



News Release

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Session A110: Poster Discussion Session - Poster Presentation

Sunday, May 19, 2013, 2:00 p.m. – 4:30 p.m.

Location: Room 108 A-B (100 Level) Pennsylvania Convention Center

PRESS CONFERENCE: Sunday, May 19, 4:45 p.m., Room 110A (Level 100), Pennsylvania Convention Center

Researchers Identify a Potential New Risk for Sleep Apnea: Asthma

ATS 2013, PHILADELPHIA — Researchers at the University of Wisconsin have identified a potential new risk factor for obstructive sleep apnea: asthma.

Using data from the National Institutes of Health (Heart, Lung, and Blood Institute)-funded Wisconsin Sleep Cohort Study, which has been following approximately 1,500 people since 1988, researchers found that patients who had asthma were 1.70 times (95% CI=1.15-2.51) more likely to develop sleep apnea after eight years.

“This is the first longitudinal study to suggest a causal relationship between asthma and sleep apnea diagnosed in laboratory-based sleep studies,” said Mihaela Teodorescu, MD, MS, assistant professor of medicine at the university, who will present the research at ATS 2013. “Cross-sectional studies have shown that OSA is more common among those with asthma, but those studies weren’t designed to address the direction of the relationship.”

The connection between asthma and obstructive sleep apnea (OSA) was even stronger among participants who developed asthma as children. Childhood-onset asthma was associated with 2.34 times (95% CI=1.25-4.37) the likelihood of developing sleep apnea.

The researchers also found that the duration of asthma affected the chances of developing sleep apnea. For every five-year increase in asthma duration, the chances of developing OSA after eight years increased by 10 percent.

Participants in the Wisconsin Sleep Cohort, who were all between the ages of 30 and 60 in 1988, complete in-laboratory polysomnography, clinical assessments and health history questionnaires every four years. For the asthma-OSA study, the researchers focused on 773 cohort enrollees who did not have OSA (apnea-hypopnea index <5) when they joined the study and then determined whether their sleep apnea status had changed after eight years.

The study adjusted for variables known to contribute to sleep apnea, including age, sex, body mass index (BMI), smoking, number of alcoholic drinks per week and nasal congestion. The study also took into account changes in BMI and the addition of new asthma cases.

During the eight-year follow-up period, 45 subjects developed asthma, and they were 48 percent more likely to develop new-onset sleep apnea. However, because the sample size was small, the increase lacked statistical significance.

“Forty-eight percent represents a large difference,” said Paul Peppard, PhD, an assistant professor of population health sciences at the university and a principal investigator of the Wisconsin Sleep Cohort Study. “This is one result that calls for a follow-up study. If confirmed by a larger study with more asthma cases, the finding would have important clinical relevance.”

He added, “For now, it makes sense for clinicians to consider asthma history, as well as more traditional factors associated with OSA such as obesity, when deciding whether to evaluate patients for OSA with a sleep study.”

Although he considers the overall study that will be presented at ATS 2013 a “strong observational study,” Dr. Peppard said it falls short of establishing causality between asthma and sleep apnea. He and Dr. Teodorescu plan to continue their study for at least another four years to look at the connection between asthma and sleep apnea over an even longer timeframe. They also hope other researchers will look at asthma and OSA in other cohorts in order to “solidify our study results.”

Dr. Teodorescu believes that birth or child cohorts would be especially important to study, because the link between asthma and OSA in the Wisconsin study was strongest in those who had asthma as children. Such studies, she added, would incorporate a “more objective” diagnosis of asthma than simply asking participants if they were ever diagnosed as having the disease.

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** Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 45011

Asthma Predicts 8 Year Incidence Of Obstructive Sleep Apnea In The Wisconsin Sleep Cohort

Type: Late Breaking Abstract

Category: 16.05 - Sleep in Other Medical Disorders (SRN/PEDS)

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Abstract Body

Rationale: Cross-sectionally, obstructive sleep apnea (OSA) is more common among asthmatics, but whether asthma promotes development of OSA remains unknown. We aimed to determine if the presence or development of asthma affects the risk of new-onset OSA in Wisconsin Sleep Cohort Study (WSCS) participants.

Methods: At four-year intervals, WSCS participants (ages 30-60 years in 1988) complete in-laboratory polysomnography, clinical assessments, and health history questionnaires. To examine the relation of self-reported physician-diagnosed asthma and incidence of new OSA, we modeled the association of presence of asthma and odds of developing OSA 8 years later, among participants free of OSA (apnea-hypopnea index < 5 events/hr and not treated) at baseline. Logistic regression estimated odds of developing OSA (AHI ≥ 5 or OSA treatment initiation). First, asthma was assessed regardless of age of onset (“asthma at any age”); then, categorized by the age of onset as childhood (age < 18 years) or adult (age ≥ 18 years). Models for asthma predicting new-onset OSA at the eight-year follow-up were constructed at first, adjusting for baseline variables (age, sex, BMI, smoking, alcoholic drinks/week, and nasal congestion), and then with addition of new asthma cases and change in BMI.

Results: Out of ~1500 WSCS participants with baseline studies, 773 had both baseline AHI < 5 and 8-year follow-up studies, and thus could be followed for 8-year incidence of OSA. Of these 773 participants, 201 had asthma (61 childhood-onset, 140 adult-onset). Relative to those without, those with asthma of onset at any age had 1.70 times (95% CI=1.15-2.51) greater odds of new-onset OSA at 8-year follow-up. Each increment in asthma duration of 5 years was associated with a 10% rise in the odds (1.01-1.19) for new onset OSA. Relative to no asthma, childhood-onset asthma was associated with 2.34 times (1.25-4.37) and adult-onset asthma with 1.48 times (0.92-2.36) greater odds of new-onset OSA. There were 45 subjects who developed asthma while under observation for OSA change. New-onset asthma was unassociated with new-onset OSA, both in the model that included asthma with onset at any age (which remained significantly associated, 1.67 [1.12-2.50]) and when stratified by age of onset (childhood-onset 2.28 [1.24-4.20] and adult-onset asthma 1.44 [0.88-2.35]).

Conclusions: In adults, presence of asthma, particularly childhood-onset asthma, predicted 8-year risk of developing OSA. Incremental asthma duration by 5 years raised the odds for OSA 8-year later by 10%. How intrinsic disease characteristics or associated features

starting early in life affect upper airway patency during sleep remains unknown.