Double trouble: association of childhood bronchial asthma and sleep disordered breathing with perioperative bronchospasm.

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Introduction

• Bronchial asthma (BA) affects an estimated 300 million people and is presently the most common chronic childhood disease worldwide (2).
• In consonance with this is the alarming increase in the prevalence of sleep disordered breathing (SDB) among children, particularly those with a high BMI (2).
• As the incidence of BA and SDB increase there is the potential for increased risk of perioperative airway complications.
• Critical airway obstruction such as laryngospasm and bronchospasm are complications with potentially devastating consequences (3).
• Approximately 1 in 3 children who develop laryngospasm suffer significant physiological perturbation (3).
• Although BA and SDB are frequently cited as risk factors for perioperative pulmonary complications (2, 3), it is presently unknown whether children with concurrent diagnoses of BA and SDB have increased rates of perioperative bronchospasm.
• Therefore, the objective of this study was to compare the rates of perioperative bronchospasm among children with dual diagnoses of BA and SDB with those who did not have these diagnoses.
• We focused on bronchospasm, as intraoperative use of Albuterol is invariably associated with a diagnosis of bronchospasm.

Methods

• This was a retrospective case-control study on 56,804 children aged 2-17 years who underwent elective non-cardiac operations. Clinical and anthropometric data were extracted from the database.
• Case definition: all patients with perioperative bronchospasm identified by documentation of Albuterol in the intraoperative record.
• Exposure variable: presence of preoperative history of physician-diagnosed asthma and/or SDB, defined as history of snoring or OSA.
• Univariate comparison of perioperative variables was made across SDB/asthma groups.
• A logistic regression model was used to calculate the adjusted odds ratio for bronchospasm.

Results

• The overall prevalence of high BMI (overweight/obese) was 32.7% while 20.4% of children had a diagnosis of asthma.
• BA/SDB was present in 10% of patients.
• Perioperative bronchospasm occurred in 772 subjects (1.7%).
• BA/SDB children had higher rates of bronchospasm requiring Albuterol (Fig. 1).
• After adjusting for several relevant covariates (age, gender, intubation yes/no, induction method) in a logistic regression model, BA/SDB remained the most consistent risk factor for intraoperative bronchospasm (OR = 2.3; 95%CI = 1.88-16.5, p = 0.003).

Conclusion

• These results indicate that children with BA/SDB have higher rates of perioperative bronchospasm compared to their peers.
• Mechanisms underlying these increased risks deserve further elucidation, but may be related to airway inflammation.
• Recognizing these children as an at-risk group could prove helpful for perioperative risk

Fig. 1. Incidence of intraoperative bronchospasm stratified by diagnostic category. Abbreviation: SDB = Sleep disordered breathing. Error bars represent 95% Confidence intervals.

References