Reviewer's report

Title: Consumption of Cisatracurium, Sufentanil and Propofol in different age groups, using a closed loop computer control system.

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Reviewer: Mehmet Ozcan

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This is a prospective study and the main hypothesis the authors are testing is that cis-atracurium requirement decreases with age. Cis-atracurium dosing is done using a closed-loop that is using an objective method to assess the degree of neuromuscular blockade. Overall, it is an important question and methods seem valid. However, there are several important issues that should be addressed before the manuscript can move forward.

First and foremost, there are many grammatical errors as well as problems with the choice of words. Some of these are to the point of misleading. For instance, the first sentence of the abstract reads "We devised this study to quantify the effect of age on cisatracurium in patients under general anaesthesia, using a computer control closed loop infusion system of cisatracurium." From this sentence, "the effect of age on cis-atracurium" can be understood in many different meanings, including the age of the medication itself (i.e. related to its date of production), or the effect of the patient's age on cis-atracurium metabolism, both of which are wrong. Therefore, this sentence should be revised to clarify the meaning. This is only the first sentence of the abstract, and there are many other problems throughout the text with omitted words, badly constructed sentences, superfluous language, etc. I recommend a thorough revision of the writing of the manuscript.

Second, the title of the manuscript is misleading and not accurate. "Consumption of Cisatracurium, Sufentanil and Propofol in different age groups, using a closed loop computer control system" has the connotation that all 3 drugs are delivered using a closed loop control system where, in fact, only cis-atracurium was done so.

Third, I have some questions about methods: inclusion/exclusion criteria are vague. How was the group allocation done? From the unequal number of patients in 3 groups, it looks like the group assignments were done after all the patients were enrolled. It is also mentioned that male/female ratio was kept more or less the same. What does "more or less" mean? What procedures were followed during enrollment to keep this gender balance? Again, looks like there was no control, but it happened to be almost equal by chance. This is OK, but methods make it sound like there was an effort/intervention to do this.

As far as exclusion criteria go, it should be specified what "significant" means for renal, hepatic, etc dysfunction (ie creatinine >2, albumin < 3, etc)
Management of intraop vital signs is confusing to say the least. For hypotension, nitroglycerin or urapidil was used: which one and how much? Did any patient end up receiving these? For tachycardia and hypertension, sufentanil 10 to 20 mcg was given. Again, which one of these doses (10 or 20)? What if BP did not respond? Was sufentanil repeated? After how much time? What was the atropine dose given? Also for respiratory management, there is some vagueness. For instance RR was kept 12-13 breaths per minute, which of these? 12 or 13? Was it really specified in the protocol or was it left to anesthesiologist's discretion? Also, ABG was checked to adjust resp parameters "accordingly"... According to what? to a pCO2 of 40? 35?

Most importantly, explanation of the closed-loop computer controlled infusion also requires improvement. First of all, there is a lot of superfluous language such as "This infusion system has the advantage for the operator..." or "This accelerometry of the TOF ratios in the adductor pollicis muscle was proven to be a more useful objective monitoring technique evaluating muscle relaxation or PORC than the subjective visual/tactile assessment methods". Methods is not a place to "sell" your methods: if you want to justify your methods by pointing out their strengths, please do so in the discussion. Therefore, methods should be revised to clean methods from such remarks or sentences. As for an explanation of the system, I could not see any reference as to the details of the TOF monitor: the technique it utilizes (accelerometry? mechano-sensor? etc), manufacturer info, etc. Also, you mention dosing according to a percentage of T1 amplitude but you do not clarify what the baseline was (e.g. is it 1% of the pre-induction baseline T1 amplitude? Sounds like it but it is not specified for sure). It is also strange that you measure TOF ratio and d/c patient from OR with TOF ratio >90%, but use subjective and inferior clinical criteria (e.g. head lift, hand grip) to decide extubation. Why did you do this???

Last but not least, you mention titrating propofol infusion to a BIS range of 40-60, but do not show the BIS data that was achieved in the end. What if group 3 had a average BIS of 59 and group 1 had an average BIS of 41? It is a big range and one can expect propofol requirements to differ unless you show me that the groups were not different in their BIS achieved.

For the sample size analysis, it is mentioned that a "pilot study" was used to calculate this. Can you share a little bit more about the numbers found in the pilot study (if it is unpublished) or reference the pilot study (if published).

I will not go over the results and discussion at this point: once the concerns about the methods and language/grammar is addressed, I would be happy to review the manuscript again focusing on these sections.

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

Quality of written English: Not suitable for publication unless extensively edited
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

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