News Release

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ATS Press Room: 415-978-3511 (May 20-23)

Oral presentation: Sunday, May 20, 8:15 a.m.
Mini-symposium: 8:15 a.m.-10:45 a.m.
Location: Room 3001-3003 (West Building, Level 3), Moscone Center

PRESS CONFERENCE: Sunday, May 20, 4:45 p.m.

Sleep Disordered Breathing is Associated with an Increased Risk of Cancer Mortality

ATS 2012, SAN FRANCISCO – Sleep disordered breathing (SDB), which is associated with an increased risk of adverse cardiovascular events and psychopathological outcomes, is also associated with an increased risk of cancer mortality, according to a new study.

"Recent *in vitro* and animal studies have shown that repeated episodes of hypoxia (an inadequate supply of oxygen) are associated with accelerated cancer progression," said F. Javier Nieto, MD, PhD, chair of the Department of Population Health Sciences at the University of Wisconsin School of Medicine and Public Health. "Our results are the first to suggest that SDB is also associated with an increased risk of cancer mortality in humans."

The results will be presented at the ATS 2012 International Conference in San Francisco.

The researchers examined 22-year mortality data on 1,522 subjects from the Wisconsin Sleep Cohort, a prospective, community-based study of the predictors and natural history of sleep disorders. SDB was assessed by polysomnography at baseline.

After adjustment for age, sex, body mass index, smoking and other factors, both all-cause and cancer mortality were associated with the presence and severity of SDB in a dose-response fashion. Compared to subjects without SDB, the adjusted relative hazards of cancer mortality were 1.1 for study participants with mild SDB, 2.0 for those with moderate SDB, and 4.8 for those with severe SDB.

The team of University of Wisconsin investigators led by Dr. Nieto conducted this research in collaboration with Ramon Farré, PhD, professor of Physiology at the Unit of Biophysics and Bioengineering at University of Barcelona, Spain. In a separate study which will also be presented at the ATS 2012 conference, Dr. Farré's group and colleagues at the Hospital Clínic-IDIBAPS in Barcelona follow up on their earlier mouse experimental model showing that the effect of intermittent hypoxia on cancer growth is considerably stronger in lean mice than in obese mice.

"The consistency of the evidence from the animal experiments and this new epidemiologic evidence in humans is highly compelling," said Dr. Nieto. "In vitro and animal studies suggest that intermittent hypoxia promotes angiogenesis and tumor growth, which can explain these observations."

"Ours is the first study to show an association between SDB and an elevated risk of cancer mortality in a population-based sample. If the relationship between SDB and cancer mortality is validated in further studies, the diagnosis and treatment of SDB in patients with cancer might be indicated to prolong survival," Dr. Nieto concluded. "Additional studies are needed to replicate our results and to examine the relationships between SBD, obesity, and cancer mortality."

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"Obstructive Sleep Apnea And Cancer Mortality: Results From The Wisconsin Sleep Cohort Study" (Session A18, Sunday, May 20, 2012: 8:15 a.m., Room 3001-3003, Moscone Center; Abstract 30627)

** 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 30627

Obstructive Sleep Apnea And Cancer Mortality: Results From The Wisconsin Sleep Cohort Study

Type: Scientific Abstract

Category: 16.04 - Sleep Disordered Breathing: Epidemiology, Genetics and Outcomes (SRN)

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Abstract Body

RATIONALE

Recent studies in a melanoma mice model have demonstrated that intermittent hypoxia promotes tumor growth. Even though previous data have shown that obstructive sleep apnea (OSA) is associated with total and cardiovascular mortality, the association between OSA and cancer incidence or mortality has not been studied. The goal of the present study was to examine the hypothesis that OSA is associated with increased cancer mortality in a population-based sample.

METHODS

We used 20-year mortality follow-up data from the Wisconsin Sleep Cohort sample (n=1522). OSA was assessed with full polysomnography at baseline in all participants. The apnea-hypopnea index (AHI) was defined as the mean number of apnea and hypopnea events per hour of sleep, and categorized as normal (AHI <5); mild OSA (AHI 5-14.9); moderate OSA (AHI 15-29.9); and severe OSA (AHI ?30 or use of CPAP). Non-parametric Kaplan-Meier analyses were used to compare cumulative mortality and Cox proportional hazards regression was used to estimate total and cancer mortality adjusted relative hazards associated with OSA severity levels.

RESULTS

Both Kaplan-Meier analyses and Cox regression analyses adjusting for age, sex, body mass index (BMI), and smoking showed that both all-cause and cancer mortality were associated with the presence and severity of OSA in a dose-response fashion (see table).

Adjusted relative hazards* of total and cancer mortality according to OSA categories.

SDB (AHI range)	All-cause mortality	Cancer mortality
	Adjusted relative hazard (95% CI)*	
Absent (<5)	1.0	1.0
Mild SDB (5-14.9)	1.8 (1.1, 2.8)	1.1 (0.5, 2.7)
Moderate SDB (15-29.9)	1.1 (0.5, 2.5)	2.0 (0.7, 5.5)
Severe SDB (≥30)†	3.4 (1.7, 6.7)	4.8 (1.7, 13.2)
P for trend	0.0014	0.0052

*Adjusted for age, sex, BMI, BMI^2, and smoking.

After excluding persons who had used CPAP treatment (n = 126), the associations were

similar. In stratified analyses according to obesity status, the association was stronger among non-obese (BMI<30 kg/m2) than among obese participants (relative hazard comparing severe vs. non-OSA, 6.3 and 3.1, respectively).

CONCLUSION

Our study suggests that OSA is associated with an increased risk of cancer mortality in humans. These results are consistent with animal studies showing that intermittent hypoxia promotes increased angiogenesis and tumor growth. These results need to be replicated in studies looking at the association between OSA and survival after cancer diagnosis.

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