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**ASTHMA CONTROL AND INFLAMMATION IN ASTHMATIC CHILDREN WITH OBSTRUCTIVE SLEEP APNEA**

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**Introduction:** Asthma affects 9% of children in the U.S. and disproportionately affects minority children of lower socioeconomic status living in urban areas, reflected in increased rates of hospitalization and mortality among those children. Evidence supports an association between obstructive sleep apnea (OSA) and poor asthma control, but the mechanisms of this association are unclear. This study aimed to determine whether, in children with asthma, increasing OSA severity was associated with increased systemic and upper airway inflammatory markers; and whether increasing inflammation was associated with decreasing asthma control. **Methods:** Non-obese children with persistent asthma (n=27) aged 4–12 years were recruited. Seven had no OSA and 20 had OSA measured by an apnea-hypopnea index (AHI) of 1.5 or greater, and were scheduled for adenotonsillectomy. Overnight, in-lab polysomnography was performed on all children. Blood was collected from all participants, and one tonsil was harvested during adenotonsillectomy from children undergoing surgery. Eleven cytokines were measured in serum and tonsillar supernatants. Exhaled nitric oxide (FeNO) was measured in children 7 and older. Asthma control was measured with the Child Asthma Control Test (cACT).

**Results:** Twelve participants (44.4%) were male, and 92.6% were African American. Age averaged 7.9 years, and mean BMI z-score was 0.33. Asthma was poorly controlled in 48.1% of the sample. Higher AHI in REM sleep ( $p < 0.05$ ) and lower nadir  $SpO_2$  ( $p = 0.008$ ) were significantly correlated with higher tonsillar TNF- $\alpha$ . As asthma control worsened, serum cytokines IL-10 and IL-13, and tonsil TNF- $\alpha$  increased (all  $p < 0.05$ ). No polysomnographic measures of OSA severity nor FeNO were associated with cACT scores.

**Conclusion:** OSA severity was associated with airway inflammation, but was not associated with asthma control. Asthma control worsened as cytokine markers of airway and systemic inflammation increased. The reciprocal relationship between OSA and asthma control may be due to unmeasured factors common to both diseases.

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**PREVALENCE OF PULMONARY HYPERTENSION IN PEDIATRIC PATIENTS WITH OBSTRUCTIVE SLEEP APNEA**Burns AT<sup>1</sup>, Hansen SL<sup>1,2</sup>, Turner ZS<sup>2</sup>, Black AB<sup>2</sup>, Hsu DP<sup>1,2</sup>

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**Introduction:** Obstructive sleep apnea (OSA) is relatively common in pediatric patients and pulmonary hypertension (PHTN) has been previously reported as a complication of this disease. However, the true prevalence of PHTN in pediatric patients with OSA remains unknown. The purpose of this study is to determine the prevalence of PHTN in children with OSA and develop a clinical algorithm to help determine the need for pediatric cardiology evaluation in a pediatric patient with OSA.

**Methods:** Retrospective chart review of 259 pediatric patients in the military health system, aged 18 years and younger, with a diagnosis of OSA and a referral to pediatric cardiology. Chart reviews

determined which patients were diagnosed with PHTN by a cardiologist. Comparisons between groups included gender and age characteristics as well as OSA severity levels and any co-morbid conditions.

**Results:** The percentage of military pediatric patients with OSA and referral to pediatric cardiology was 14.6% with 57.4% male. The AHI severity levels included 48.5% mild, 22.7% moderate, and 28.8% severe. A diagnosis of PHTN was found in 3.7% of the patients with OSA. Co-morbid, cardiac disorders were present in 100% of those with PHTN.

**Conclusion:** PHTN is a serious medical condition that may lead to significant morbidity and mortality. OSA is a common medical condition that has been associated with PHTN. The results of this study suggest that the prevalence of PHTN in pediatric patients with OSA is low and typically associated with co-morbid, cardiac conditions. Identifying at-risk patients for cardiac evaluation can improve their prognosis. Additionally, an evaluation algorithm can improve the medical decision making to determine which pediatric patients with OSA should have a cardiology evaluation.

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**ASSOCIATION BETWEEN SNORING AND ANXIETY IN COMMUNITY-DWELLING SCHOOL CHILDREN**Kimura M<sup>1</sup>, Wada H<sup>2</sup>, Shirahama R<sup>2</sup>, Suzuki Y<sup>2</sup>, Suzuki Y<sup>2</sup>, Maruyama K<sup>2</sup>, Ikeda A<sup>2</sup>, Tanigawa T<sup>2</sup>

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**Introduction:** We previously demonstrated that sleep disordered breathing was related to behavioral problem in primary school children (Naoko S. et al. Sleep 2017; 40:1–8). However, association between snoring and anxiety among community dwelling school children in Japan remains to be elucidated.

**Methods:** A cross sectional study on whole primary school children in a city in Japan was conducted. A questionnaire, which included questions regarding a history of snoring, anxiety and variables: such as sex, grade, height, weight, tonsil hypertrophy and asthma, was delivered to parents or guardians of all the children (26,599) via the schools, and their responses were collected by teachers. Anxiety was evaluated with the subscale of Strengths and Difficulties Questionnaire (SDQ); the scores for emotional symptoms. Score 0 to 3 was defined as ‘no anxiety’, and score 4 to 10 as ‘having anxiety’. Univariable and multivariable regression and logistic analyses adjusted for the variables were conducted, using SAS version 9.4 software.

**Results:** In total, 17,859 children were included in this analysis. The prevalence of children ‘having anxiety’ in ‘no snoring’, in ‘snoring once/twice a week’ and in ‘snoring more than three times a week’ were 6.0% (n=573), 9.7% (658) and 12.5% (176), respectively. The Odds Ratios (95% Confidence interval) for ‘having anxiety’ of ‘snoring once/twice a week’ and ‘snoring more than three times a week’ referenced to ‘no snoring’ were 1.67 (1.49–1.88) and 2.19 (1.82–2.63), respectively (P for trend < 0.0001).

**Conclusion:** Frequency of snoring was significantly associated with anxiety among community-dwelling school children.

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**THE MODIFIED EPWORTH SLEEPINESS SCALE PREDICTS HYPERSOMNIA BUT NOT OBSTRUCTIVE SLEEP APNEA IN A PEDIATRIC POPULATION.**Goldman L<sup>1</sup>, Rossi G<sup>1</sup>, Burkhead C<sup>1</sup>, Relia S<sup>1</sup>, Dayyat EA<sup>1</sup>

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