Accuracy of a Noninvasive Measurement of Hemoglobin via Pulse CO-Oximetry in Japanese Population. Ishida C., Shiraishi Y., Mimuro S., Yu S., Katoh T., Sato S. *Eur J Anaesthesiol*., May 2011. Abs 1611.

Background

A Masimo Rainbow SET, Pulse CO-Oximetry developed by Masimo Corporation leverages 7 wavelengths and advanced signal processing technique to measure total hemoglobin (SpHb) values. The SpHb values can be objectively displayed and be shared by multiple doctors through the monitor, which may lead to the improvement of anesthesia safety. Furthermore, the function of SpHb measurement is included in a pulse oximeter which makes it much easier to operate it. This study is to evaluate the accuracy and to find out the possible problems of this device on Japanese patients.

Methods

After IRB approval and informed consent, 16 ASA I-II patients scheduled to undergo elective surgery were enrolled in this study (cardiac surgery was excluded). Standard anesthesia was taken and no treatment was made due to the data of SpHb. Arterial blood samples were analyzed by CO-oximetry (Radiometer ABL800 FLEX), at the same time the conventional gas analysis was made.

Results

89 samples from 16 patients were obtained. The correlation coefficient between SpHb and tHb was 0.8. The bias was 0.65 and precision was 1.1. The figure 1 shows the correlation between SpHb and tHb, and the figure 2 shows the Bland Altman plots. This is the first time that this device being introduced to Japanese patients. Our data shows that SpHb is reliable on Japanese patients, similar to previous studies on American people. The limitation of our study is that we only observed 16 patients, further studies may be needed.

Conclusions

On Japanese patients the noninvasive measurement of hemoglobin via Pulse CO-Oximetry may be reliable.