Author's response to reviews

Title: Evaluation of Coronary Blood Flow during Cardiac Arrest with Circulation Maintained through Mechanical Chest Compressions in a Porcine Model

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Author's response to reviews: see over
Responses to Reviewer # 2

1) The abstract conclusion should be revised accordingly to the conclusion in the manuscript and the aims for conducting the study; the correlation of Doppler flow and CPP during mechanical chest compression. The phrase “coronary blood flow can be normalized” is still speculative and should be revised.

**Answer:** That is correct, reviewer’s comments have been carried out.

2) Results:
In the revised phrase it seems that APV data from the ROSC period is now available as mentioned in the manuscript:
“Figure 1 shows the original Doppler curves from which APV was calculated during baseline, during the VF period without CC’s, during the VF with mechanical CC’s and during the ROSC period indicating not only an instant increase in peak velocity but Doppler flow through the whole cyclic period of CC’s.”
In the cover letter the results are described: “Following successful ROSC, CPP once again approaches baseline values while APV, after an initial increase, gradually decreases to return to the baseline values.”
I acknowledge your difficulties in measuring APV due to technical disturbances in the ROSC period, but figure 1 indicate that data, at least partly is present as well as your cover letter.

Why are these data not mentioned in the results? It seems that you have interpreted the data, but it is not commented in the discussion or limitations.

**Answer:** It is correct that we discuss APV in the ROSC period but we have not made any calculations. The main cause why we have not made any calculations is that there are no values in the maximum hyperemia phase due to technical disturbances. All though we can see a clear elevation of APV in the beginning of the ROSC-period. We think that if we should show the values in a figure, we ought to have the whole period with the maximum levels as well. Our machine in question has problems readjusting itself to large sudden scale changes during very large changes in flow velocity as we see during the post ROSC hyperemia phase. This machine has problems adjusting for the scale changes which is seen during hyperemia which also means that there is a lot of drift in sensing as well as aliasing, unfortunately. Once stable blood flow is seen measurements could more accurately be made. Hyperemia values approached approx 7-10 times the baseline values visually, but measurements could not be accurately made during the phase.

**Answer:** Additions have been made in “Discussion” and in “Limitations” regarding APV during the ROSC-period.

- Minor Essential Revisions

3) Results:
First paragraph, last sentence: Quite difficult to understand this sentence, besides that some minor spelling mistakes.

**Answer:** we agree, has been clarified.
4) Figure 4:
The correlation of CPP and APV is calculated for the 10 minutes of mechanical chest compressions. In the figure it seems that there measure points extending the 10 minutes period. The overlaying figures are quite confusing, but might be due technical problems in creating the review file.

**Answer:** *we agree, the figure has been clarified, the period of mechanical ccs are 10 min everywhere*