Reviewer's report

Title: Remifentanil is more effective than sufentanil in suppressing hemodynamic and metabolic stress responses to intense surgical stimuli

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Reviewer: E. Freye

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Evaluation of paper:

Remifentanil is more effective than sufentanil in suppressing hemodynamic and metabolic stress responses to intense surgical stimuli

Title is misleading: Since Remi was given on-top (!) the basic Sevo/Sufentan-anesthesia, this should be outlined appropriately in the title i.e. Additional high dose remifentanil necessary to blunt stress response in patients undergoing open-heart surgery with suf/sevo-anesthesia

Abstract o.k.

Introduction

Page 4 line 9. Sentence „The reason for this is that the maximal effect attainable with sufentanil is insufficient-this is not a reason. Therefore give another possible explanation such as Sufenta is an opioid very much selective for the µ-type opioid receptor, or alternatively specific nociceptive afferences, not related to the opioid receptor are activated by sternal spread. If possible get some ref, which may underline your assumption.

Line 16. You report that Remi has different activities than Sufenta on opioid cardiac receptor sites. Are these receptor sites by any chance affected by a nociceptive input such as sternal spread ? If so, show Ref.

Methods

Page 5 line 12. Outline why sternotomy was necessary. I presume that most if not all patients underwent ACBG

Line 5: Mention that this is the postop period where pain intensity scores as well as opioid consumption plus (!) side effects were assessed

Page 8, line 6 Anesthesia: also mention the respirator settings and the end-tidal CO2

Line 14: Change sentence to clarify: Remi-infusion was discontinued following 10 (or 5 ?) min after sternotomy (omit the phrase after the last measurement !)

Line 17. Clarify that in the control as well as the study group (!?) once MAP exceeded the upper limit, Sevo was used as the rescue anesthetic.
Statistics:
Page 9 line 14: Mention that this is a for calculating a suff. power and determining the necessary sample size, i.e. the No of patients to be incorporated in order to avoid Type II error and get a sound scientific conclusion.
Also, since measurements were done repetitively on patients only at diff. times you should incorporate a correction factor such as Bonferroni.

Results:
Page 10 lines 4-6. Outline these data in the table, add the demographics of both groups and mention the basic Sufenta dose (range), which I presume, was similar in both groups.
Line 9 correct to clarify because this is one of your main & powerful findings: SPI, was the same in both groups only until sternotomy, at which time it significantly (how much ?) increased in the control group.
Page 10 Line 17-22 as well as Page 11 line 1-4: it would be nice for the reader to demonstrate these differences in a graph instead of in a table.

Discussion
Page 12 Line 7 mention that basic Sufenta dose was similar in both groups
Page 3 line 6-8. How much did it differ (significantly ? I hope not !)
Page 15 line 12: I suggest to add..., given over a short period of time, i.e. prior and shortly after sternotomy.
I suggest to add another explanation: Remi because of its lesser selectivity, and interacting also with the delta opioid receptor site, is able to exhibit an additive antinoiceptive effect in the clinical setting (see also ref by Zhao et al in Anesthesiology 2008) corroborating other studies which had used a combination of opioids interacting with different receptor sites such as Buprenorphine and Sufenta (check the lit).
Also take into consideration the difference of opioid receptors affecting diff physiological states:

And Finally add a conclusion: What is the significance of your findings for those
working in the cardiovascular field