Author's response to reviews

Title: Dexmedetomidine versus remifentanil in postoperative pain control after spinal surgery: a randomized controlled study

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Version: 3 Date: 28 November 2014

Author's response to reviews: see over
**Reply to Reviewer 1 (Xuwei Hou)**

I appreciate for your thorough and kind review on my manuscript.

Here are my answers to your inquiries.

1. Diabetic milieus will blunt the pain sensation. The authors need to state the presence of DM in each group.
   
   *I admit that diabetes mellitus may blunt the pain sensation. I modified Table 1. adding the presence of DM in each group and the presence of DM did not differ between the groups.*

2. The specific spine disease should be presented in the method session.
   
   *Patients with lumbar herniated nucleus pulposus, spinal stenosis, spondylolysis, and spondylolisthesis were included. I added this in the Method.*

3. Comparison of pre-operative VAS scores between the groups should be given.
   
   *I added pre-operative VAS scores in Table 1. It did not show significant differences between the groups.*

4. Comparison of pre-operative PCA use between the groups should be given.
   
   *I admit that preoperative pain management might have been important in assessing postoperative pain management. Unfortunately, we did not control the preoperative pain management strategy and most patients were taking medications for pain aside from opioids. Although pain management strategy of patients were different, the preoperative pain score did not show significant differences; the preoperative PCA or pain management strategy, in our opinion, might not have influenced the result of this study.*

5. The table 1-3 should be involved in the text, instead of suppl.

   *I added Table 1-3 in the main Text.*
Reply to Reviewer 2 (Luc Quintin)

I appreciate for your thorough and kind review on my manuscript.
Here are my answers to your inquiries.

Competing interest and authors contributions are now on the first p in most
journals, unless required so by BMC.

*I modified this according to BMC anesthesiology requested.*

P 2 abstract line 26 : I would stick to remifentanil group and dexmedetomidine
group throughout ms although the two drugs are quite long. There are many
abbreviations which make the ms difficult to read .

*For better understating, I did not use abbreviations for the group name as you recommended.*

L 31-sq and 39-sq : please state that you are using hydromorphone.

*I added the statement that I used hydromorphone for PCA in the Abstract.*

35-sq and 39-sq : I would give the results for the two most important points in the
time course : e.g. early PACU upon arrival (acute pain) and late interval (almost
chronic pain).

*I omitted the results except T1 and T5 as you recommended.*

40 : PONV is mentioned in the ms but not mentioned in the abstract. Is this
deliberate ?

*The presence of PONV is another important result of this study. I added the result about the PONV
in the Abstract.*

54 : nobody knows whether dex is highly selective : there are no data. The only
data I could find are on medetomidine (1). So please delete this comment which
trails from one paper to the next with no scientific basis.

*I modified the sentence you pointed with the reference you presented with kindness.*

55 : shorter : do you compare with clonidine ? if so say so.
Dexmedetomidine has shorter duration of action comparing to clonidine. I added this statement in the text.

82: to make life easy for the lay anesthesiologist, I would suggest to give an example (e.g. 70 mcg for 70 kg.min-1)

same for 84.

I gave examples for ease of speedy reading (e.g. 0.5 mcg /min for 50kg adult patient) as you suggested.

91: is 40 < BIS < 60? in other words is BIS not too low but in a reasonable interval?

? this may have an impact on anti-nociception, although most people behave as if the two systems (hypnosis vs. anti-nociception) are totally separated.

I appreciate for your ‘eagle eye’ comment. I corrected the phase as BIS between 40 and 60, which are the appropriate BIS score for general anesthesia, or to say appropriate hypnosis.

113: we need a reference for the post anesthesia recovery score? alderete?

Modified Aldrete score is used in the PACU of our institution and I added this in the text.

139: as the reader has the data delineated in full in fig 3, there is no point to repeat in full in results. I would give only two time interval: early PACU, late 48 h interval. But I would give the doses of hydromorphone in mg.kg-1.h-1 or something like that. Your dilution may not be the same as the dilution used in the next hospital with a different electric syringe.

I deleted the phrase repeating the Fig.3. 1 ml of PCA equals 0.12mg hydromorphone, and I added this in the text as you recommended.

142: table 3 should be in the ms not in the electronic supplement.

I added the Tables in the main text.

145: insert 148-150: « this is the first….PACU » before « this study suggests…remifentanil ».

in addition, this study demonstrates rather than suggests. I am usually rather dubitative. Here your data appear as clear cut.
I modified the sentences according to your recommendation.

150-1: do you mean chronic pain vs. acute pain when you mention pathological pain and acute physiological pain? unclear to me.

Pathologic pain differs from physiologic pain in that it is excessive in intensity and spread and can be activated by low-intensity stimuli and hyperpathia. I added this in the text for better understanding.

165-168: excellent from a pathophysiological standpoint. However you are not very clear when cursory reading is used: do you mean that the intracellular potential is higher thus the cell responds more easily to incoming stimuli? I suspect so. But you have to be crystal clear for speed reading.

When nociceptors are sensitized, the threshold for activation is decreased, discharge rate with activation is increased, and rate of basal (spontaneous) discharge is increased, resulting in easier response of nociceptors to incoming stimuli. I modified the sentence for better understanding as you commented.

177-sq: 250 min as context sensitive half life after an 8 h infusion would make circa 4 h* 5-9 half lifes = circa 20-24/40 h. You are looking 48 h later. So I agree. However this is too cursorily explained for speed reading.

179: what do you mean: not the factor? Ok so what is the factor? OIH?

I modified this paragraph for easier reading as you recommended.

182: state OIH in full here. the reader has forgotten what it is: speed reading again.

I stated OIH in full according to your recommendation.

192: « OIH may .....surgery ». unnecessary. Delete.

I deleted this sentence as you recommended.

3 references are missing

I reviewed the references you presented and found them very useful in my manuscript. I added them in required places in the text. Thank you for your great concern with my manuscript.