Author's response to reviews

Title: Changes in cerebral oxygenation during early postnatal adaptation in newborns delivered by vacuum extraction measured by near-infrared spectroscopy

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Author's response to reviews: see over
Dear Editor:

We thank you for reviewing our manuscript and for considering a revised version for publication in the Journal BMC Pediatrics. We resubmit our paper and after having addressed all the points raised by the reviewer Topun Austin in the point-by-point reply attached below. We have marked the changes to the manuscript using the “track changes” features and resubmitted a clean version and a version with the revisions marked.

We hope that this revision meets your and the reviewers’ expectations and that it can be accepted for publication in the present form. We are looking forward to your reply.

Yours sincerely

Tanja Karen

Jean-Claude Fauchère
Point by point reply:
Manuscript ID: MS: 4219624710286769

Second revision: “Changes in cerebral oxygenation during early postnatal adaptation in newborns delivered by vacuum extraction measured by near-infrared spectroscopy”

The reviewers’ comments are in **bold** and our replies are in the regular font. Extracts from the text are in _italic_ fonts.
We marked the changes to the manuscript using the “track changes” features and resubmitted a clean version and a version with the revisions marked.

Reviewer (Topun Austin)

1. Reviewer’s comment:
Point 4: not all errors in regress to the mean and may in fact be different at different ranges of group wise comparisons. This is one of the limitations of THI.
We have thought about this comment and of course theoretically there is a possibility that these errors may be subject to different factors between the groups. However, we could not think of any plausible reason for this. Still to accommodate the reviewer’s concern, we have mitigated the statement.

“By assuming a reasonable value of the scattering coefficient, the total haemoglobin concentration (THI) can be determined as an absolute value. Since this parameter requires an assumption, it is less reliable than the TOI. On the basis of measurements in single subjects, an error in the assumption will propagate directly to the THI value. Unless there are factors affecting the scattering coefficient systematically and differently for the two groups, for a group of subjects in average as for any statistical mean, the error should average out or at least be substantially reduced. Consequently when a difference in THI is found between two groups, this is probably a fairly reliable result.”
Point 5: the lack of haematocrit is a limitation- one cannot assume that because of the timing of cord clamping is similar the haematocrits will be similar – the method of delivery is very different and when assessing cerebral oxygenation, blood volume and oxygen delivery a measure of SaO2 and Hb/Hct is very useful.

Answer:
We have thought about the reviewers comment and we came around that we cannot assume that the haematocrits between the two groups will be similar because the time of cord clamping is similar. Most studies investigating the influence of hemoglobin/hematocrit values have been performed in preterm infants showing improved cerebral oxygenation.

In healthy term newborn infants late cord clamping resulted in an increased placental transfusion, expressed by higher hematocrit and hemoglobin values, and larger left ventricle diameter at the end of the diastole, with no changes in peripheral perfusion or oxygen metabolism (Zaramella P, Frato F, Quaresima V, Secchieri S, Milan A, Grisafi D, Chiandetti L: Early versus late cord clamping: effects on peripheral blood flow and cardiac function in term infants. Early Hum Dev 2008, 84(3):195-200). Cerebral oxygenation was not measured in this study.

We added this concern as a limitation of the study in the discussion part.

A limitation of the present study is that our study group is very small with 11 infants and we therefore could miss some more differences in our parameters. **We did not measure haematocrit values in our newborns, which may influence cerebral oxygenation.** Another question could be if the differences between our groups are due to vacuum extraction by itself or due to fetal distress.