Reviewer's report

Title: Successful resuscitation from prolonged hypothermic cardiac arrest without extracorporeal life support (ECLS) – a case report

Version: 0 Date: 06 Aug 2019

Reviewer: Romain Jouffroy

Reviewer's report:

1. Do you believe the case report is authentic? Yes

2. Do you have any ethical concerns? No

Please consider if local Institutional Review Board approval or ethical approval was obtained (if appropriate) and if the patient (or their parent or guardian in the case of children under 18) gave written, informed consent to publish this case and any accompanying images. A statement to this effect should appear in the manuscript.

Comments: A statement that the patient gave written, informed consent appears in the manuscript.

3. Does the Introduction explain the relevance of the case to the medical literature? Yes

4. Does the article report the following information? Where information is missing, please specify.
   a. The relevant patient information, including: Yes to all
      - De-identified demographic information (age, gender, ethnicity):
      - Main symptoms of the patient
      - Medical, family and psychosocial history
      - Relevant past interventions and their outcomes

   b. The relevant physical examination findings: Yes

   c. Important dates and times in this case (if appropriate, organized as a timeline via a figure or table); if specific dates could lead to patient identification, consider including time relevant to initial presentation, i.e. initial presentation at T = 0, follow up at T = 1 month: Yes

   d. Diagnostic assessments, including: Yes to all
      - Diagnostic methods
      - Challenges (e.g., financial, language/cultural)
      - Reasoning and prognostic characteristics (e.g., staging), where applicable
5. Is the interpretation (discussion and conclusion) well balanced and supported by the case presented? Yes
Comments: I suggest the authors to emphasize that despite ECLS development in the last 20 years in order to rewarm hypothermic CA, when ECLS is not available it doesn't mean that the patient is deceased. This is the cornerstone of their discussion in my opinion, because when hypothermic CA occurs, the chances of success are the highest.

6. Is the anonymity of the patient protected? Please consider any identifying information in images such as facial features or nametags, whether the patient is named etc. If not, please detail below.
Yes

7. Is the Abstract representative of the case presented?
Comments: Yes

8. Does the case represent a useful contribution to the medical literature?
Comments: Yes

9. Additional comments for the author(s)?
Dear authors,
Thanks for this very interesting article on the possibility of successful cardiopulmonary resuscitation of hypothermic cardiac arrest despite the lack of extracorporeal life support. I have some suggestions and the form and the background in order to improve the quality of your manuscript.
I hope my comments will be helpful.

Form
When a acronym appears only once, you don't need to specify the acronym into parenthesis, for example: GCS, ICU, ERC, AHA
Similarly, if you specified the significance earlier, you can use the acronym, for example: ROSC, ECLS, CA
I suggest you to harmonize terms of ECLS and ECMO in the text and the figure.
In the conclusion, I would not repeat CPR duration (5:44 hours).
Background:
- Page 4 line 20: do the authors know the blood pressure value?
- Page 5 line 1: could you please comment and discuss the reason for serum potassium value despite acidosis, in the genesis and the maintenance of ventricular fibrillation cardiac arrest
- Page 5 line 50: please specify what do you mean by "despite a sensation deficit in both feet and hands"?
- Page 6 line 18: In my opinion, the core of the discussion is here: despite "ECLS rewarming is encouraged in current resuscitation guidelines", it doesn't mean that rescuers should not attempt CPR because hypothermic CA is associated with highest successful chances.
- Page 6 lines 45-46: "If a patient remains asystolic after rewarming, death most likely occurred (e.g. caused by asphyxia) before the onset of hypothermic cardiac arrest (3).": I don't understand the utility of this sentence because your case report focus on the hypothermic phase, not after rewarming. Is there a link between cardiac rhythm before and after rewarming?

**Level of interest**
Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

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If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

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Were you mentored through this peer review?

No