Reviewer’s report

Title: False elevation in Entropy but not in PSI during general anesthesia: A case report

Version: 0 Date: 20 Dec 2017

Reviewer: Francesco Barbani

Reviewer's report:

Thank you for the chance to review such an interesting contribution from Young Sung Kim and co-worker. The manuscript gives the opportunity to focus on EEG monitoring and its potential pitfalls during every day clinical scenarios; I read it with great interest and curiosity. Despite these monitors give us the opportunity to deliver to each patient exactly the best anesthesia depth, in order to prevent adverse events from under or over administration, the case here reported underline the perception that EEG monitoring systems should be used being aware of possible artifacts of signal sampling, being able as anesthesia providers, to correctly detect, avoid and interpret them.

However, please find below my comments and questions:

Major Comments:

Section "Background":

Row n. 49-50 "We report the FALSE elevation on Entropy of…"

Since there is not a Gold Standard EEG monitoring system I would suggest to blunt the term "false".

Section "Case presentation":

Row 52-54 "The patient did not complain of recall in the postoperative period"

This is an interesting topic that you should further explain or investigate: did you explicitly investigate the occurrence of recall? What kind of method or interview did you choose to do that? What was the result from the "Brice Interview" or similar investigations coming from literature? (Brice DD, Hetherington RR, Utting JE. A simple study of awareness and dreaming during anaesthesia. Br J Anaesth 1970; 42: 535-42).

Given that awareness during surgery and recall are some of the main reasons to use EEG monitoring, but not the only, I would suggest that before than sentencing "false elevation of
Entropy" this topic should be assessed in depth and not briefly explained in a few words sentence.

Figures 2 and 3

In both of these pictures you properly underline and show to the reader the quality of EEG signals sampled with the Masimo's device but, at the same time, there is no way to assess quality sampling from Datex's monitoring. Since you are reporting a potentially false elevation of a computed parameter (State Entropy and Response Entropy vs SedLine) it is fundamental to assess quality of signal sampling and graphic wave representation shown on the monitoring screen.

What I want to underline is: if I use to double check cardiac frequency on EKG signal quality, the same I would do in the case of anesthesia depth (RE/SE or BIS…) and EEG signal and waves.

Minor Comment:

Figure 1

You show the position of EEG electrodes on patient's forehead; well, their positions are slightly different and maybe they could simultaneously assess different brain areas? Moreover, why did you set Entropy's electrodes so high on forehead, almost on patient's hair? No pictures of signal's sampling are shown, did you check EEG sampling quality before starting the procedure? Masimo's electrodes, on the contrary, seems to be very well positioned and probably on the best situation to sample data.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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Please indicate the quality of language in the manuscript:

Acceptable

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