Effect of Intermittent Noninvasive Blood Pressure Monitoring on the Continuous Noninvasive Hemoglobin Monitoring by Pulse CO-Oximetry (SpHb) with the Masimo Radical-7 Hemoglobin Monitor.

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Background

SpO2 monitorization is known to be altered by noninvasive blood pressure determination (NIBP). Although routine pulse oximetry (SpO2) and NIBP cuff in the same arm is not recommended, the alteration on SpO2 and SpHb monitoring when NIBP is measured in the same arm are not described with the new Radical-7(TM) continuous SpHb (Masimo, USA). Our objective is to know whether NIBP and SpHb and SpO2 can be determined on the same arm.

Methods

After local ethics committee approval, written informed consent was obtained from 15 ASA I-III surgery scheduled patients. After standard monitoring, SpHb sensor and NIBP cuff were placed in the same arm patient. Patients with hemodynamic instability, severe vascular abnormalities or unable to access to the upper extremity were excluded. After SpHb measurement stabilization, NIBP cuff was inflated every 10 minutes (a minimum of 4 measurements for each patient). Time between starting NIBP cuff inflation and SpO2 and SpHb signal loss was recorded (measurement alteration time). Time between SpO2 and SpHb signal loss and SpO2 and SpHb baseline recovery was recorded (failure interval SpO2 and SpHb). Student's t test was used for statistical analysis. A $p< 0,05$ was considered significant.

Results

No patients were excluded. 67 measurements were collected. Three measurements were excluded (one because of twice NIBP cuff inflation, two because of inflation time not recorded). Demographic data are shown in Table 1.Measurement alteration time and failure interval are shown in Table 2. Twenty-five of the sixty-four measurements showed no alteration of the SpO2 and SpHb measurement (measurement alteration time and failure interval of SpO2 and SpHb equal to zero seconds).

Conclusions

SpO2 monitoring could be placed on the same arm as NIBP, although SpHb monitoring should not because of the much longer failure time.

Sex (Male/Female)	Age (years)	Weight (Kg)	Height (cm)	ASA (I/II/III)	Time of surgery
9/6	43,5(±21,1)	72,3(±17,1)	170,7(±8,1)	8/3/1	89,3(±50,2)

[Table 1. Data show number or mean (±SD)]

	Measurement Alteration Time (seconds)	Failure Interval (seconds)(*)
SpO_2	10,31(±9,75)	15,13(±15,61)
SpHb	9,78(±8,93)	93,75(±170,18)

[Table 2. Data show mean (±SD) (*)$p<0,05$]