Masimo SpHb: is it reliable?

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Background:

Non-invasive methods of monitoring hemodynamics are becoming a more and more frequent choice intraoperatively. Their accuracy, comparing with gold-standard measurements, is the downside of these new methods. No previous studies were performed in this matter.

Masimo rainbow® is a continuous method that through plethysmography curve analysis, monitors not only a estimated value for pulse pressure variation but also estimates blood hemoglobin (SpHb) and hemoglobin saturation.

Goal of study:

Prospective, observacional study, that aims to find a correlation between SpHb variation with the one from gas blood analysis (GHb), our standard method.

Materials and Methods:

- ♦ Patients submitted to an elective vascular procedure under general anesthesia during October 2016.
- ♦ Each patient was monitored on the same arm with a finger sensor of Masimo rainbow and an arterial catheter inserted.
- ♦ The values of SpHb and GHb were registered at the beginning and every hour during the surgical procedure.

Discussion and Results:

Linear regression and range of determination coefficient were performed to correlate the trend of SpHb with GHb.

R^2 ranged between 0,12 to 1.
The median value was 0,49

Conclusion:

- ♦ SpHb variation does not correlate with standard method trending analysis.
- ♦ Its unreliability might compromise decision-making in adverse intra-operative setting, based alone on SpHb interpretation.
- ♦ Limitations of this study: small sample size and impossibility to attenuate all the confounding factors to Masimo readings, above all the great prevalence of peripheral arterial disease in this group.

References:

- ♦ Kayan et al, Accuracy of non-invasive hemoglobin monitoring by pulse CO-oximeter during liver transplantation. Minerva Anesthesiologica 2017 Jan 20
- ♦ Barker, S. et al. Continuous non-invasive hemoglobin monitoring: a measured response to a critical review. Anesth Analg 2016, volume 22 (2).