

Second-Hand Smoking and Carboxyhemoglobin Levels in Children: A Prospective Observational Study.

Yee B.E., Ahmed M.I., Brugge D., Farrell M., Lozada G., Idupaganthi R., Schumann R. *Paediatr Anaesth.* 2010 Jan;20(1):82-9.

Aim

To establish baseline noninvasive carboxyhemoglobin (COHb) levels in children and determine the influence of exposure to environmental sources of carbon monoxide (CO), especially environmental tobacco smoke, on such levels.

Background

Second-hand smoking may be a risk factor for adverse outcomes following anesthesia and surgery in children (1) and may potentially be preventable.

Patients and Methods

Parents and their children between the ages of 1-12 were enrolled on the day of elective surgery. The preoperative COHb levels of the children were assessed noninvasively using a CO-Oximeter (Radical-7 Rainbow SET Pulse CO-Oximeter; Masimo, Irvine, CA, USA). The parents were asked to complete an environmental air-quality questionnaire. The COHb levels were tabulated and correlated with responses to the survey in aggregate analysis. Statistical analyses were performed using the nonparametric Mann-Whitney and Kruskal-Wallis tests. $P < 0.05$ was statistically significant.

Results

Two hundred children with their parents were enrolled. Children exposed to parental smoking had higher COHb levels than the children of nonsmoking controls. Higher COHb values were seen in the youngest children, ages 1-2, exposed to parental cigarette smoke. However, these trends did not reach statistical significance, and confidence intervals were wide.

Conclusions

This study revealed interesting trends of COHb levels in children presenting for anesthesia and surgery. However, the COHb levels measured in our patients were close to the error margin of the device used in our study. An expected improvement in measurement technology may allow screening children for potential pulmonary perioperative risk factors in the future.