Reviewer's report

Title: Cardiac magnetic resonance imaging parameters as surrogate endpoints in clinical trials of acute myocardial infarction

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Reviewer: Colin Dominic Chue

Reviewer's report:

The manuscript presented is a comprehensive review of a number of cardiac MRI measurements with potential use as surrogate endpoints in research studies. The manuscript is well written with a style that is clear throughout and is particularly relevant given the increasingly widespread use of MRI.

Major Compulsory Revisions

1) Page 4 Surrogate endpoints- reliability. The authors comment on intraobserver and interobserver repeatability as markers of reliability, but what about interstudy reproducibility (degree of variability when the study is repeated in the same individual)? This is particularly relevant when measurements are repeated over time, as some of the difference seen in the surrogate endpoint may be explained by interstudy variability. Are there any data on this for any of the surrogate endpoints described?

2) Page 7 Infarct size- validity and reliability. It is stated that manual tracing of infarct size shows excellent interobserver variability. Are the authors aware of the availability of any reliability data for the semiautomated methods they describe?

3) Page 13 Microvascular obstruction- comparison to alternative methods. The authors mention myocardial contrast echocardiography but do not make any comparison between this technique and CMR. Are the authors able to make a brief comparison?

4) Page 14 Left ventricular ejection fraction and volumes- comparison to alternative methods. The alternative techniques of echocardiography and SPECT are discussed, but how does CMR compare to multigated acquisition scanning (MUGA), which, although involves the use of ionising radiation, is also able to provide accurate information regarding EF and volumes?

Minor Essential Revisions

1) Page 6 line 3- is there a reference for the equation given for calculating infarct size as a percentage of left ventricular mass?

2) Page 7 line 5- typing error “und” should read “and”

3) Page 10 line 6- AAR acronym needs changing to its unabbreviated form (presumably area at risk)
4) Page 14 line 7- change “ECG” to “electrocardiographic”

5) Page 15 line 1- change “LV” to “left ventricular”

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

**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.