Reviewer's report

Title: Acute posthypoxic myoclonus after cardiopulmonary resuscitation

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Reviewer: Jeanne Teitelbaum

Reviewer's report:

This is an interesting articles where the authors look at the origin of post-arrest myoclonus in patients undergoing moderate hypothermia after resuscitation from cardiac arrest. They postulate that recognizing the origin of such myoclonus might guide therapy and perhaps inform prognosis.

The question is an interesting one. The study, however, is retrospective and not all patients were investigated thoroughly. There is a lack of description of the myoclonus, there is incomplete electrophysiological evaluation, and those who are tested are at the discretion of the treating physician, which can introduce bias. If at all possible, it would be important to separate the primarily hypoxic arrests (hypoxia with secondary bradycardia the asystole and arrest) from the primarily cardiac arrest as the prognosis in general and the type of myoclonus are different.

The results reported are confusing, and this part should be redone to more clearly inform us on exactly how many patients had which type of myoclonus and when after injury. When referring to acute PMH, we are talking about all patients with myoclonus as stated in the abstract. This should be redefined clearly in the methods or in the results. Is all generalized myoclonus considered status? Is multifocal myoclonus automatically generalized or status? This needs to be better defined.

When stating that 12% of patients with acute myoclonus had a good outcome, it should be mentioned in the text that most of the patients without good outcome are dead, not just shown in the board. And is there a difference between focal and status?

Conclusions regarding persistant myoclonus are unreliable because of the small sample and loss to follow-up.

In the discussion, the word infaust is used. I do not know what this means. Also, the sentence: A giant SEP potential is compatible with hyperexcitability of the sensorimotor cortex and proofs the cortical origin of myoclonus in nonresuscitated patients. What is a nonresuscitated patient, a normal patient? A patient who arrested but was not resuscitated? (unlikely I suppose). This should be re-written more clearly.

In the discussion on why there could be a cortical origin without giant SEP, there needs to be alternate explanation, since drugs were present in cases with giant
SEP and this is not a valid explanation.

The rest of the discussion is acceptable. In the conclusion, I think it is too much of a stretch to say that outcome was better without again mentioning the study’s limitations.

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

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I have no competing interests