Reviewer's report

Title: Prevalence and inter-relationship of different Doppler measures of dyssynchrony in patients with heart failure and prolonged QRS: A report from CARE-HF

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Reviewer: Luna Gargani

Reviewer's report:

This is an interesting paper, analysing the prevalence and meaning of dyssynchrony in patients included in an important trial, such as the CARE-HF trial. The analysis is well conducted and quite clear. Nevertheless, I would focus a bit more on the big issue of the lack of association between echocardiographic measurements of mechanical dyssynchrony and clinical response to CRT, especially after the PROSPECT results. The hypothesis that parameters of mechanical dyssynchrony could be useful for predicting clinical response to CRT has not been denied, it has been only demonstrated that, up to date, the available tools are not able to give us this information. The method of tissue synchronisation imaging, although promising, still shares this flaw.

Some minor comments:

Abstract.
- Please put the aim of the study after the background.
- In Methods, please indicate the age in a more comprehensible way.
- I would indicate Atrio-ventricular dyssynchrony by an acronym closer to the meaning of the expression, i.e. AVD or use LVFT as acronym for left ventricular filling time (as it is actually done in the text).
- The sentence "Inter-ventricular mechanical delay (IVMD) was measured as the difference in onset of Doppler-flow in the pulmonary and aortic outflow tracts >40 ms." Should be changed in "Inter-ventricular mechanical delay (IVMD) was defined as the difference in onset of..."

Text.
- Page 4, line 22: please remove “HF” after NYHA class. You should add that pharmacological therapy was "standard", as it actually was in the CARE-HF. This part of methods should be as more similar as possible to already published papers on CARE-HF (i.e. Eligible patients were at least 18 years of age, had had heart failure for at least six weeks, and were in New York Heart Association (NYHA) class III or IV despite receipt of standard pharmacologic therapy, with a left ventricular ejection fraction of no more than 35 percent, a left ventricular end-diastolic dimension of at least 30 mm (indexed to height), and a QRS interval of at least 120 msec on the electrocardiogram. Patients with a QRS interval of 120 to 149 msec were required to meet two of three additional criteria for
dyssynchrony: an aortic preejection delay of more than 140 msec, an interventricular mechanical delay of more than 40 msec, or delayed activation of the posterolateral left ventricular wall.)

- Page 5, line 8: "735 had an analysable baseline echocardiographic examination. (13) including 92 patients..." should be "735 had an analysable baseline echocardiographic examination, (13) including 92 patients...".

- Page 8, line 22: “to determine weather their...” should be “to determine wheather their...”

- Page 10, line 4: please remove one of the two “%” after 60.

- Page 12, line 3: what do you mean by RCTs?

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

**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.