Reviewer's report

Title: Cardiac condition during cooling and rewarming periods of therapeutic hypothermia after cardiopulmonary resuscitation

Version: 2 Date: 22 April 2014

Reviewer: Joseph Weidman

Reviewer's report:

In this manuscript, the authors attempt to elucidate potential cardiac benefits of therapeutic hypothermic therapy given to post-cardiac arrest patients by charting hemodynamic data at discrete temperatures during the cooling process and comparing these data with data acquired at the same temperatures during the warming process. The subject is an interesting one, and while the experiment has potential confounders, overall it is a valuable addition to the current literature on the subject. The paper is well written and appropriately organized.

Minor Essential Revisions

--Consider changing “We sought to determine whether patients expected to benefit neurologically from TH …” to “patients who benefitted neurologically”, as it appears from figure 1 that those patients with bad neurologic outcomes were not included in the final analysis.

--The methods section outline that patients whose MAPs dropped below 60 mmHg received dopamine or norepinephrine. Were these patients excluded from the study? Any change (or lack thereof) in protocol for these patients should be mentioned, as a reader might wonder about the use of inotropic agents clouding the picture regarding the benefit of TH alone on cardiac function.

--It was appropriately noted that, as the heart rate remained relatively consistent, the increase in cardiac output resulted from an increase in stroke volume. The paper may benefit from some additional discussion surrounding why the stroke volume might have increased. Is there reason to believe that this increase in stroke volume isn’t simply from the observed drop in SVRI, but rather from an improvement in contractility?

--Please consider incorporating a brief discussion of the phenomenon of reversible myocardial dysfunction following cardiac arrest. This condition generally resolves in 24-48 hours, and might have played a role in your findings. Had you been able to include a control group in your experiment, the relevance of the condition to your findings might have been more apparent. You might consider referencing either of the following:

--“Reversible myocardial dysfunction in survivors of out-of-hospital cardiac arrest” from 18 Dec 2002 JACC

--“Myocardial dysfunction after resuscitation from cardiac arrest: an example of
global myocardial stunning.” From 28 Jul 1996 JACC

--The sentence “A recent study showed similar results in that patients kept at 33C …” in the Discussion section needs an endnote/reference.

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests