

The Accuracy of Total Hemoglobin Measured by Pulse CO-Oximeter Compared with that by Blood Gas Analyzer.

Nagata H., Yamada T., Kotake Y., Morisaki H., Takeda J. *Proceedings of the 2011 Annual Meeting of the American Society of Anesthesiologists*. A78.

Background

The transfusion therapy is one of the important treatments in perioperative management. We must be careful about the decision to avoid complications of the transfusion therapy. We commonly measure the hemoglobin by the blood collection for decision of the transfusion therapy. Noninvasive hemoglobin measuring equipment is developed, and it is used a clinic recently. A purpose of the studies is to inspect precision of the noninvasive measurement of hemoglobin by CO-Oximeter compared with that by blood gases analysis.

Methods

After IRB approval, we measured the hemoglobin by blood gas analysis (ABL800 FLEX, Radiometer Corp, Tokyo, Japan) and by CO-Oximeter noninvasively (Radical-7 Rainbow, Masimo Corp, Irvine, CA, USA) for the pediatric patients of the orthopedic surgery. Blood samples were taken from arterial line cannulated in the radial artery, and a probe of pulse oximeter was attached with a index finger on the same side as the arterial pressure line. Hb measurement was continued during surgery and postoperative time.

Results

15 patients were participated in this study with 100 pairs of measurements. The correlation between blood gas analysis and CO-Oximeter values was 0.80. The bias was 0.35g/dl with a standard deviation of 1.21g/dl.

Conclusion

In this study, the correlation between blood gas analysis and CO-Oximeter values was good during perioperative time. The correlation was better in postoperative time than during surgery. This noninvasive monitoring by CO-Oximeter is very useful during perioperative period.