Reviewer's report

Title: Change in heart rate variability precedes the occurrence of periodic leg movements during sleep: an observational study

Version: 1 Date: 24 July 2013

Reviewer: Andrea Romigi

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Major Compulsory Revisions

The article “Change in HRV precedes the occurrence of PLMS during sleep: an observational study” regard an interesting and also intriguing issue. Recently a growing body of evidence suggested that PLMS are strictly associated with hypertension, cardio and cerebrovascular risk. The authors focused about PLMS effects on HRV and HRV changes before PLMS occurrence.

They confirmed the PLM-induced high sympathetic activation but also reported an interesting precocious sympathetic activation several seconds before PLM occurrence. The article is generally clear, although there are some methodological issues that should be addressed.

1. The small sample and the uncontrolled design may represent the most critical issue of this study. An increase of the sample size may strongly ameliorate the significance of results. However the authors should clearly state these study limitations.

2. The clinical significance of VLF is still unclear. Furthermore the analysis of VLF would require long term ECG monitoring (i.e. 24 hours) (Task Force of ESC and NASPE, 1996).

3. The different number of analysed periods should influence the data analysis.

4. Authors stated that “EEG spectral powers before the beginning of the period of PLMS”, although the utilise of only two EEG electrodes (C3 e C4) does not allow any generalisation regarding qEEG changes. In my advice authors should weaken their assertion.

Minor essential Revisions

1. The authors should specify the mean number and range of periods for each pts in each condition (with/without PLMS).

2. Why was different the duration of periods without (15 min) and with PLMS (10 min)?

3. Why the transition from PLMS to PLMS-free period was established from 5 to 10 min?

4. It may be also interesting evaluate possible correlation between PLMI severity and HRV changes.
5. Authors could also analyse further useful HRV time dependent parameters i.e SDNN-RMSSD.

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

No conflict of interest to disclosure.