

Effect of Hydroxocobalamin on Surface Oximetry in Nonexposed Humans

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Introduction

The newer cyanide antidote, hydroxocobalamin, due to its pigmentation, has been found to cause interferences in some laboratory assays. Co-oximetry may also be affected by hydroxocobalamin, leading to false elevations in hemoglobin concentration, methemoglobin, carboxyhemoglobin, and false decreases in oxyhemoglobin. The Masimo Radical-7 is a medical device that performs noninvasive oximetry and estimates hemoglobin (Hb) concentration and percent carboxyhemoglobin (COHb), methemoglobin (MetHb), and oxyhemoglobin saturation (O₂Hb). *Study Objectives:* The study sought to determine the effect of hydroxocobalamin on noninvasive measurement of hemoglobin indices using the Masimo Radical-7 monitor.

Methods

Seven asymptomatic volunteers who were unexposed to cyanide had baseline heart rate (HR), blood pressure (BP), and oximeter measurements recorded followed by an infusion of five grams of hydroxocobalamin over 15 minutes. The above parameters were subsequently recorded at: 5, 10, 15, 30 and 60 minutes post infusion. Data were analyzed by calculating the area under the curve (AUC) for each variable and comparing the results to expected values by paired t tests. Expected AUC values were calculated by extrapolating baseline values across the entire time period.

Results

The mean differences from baseline values with 95% confidence intervals and t tests of mean difference were: SBP: 11 mm Hg (95% CI, 0-22; P = .051); HR: -9 (95% CI, -15 to -3; P = .01); Hb: -0.1 (95% CI, -0.7 to 0.4; P = .57); O₂Hb: 0 g/dL (95% CI, -1 to 1; P = .41); COHb: -1 (95% CI, -3 to 1; P = .25); MetHb: -0.2 (95% CI, -0.3 to 0; P = .03). Discussion After infusion of hydroxocobalamin there was a significant elevation of systolic blood pressure and decrease in heart rate. There were no significant differences in Hb, O₂Hb, and COHb. Although percent methemoglobin concentrations were statistically lower, the authors feel this difference is of trivial clinical significance.

Conclusion

The administration of hydroxocobalamin does not significantly impact noninvasive oximetry.