Reviewer's report

Title: The Effect of Long vs. Short Duration of Electroacupuncture on Analgesia and Sensory Thresholds: A randomized study for acupuncture analgesic mechanisms

Version: 2 Date: 20 January 2008

Reviewer: Zhen Zheng

Reviewer's report:

Summary

This study aimed to assess the effect of electroacupuncture of different stimulation durations on thermal pain in humans. Cold, warm and mechanical detection thresholds, cold and hot pain thresholds and ratings to hot stimulation at pain threshold level were assessed before and after EA. EA of 15 or 30 minutes increased warm detection and hot pain thresholds and reduced pain rating. EA had no effect on mechanical detection threshold. Cold detection and pain thresholds decreased after EA. The authors concluded that longer stimulation of EA induced a sustained analgesic effect, which is likely to be mediated via central mechanisms.

Overall impression

This study addresses an important yet under studied area, that is the optimal parameters of EA stimulation. The study was well designed and the methods were clearly described in general. The EA treatment was adequate; standardized methods of detection and pain thresholds tests were employed; and the statistically analysis was appropriate. Data were generally well presented. The writing was clear and concise.

The major drawbacks of this manuscript are the arguments set in the sections of Introduction, Discussions and Conclusions and the presentation of the figures. I will outline these in detail as follows.

I recommend this manuscript to be accepted subject to compulsory changes.

Detailed Comments

Title

It is adequate. However the part "a randomized study for acupuncture analgesia mechanisms" can be deleted as the word "randomisation" often indicates more than one group being involved. In addition, this is not exactly a mechanism study. If this was one of the aims, then it has not been well articulated in the manuscript. Minor revision

Abstract
Again, I recommend deleting "randomized study". Also the conclusion needs to be revised. Please see my comments on the Conclusion.

**Compulsory changes**

**Introduction**

This section needs major revision. Although the benefit of acupuncture for clinical pain and the use of Ting point stimulation were explained, this section did not give a clear rationale why the duration of EA should be studied and why thermal sensory detection thresholds should be assessed when the main aim was to study the analgesic but anaesthetic effect of EA.

**Compulsory changes**

**Methods**

My main concerns about this section are statistics and the temperature of the testing room. The choice of four-way ANOVAs with repeated measures is correct. However, it is not clear what post-hoc analyses were used. In the Results, the authors did mention that post-hoc ANOVAs were used with Bonferroni corrections. If so, then p value should be divided by the number of comparisons. Please add the description of post-hoc analyses to the Methods.

**Compulsory changes**

In addition, data of mechanical detection threshold measured with Von Frey filaments are not continuous. Were non-parametric ANOVAs used? Finally was the room temperature controlled during the tests? It has a strong impact on the thermal detection and pain thresholds.

**Compulsory changes**

My other comments are as follows.

- Please include the name of the human subject review committee.
- Please move the additional information about inclusion and exclusion criteria to this section.
- Were subjects screened for a history of chronic pain? Were female subjects tested during pre-menstrual stages? As we know, both chronic pain and menstrual cycles impact on pain thresholds.
- Were people with cardiac pacemakers excluded?
- The subjects aged between 18 and 49 years old. This is a better age range than 18-80 years indicated in the selection criteria.
- I suggest that a modified VAS including non-pain component (Willer 1977; Zheng et al., 2000) to be used in future studies.
- Include the name of the manufacturer of Von Frey filaments.
- Delete repeated description of EA treatment.

**Results**

My main comments here are related to the presentation of the data.
In the figures, it is important for the readers to understand what the comparisons are. Location? Time? Duration? I suggest you use different symbols representing various types of comparisons.

Are significant results, indicated in the figures, the outcomes of post-hoc analyses?

In the PDF version I have, Figure 5 missed a few indicators on the X axis. In addition, what is the comparison indicated by the perpendicular line?

Only means were presented. Standard Deviations or Standard Error of Means need to be presented in the figures or in tables.

I suggest removing the figure about De Qi.

Why were the data of cold pain threshold not included?

What is IRB?

Discussion

This part requires major revision. There is little discussion on the effect of different durations of EA. I. Being the main aim of the study, this finding should be compared with previous studies on this topic. Compulsory changes

Furthermore, the finding of increased warm and hot pain thresholds and decreased cold detection and pain thresholds after EA requires further explanation. The analgesic effect of EA on heat pain is consistent with the findings of other studies. I am, however, surprised to see that EA induced a widespread cold hyperalgesia in this study. This unexpected finding has not been explained. Was this due to the testing time or day, the room temperature or the effect of EA on sympathetic nervous system? - Compulsory changes

The authors intended to explore the mechanisms of the spread of EA analgesia and the different effects on cold and warm detection and pain thresholds. However the proposed mechanisms were not clearly explained. For instance A-delta mediated C-fibre modulation implies that EA stimulation in this study mainly activated A-delta fibres. There is however no evidence to support this hypothesis. It is commonly accepted that the sharp needling sensation upon insertion is likely to be mediated by A-delta fibres. The authors did not provide any data to support the claim that the tingling sensation was also mediated by A-delta fibres. Compulsory changes

The recommendation of CV 2 is not necessary since the additional effect of this point was not one of the aims of the study. minor essential changes

Conclusion

Please limit this section to the findings and main aims. Some sentences can be deleted. Compulsory changes
Declaration of competing interests
I declare that I have no competing interests.

References

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.