Reviewer's report

Title: Rapid short-duration hypothermia with cold saline and endovascular cooling before reperfusion reduces microvascular obstruction and myocardial infarct size

Version: 1 Date: 25 November 2007

Reviewer: Neel Sodha

Reviewer's report:

General

Gotberg et al have performed a nice series of experiments evaluating the use of hypothermia to limit the extent of injury after myocardial ischemia reperfusion. Key to the strength of the manuscript is the use of readily available technology and material which may facilitate its clinical utility in the future. The manuscript is well written, utilizes appropriate techniques, and draws conclusions justified by the data. The experimental intervention utilized in the study demonstrates significant reductions in myocardial infarct size after I/R, but provides little evidence of functional benefit.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Additional details regarding the functional data (HR, SV, CO) is needed.
   -Did all animals receive equivalent amounts of intravenous fluids?
   -Why were baseline MR studies for HR, CO, and SV performed in only seven animals?
   -Were core temperatures similar between groups during acquisition of post I/R functional data?
   -Please provide additional discussion as to why no significant differences were observed between groups for CO given the marked differences in infarct size. The data presented demonstrate a trend towards worse CO in animals subject to hypothermia than normothermia. Additional commentary regarding these findings would be worthwhile given cardiac output / index are followed much more commonly in the clinical setting than infarct size.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Given that VF/VT is a significant problem after myocardial I/R injury, data regarding the incidence of VF/VT would add to the paper. Please include the
incidence of VF/VT during the experimental protocol and provide discussion if there were significant differences between groups.

2. Please provide additional discussion regarding why there was lack uniform timing for the duration of I/R between animals.

Discretionary Revisions (which the author can choose to ignore)

None

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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.