

Comparison of Three Methods of Hemoglobin Measures during Major Surgery.

Cegarra V., Remartínez F., Martínez A., García-Alvarez M., Moral M.V. *EJA* 2012; 29: May 2012 Supplement. Abs 1734.

Background

During surgery, an acute hemorrhage can occur. Hemoglobin concentration (Hb) is essential to manage the transfusional therapy. In our centre, hemoglobin values can be obtained from a blood sample and measured using the automated hemoglobin analyzer in the central laboratory (tHb)(Beckman-Coulter), or, using a “point-of-care” device as Co-Oximeter (cHb) (ABL 800 FLEX). Recently, a non-invasive and continuous monitor (Masimo Rainbow SET) is present in surgical theatre: hemoglobin (SpHb) is measured by a spectrophotometric sensor placed in a finger's patient. We evaluated the accuracy of SpHb and cHb compared with central laboratory hemoglobin (tHb).

Material and Methods

We performed a prospective study of 23 patients (73 data points) who underwent major surgery and requiring arterial catheter. General anesthesia was performed with sevoflurane and remifentanyl. Rocuronio was used as non-depolarizing muscle relaxation. All blood samples were obtained from radial artery catheter. First measure was obtained before surgical incision. Following measures were obtained according to anesthesiologist criteria. Each blood sample was analyzed in both central laboratory(tHb) and “point of care” device (cHb). Simultaneously, a value from the SpHb monitor display was collected.

Results

55% of patients (12/23) were men. The mean patient age was 57 years old. R: (19-80). Abdominal surgery was performed in 47.9% (35/73). Head and Neck surgery in 16.4% (12/73). Orthopedic surgery in 13.6% (10/73). Neurosurgery in 12.3% (9/73). Laparoscopic surgery in 5.4% (4/73). Vascular surgery in 4.1% (3/73). The mean value for differences Hb was: tHb 10.91g/dL, cHb 11.38 g/dL, SpHb 11.96 g/dL. Difference between SpHb-tHb was < 0.5 g/dL for 17.8% of samples, 0.5-1g/dL for 20% of samples and higher to 2.0 g/dL for 20% of samples. The absolute difference between cHb-tHb was < 0.5 g/dL for 50.7% of samples. Correlation Coefficient (CC) when compared cHb and tHb was 0.97, considered as excellent. CC when compared SpHb and tHb was 0.77, considered as good.

Conclusions

We showed better results in Co-oximeter results than in Masimo. Absolute difference between Masimo and central laboratory is well correlated but it is not as accuracy as Co-oximeter. Both of them showed an overestimation of tHb values. Masimo provide information about hemoglobin's trend but further improvement is required for guarantee a good clinical management.