had no incremental prognostic value in comparison to LVEF.

Their conclusion is not that surprising as the authors stated in the discussion section.

Conventional dyssynchrony parameters assess the dispersion of myocardial peak velocities or strains and may reach the cutoffs for dyssynchrony even in the absence of conduction delays. In patients with ACS, ischemia-induced regional heterogeneity of contraction would result in the detection of “dyssynchrony” by parameters based on myocardial strain. Similarly, when akinetic LV segments are pulled from actively contracting segments, velocity-based parameters may also detect “dyssynchrony”.

Therefore, in patients with ACS and regional LV dysfunction, conventional dyssynchrony parameters are most likely reflective of the extent and localization of dysfunctional myocardium only. The extent of LV dysfunction can be more easily (and reproducibly) assessed by LVEF and it is not surprising that conventional dyssynchrony parameters do not have incremental value in this setting.

Major Compulsory Revisions

1. Most of speculations above have already been raised in the discussion section, but in order to support them, the authors should make an effort to quantify the extent and localization of the LV dysfunction (e.g. WMSI, anteroseptal versus inferoposterior LV asynergy, etc…) and relate them to the dyssynchrony parameters.

2. The values of global strain, PSI and WMSI should be reported and their predictive value tested. Instead of MPI, another time-to-peak velocity parameter(s) should be tested and compared.

3. The occurrence of new MI should be removed from the composite end-point unless the authors provide the evidence from the literature that the coronary plaque rupture can be predicted by assessing LV dyssynchrony.

4. The difference between AUC curves should be formally tested (there are
methods offered by commercially available software).

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I have no competing interests.