Incidence of and Risk factors for perioperative respiratory adverse events in children: a prospective cohort study

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Background :

Respiratory adverse events represent a major cause of perioperative morbidity in pediatric anesthesia. Few prospective published studies (1,2) had identified risk factors for perioperative respiratory adverse events (PRAE) in children.

The aim of this study was to determine the incidence of and the risk factors for PRAE in children undergoing elective procedures under general anesthesia.

Methods :

- ❑ **Study design:** prospective observational study
- ❑ **Inclusion criteria:** Children undergoing general anesthesia for elective procedures from November 2014 to November 2016.
- ❑ **Data collection:** Demographic data, medical history of asthma, allergy, second hand smoking, night-snoring and sleep apnea and recent upper respiratory tract infection.
- ❑ Induction techniques and agents, airway management and the occurrence of PRAE (moment, management strategy and outcome) were recorded.
- ❑ **Statistical analysis :** Pearson's Chi-square and Fisher's exact tests were used. $P < 0.05$ was considered significant.
Multivariate Cox regression was employed to identify independent predictors for PRAE.

References :

1- Von Ungern-Sternberg BS and al. Risk assessment for respiratory complications in paediatric anaesthesia: a prospective cohort study. Lancet 2010;376:773-83.
2- Bordet F and al. Risk factors for airway complications during general anaesthesia in paediatric patients. Pediatric Anesthesia 2002;12:762-9.

Results :

- ❑ The study included **1022** children.
- ❑ PRAE occurred in **96 (9.4%)** patients
- ❑ No patient was re-intubated, unremarkable outcome for all patients.

Figure 1: Incidence of PRAE

Induction of anesthesia	19.80 %
Maintenance	16.70 %
Emergence	63.50 %

Table 1: Moment of occurrence of PRAE

Factors	Odds-ratio / 95% CI	P
Age < 12 months	2.41 [1.29-4.50]	0.005
ASA class > 1	2.89 [1.01-8.27]	0.047
Recent Upper respiratory tract infection	2.22 [1.36-3.61]	0.001
Night-snoring	1.78 [1.00-3.17]	0.047
Use of LMA/FM	2.44 [1.18-5.05]	0.016
Endotracheal intubation/SGD	2.67 [1.25-5.71]	0.011
Peripheral regional nerve block	0.51 [0.30-0.88]	0.015
Inhalational induction	0.47 [0.25-0.87]	0.018

Table 2: Independent risk factors for PRAE

- ❑ Asthma and passive smoking were not associated with a higher risk of PRAE in our cohort.

Conclusion :

PRAE occurred more often on **emergence**. The main predictive factors for PRAE in our study were **age under 1 year** and **history of recent upper airway tract infection**.