

# Obstructive sleep apnea's damage evident after one month

April 23 2012

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Obstructive sleep apnea (OSA) is a disorder in which there are recurring episodes of upper airway collapse during sleep with ongoing effort to breathe. OSA is estimated to affect 1 in 5 adults in America. The serious nature of the problem was captured in a landmark study which found that middle-age and older men with even mild levels of OSA were in danger of increased risk of stroke and death. While a link between OSA and stroke is clear, OSA's effect on the cerebral (brain) vessels is not. In an effort to shed light on this relationship, researchers in Texas have developed a novel model that mimics OSA in humans. Their model has found that after just 30 days of OSA exposure cerebral vessel function is altered, which could lead to stroke.

The model and its findings are the result of efforts undertaken by Randy F. Crossland, David J. Durgan, Eric E. Lloyd, Sharon C. Phillips, Sean P. Marrelli and Robert M. Bryan, Baylor College of Medicine, Houston, Tex. An abstract of their study entitled, "Cerebrovascular Consequences of Obstructive Sleep Apnea," will be discussed at the meeting [Experimental Biology](#) 2012 being held April 21-25 at the San Diego Convention Center.

## New Model, New Findings

The most common [animal model](#) used to study OSA today is intermittent hypoxia (IH) which relies solely on exposing animals to a decrease in [blood oxygen levels](#). The new model incorporates all physiological

consequences involved in OSA by inducing true apnea (closure of the airway). The revised model creates a more complete picture of the apnea process and one that more accurately mimics how OSA unfolds in humans.

Using their model the researchers induced 30 apneas (10 seconds duration) per hour in animals for 8-hours during the sleep cycle for up to one month. After one month of apnea, cerebral vessel dilatory function was reduced by up to 22 percent. This finding correlates with studies that show similar [cell dysfunction](#) in arteries and an increased risk of stroke in OSA patients. Damage to the vascular wall in brain arteries could be a factor predisposing an individual with OSA to stroke.

"There are two important findings in these results," according to researcher Randy Crossland. "The first is the model itself. The new model allows us to study the complete disease and better understand how repetitive exposure to apnea affects the body. The second is that only one month of moderate OSA produces altered cerebrovascular function which could result in a stroke. A finding that highlights the detrimental impact OSA can have on the body."

## **OSA Prevalence Expected to Rise**

According to Mr. Crossland, some researchers estimate that up to 85 percent of patients with clinically significant [sleep apnea](#) have not been diagnosed. Obesity and aging are strongly associated with OSA. "As the prevalence of obesity is rising, and the population continues aging, we expect the rates of OSA to rise. It should also be noted that non-obese individuals and even children can have OSA," he said. And while OSA is seen more often in men than in women for unknown reasons some researchers believe that the true rate in females has been underestimated.

The common signs and symptoms of OSA include: habitual snoring,

daytime sleepiness, enlarged neck size, morning headache, sexual dysfunction, and mood and behavioral changes. "OSA can have a detrimental impact on a person's body and their life. It is a serious, yet treatable, disorder that should not be taken lightly," according to Mr. Crossland.

Provided by Federation of American Societies for Experimental Biology

Citation: Obstructive sleep apnea's damage evident after one month (2012, April 23) retrieved 25 April 2024 from <https://medicalxpress.com/news/2012-04-obstructive-apnea-evident-month.html>

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