TITLE: MONITORING WITH PULSE OXIMETRY DURING ANESTHESIA AND IN THE RECOVERY ROOM - IS THE INCIDENCE DEGREE AND DURATION OF HYPOXEMIA REDUCED?

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Per- and postoperative hypoxemia seems to be more common. than previously assumed (1). In children the number of events with hypoxemia can be reduced by monitoring with a pulse oximeter (2). But is the degree and duration of hypoxemia reduced?

The aim of this study was to evaluate in adults whether monitoring with a pulse oximeter will reduce incidence, degree and duration of hypoxemia during anesthesia and in the recovery room (RR). We also compared the cumultative duration of hypoxemia in the operating room (OR) with that of the RR.

Allocated to the study were 200 patients randomized into to two groups. In group one the pulse oximeter data and the alarms were available to the anesthesia team and the RR staff. In group two the pulse oximeter data were unavailable and the alarms were turned off. The patients were monitored from just prior to induction of anesthesia until discharge from the RR. The patients underwent elective procedures in general or regional anesthesia with expected duration of more than 20 minutes. All oximeters were connected to strip-chart recorders or the memory data were collected through a computer. Hypoxemia was defined as desaturation with $SpO_2 \leq 90\%$ for more than 30 sec. During anesthesia and in the RR we recorded the lowest SpO_2 value and cumulative duration of hypoxemia in four levels $SpO_2 \leq 90\%$, 85%, 80% and 75%.

The study was performed with the patients informed consent and approval by the local ethical committee.

The number of patients with hypoxemic episodes in the two groups was compared with Chi-square test and the cumulative duration of hypoxemia was tested with a Mann-Whitney Rangsum-test. A P value <0,05 was considered significant.

We found that the incidence of hypoxemia was significantly reduced in the available group compared to the unavailable group in both the OR and the RR. The lowest SpO_2 values were significantly higher in the available group (mean SpO_2 90%) than in the unavailable group (mean SpO_2 87%). At all four levels the cumulative duration of hypoxemia, both in the OR and in the RR, was 3-5 times lower in the available group than in the unavailable group, a difference that is statistically significant. The cumultative duration of hypoxemia was three times higher in the RR than in the OR.

In conclusion, continous monitoring with a Pulse Oximeter significantly reduced the incidence, the degree and the duration of hypoxemia during anesthesia and maybe most noteworthy in the RR.

References: 1) Anesthesiology, 1989, A1181.
2) Anesthesiology, 1988, pp181-183.