The Usefulness of Noninvasive CoHb Monitoring at HBOT Department (Pulse CO-Oximetry Rad-57).

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Introduction

To diagnose carbon monoxide poisoning (CMP), carboxyhemoglobin (COHb) is routinely measured by blood analysis. However, taking a blood sample may be harmful for the patients. Masimo Pulse CO-Oximetry Rad-57 is able to measure COHb noninvasively (SpCO) and continuously. We compared accuracy of SpCO and COHb levels in CMP patients before and after Hyperbaric Oxygen Therapy (HBOT).

Methods

9 patients with CMP undergoing HBOT participated. COHb levels before and after HBOT were analyzed by CO-Oximetry (Radiometer ABL735) and recorded, simultaneously Rad-57 continuously measured SpCO. A clip sensor was placed on middle or ring finger, and in 6 subjects the sensors were shielded with black plastic bags. Data were analyzed using Peason's correlation coefficient 'r' and bias, and precision were calculated.

Results

70 blood samples were collected. The average age of the subjects was 33.1 ± 11.8. Causes of CMP included 4 cases of briquettes coal, 3 fires, and 2 auto exhausts. COHb and SpCO ranged 0.2% - 34.5% and 1% - 32% respectively. Comparing the data between COHb group and SpCO group in all subjects, r = 0.89 (N=70). Comparing the data between COHb and SpCO with and without shielding is presented in Table 1.

Conclusions

We have found a strong correlation between SpCO with Rad- 57and COHb levels in venous blood. Subjects with the shielded sensor showed high accuracy. Our data suggests that shielding a sensor may increase the accuracy of SpCO values. In conclusion, this study demonstrates the accuracy of the Masimo RAD-57 for measuring carboxyhemoglobin. This new monitor should provide for rapid and easy diagnosis of CMP as well as a reliable monitor during treatment of CMP.

	Total (n=70)	w/shielding (n=52)	w/o shielding (n=18)
Bias	-0.68	-0.47	-1.28
Precision	2.95	1.26	4.93
Correlation Coefficient	0.89	0.95	0.77