Author's response to reviews

Title: Somatosensory Evoked Potentials suppression due to remifentanil during spinal operations; a prospective clinical study

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Author's response to reviews: see over
Cover letter

Thank you for your valuable suggestions in order to improve my manuscript. Below I have addressed all the issues.

Reviewer 1.
Usually we use quite large doses of remifentanil (0.5-1mcg/Kg/min) in order to maintain a low mean arterial blood pressure. Propofol was adjusted to maintain the bispectral index (BIS) number at 40-50 and remifentanil was adjusted to maintain the mean arterial pressure (MAP) at 50-65 mmHg. Remifentanil metabolises quickly from esterases and this characteristic makes it safe component of anesthesia even in large doses. These doses are also used by other authors (Ngwenyama et al, 2008: 0.6mcg/Kg/min, Maghsoudi et al, 2007: 1mcg/Kg/min, Grottke et al, 2004: 0.5mcg/Kg/min, Hargreaves et al, 2005: 1mcg/Kg/min).

You are right about the TCI, but we titrate remi according to MAP. In the future we should use TCI to compare the doses.

Certainly propofol effect SSEP, but infusion of propofol was started before the first measurement of amplitude and latency; so whatever change was noticed between the first (baseline) and the second measurement was due to the remi infusion.

The dose of propofol was between 30-50mcg/Kg/min in all patients, following the indication of BIS, but stable in each patient.

I have added the data of the monitors.

About esmolol, there is new evidence suggesting that administration of esmolol might reduce the actual anesthetic requirement. This was initially shown by studies in which esmolol decreased the amount of anesthetic required to prevent movement after skin incision (Johansen et al, 1997). Subsequent study used bispectral index (BIS) demonstrated decreased BIS values in subjects receiving esmolol during induction in general anesthesia (Oda et al, 2005). So, in case that remi influences clinical significant SSEP components, we might co-administer b-blocker in order to reduce remi’s dose and consequently the negative effect.

Reviewer 2.
1. It was my mistake, the recordings were only cortical.

2, 7. This is right and I have added this in the method section.

3. The population of this study is small, but firstly the difference was too big resulting in high study power and secondly there is also another study with same population (Schmidt G et al, 2007). In the future we are planning studies with bigger population.

4. Crabb’s study ended 10 min after incision, where our recordings were performed during all the duration of the surgery. So we have the chance to investigate the effect of remifentanil over time. Also our results added some new points about the hemodynamic changes of high dose of remifentanil, since we have also monitored the cardiac output. Our results are in accordance with Crabb’s, that MAP is decreased significant, but moreover we found that the cardiac output was not significant impaired.

5. This could be part of a future project, since we investigate that this dose (0.8mcg/Kg/min) suppresses SSEP.

6. We did not perform wake up test, since surgeons ensure the right position of instruments (by c-arm).

8. The number of figures has been corrected.

9. Due to the fact that the quality of figure can not be improved, we decided to remove it.

10. The patients were hyperventilated in order to achieve mild vasoconstriction that minimizes the blood loss and provides a better surgical field. Just after intubation the ventilation was adjusted to endexpiratory CO₂ because it was more quickly but this it was corroborated and with the arterial CO₂, in order to check the shunt between them, since it is more easily to monitor all the time the EtCO₂ and not the arterial CO₂ during the surgery. I have corrected this issue in the section of method.

Reviewer 3.
Figures and Tables were corrected
Also there have been made changes in the text and language corrections.