Author’s response to reviews

Title: Electrical storm during induced hypothermia in a patient with early repolarization

Authors:

Patrick Badertscher (patrick.badertscher@usb.ch)
Michael Kuehne (Michael.kuehne@usb.ch)
Beat Schaer (beat.schaer@usb.ch)
Christian Sticherling (christian.sticherling@usb.ch)
Stefan Osswald (stefan.osswald@usb.ch)
Tobias Reichlin (tobias.reichlin@usb.ch)

Version: 1 Date: 18 Sep 2017

Author’s response to reviews:

Dear Doctor Guerra

Thank you very much for the opportunity to revise our manuscript. We very much appreciate the critical review and helpful comments on our manuscript submitted for publication in BMC Cardiovascular Disorders.

We have incorporated the excellent comments made by the reviewer, which helped to further improve our manuscript. Please find a detailed point-by-point list of all changes made to the manuscript keyed to the reviewers’ comments below.

Reviewer #1:

Patrick Badertscher et al. described a case report of a young patient survived from a cardiac arrest followed by multiple episodes of recurrent ventricular fibrillations during hypothermia protocol in the presence of early repolarization pattern and anomalous origin of LAD. The English form is comprehensible and well written and the case is also interesting and challenging, presenting a strange and a rare clinical scenario.
I have only few suggestions:

1.) Pag 3 line 29: it sounds better "family's medical history" instead of "the medical family history".

As suggested by the reviewer we now changed "the medical family history" to "family's medical history".

Insertion: Page 3, Line 32.

2.) Pag 3 line 31: family's medical history affecting this patient is quite negative for cardiovascular disease except for sister's sick sinus syndrome treated by PM implantation: it could be interesting to specify whether the sister had a known coronary artery abnormalities: do you have such an information?

As suggested by the reviewer we tried to obtain more information on the sister’s medical history. Unfortunately, no information regarding coronary artery abnormalities was available. The patient’s sister was treated in Portugal a couple of years ago.

3.) Pag 3 line 54: how soon did you start the hypothermia protocol?

We started the hypothermia protocol at admission to the ICU. The patient suffered a ventricular fibrillation arrest around 4.00am while asleep and was brought to the hospital by helicopter. He arrived at 5.50am and was taken immediately to the cath lab, where an urgent coronary angiography was performed. The hypothermia protocol was started in the ICU at 9.00am.

4.) Pag 4 line 49: after this episode why did you not consider the surgical reimplantation of anomalous LAD?

We did consider the surgical therapy of the anomalous LAD, but decided that further risk stratification with myocardial perfusion imaging stress testing (MPI) was warranted in this case.
Due to a lack of clear guideline recommendations, the management of patients with ACAOS remains fraught with uncertainty. The MPI showed no signs of myocardial ischemia, making ACAOS and resulting myocardial ischemia a very unlikely cause of his initial VF arrest. Nonetheless, we implemented this point into our discussion.

5.) Do you have a patient's ECG previous to the first episode of cardiac arrest (e.g. previous medical documentation)? It could be interesting to see it before CPR and first DC shock.

We agree that a prior ECG would have been very interesting. This 31-year-old man had no significant past medical history. It was his first medical contact with our institution. The family physician was contacted, but no prior ECG was available.

6.) In conclusion, in general in this case, given the presence of anomalous LAD, it’s better to speak only about "early repolarization pattern (ERP)" and not about "early repolarization syndrome" as we are not completely sure that the first episode of cardiac arrest is due only to a "primary" arrhythmogenic cause (sustained by ERP).

As perfectly pointed out by the reviewer, it is very important to distinguish between ERP and ERS. In this case, we firmly believe that the initial VF arrest was primarily due to an arrhythmogenic cause and unlikely related to a coronary anomaly. The patient was asymptomatic without any complaints during daily activity and regular exercise and the VF arrest occurred while sleeping. A myocardial perfusion imaging with bicycle exercise stress testing was performed four weeks after the hospitalization and showed no signs of ischemia, making ACAOS and resulting myocardial ischemia a very unlikely cause of his initial VF arrest. We treated the patient successfully like an ERS patient, thus we think it’s legitimate to discuss the literature for ERS.

We are grateful for your critical evaluation of our revised manuscript.
Sincerely yours,

Patrick Badertscher, MD

Tobias Reichlin, MD