Older men with breathing problems during sleep more likely to have irregular heartbeats

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Increasingly severe sleep-related breathing disorders in older men appear to be associated with a greater risk of abnormal heart rhythms (arrhythmias), according to a report in the June 22 issue of *Archives of Internal Medicine*, one of the JAMA/Archives journals. In addition, different types of breathing problems appear more closely associated with different categories of arrhythmia.

Sleep-disordered breathing is a common condition, according to background information in the article. It causes a number of physiologic events that could be stressful to the cardiovascular system, including inadequate blood oxygen levels at night and activation of the sympathetic nervous system (associated with the body's fight-or-flight response).

Reena Mehra, M.D., M.S., of Case Western Reserve University School of Medicine, Cleveland, and colleagues studied 2,911 men who underwent sleep testing by polysomnography between 2003 and 2005. The number of times they experienced apnea (brief pauses in breathing) or hypopnea (shallow breathing) during sleep was recorded, as were any periods of time in which the oxygen level of blood in their arteries dipped below 90 percent (hypoxia).

Having more episodes of paused or shallow breathing was associated with increased odds of two types of arrhythmias—one involving the heart's upper chambers (atria) and one involving the heart's lower chambers (ventricles). Obstructive sleep apnea—the most common type, involving a partial or complete blockage of the airways—was associated

with irregular heartbeats caused by a problem with the lower chambers or ventricles. Lower blood oxygen levels also appeared to be associated with this type of arrhythmia. However, central sleep apnea, involving a malfunction in brain signals controlling breathing muscles, was more strongly associated with arrhythmias in the atria or upper chambers.

More severe cases of sleep-disordered breathing were associated with higher odds of arrhythmia; in addition, "there also seems to be a threshold effect such that moderate-to-severe sleep-disordered breathing confers the greatest increased odds of clinically significant arrhythmias independent of self-reported heart failure and cardiovascular disease," the authors write.

"This line of investigation also identified hypoxia as the possible culprit pathophysiologic characteristic of sleep-disordered breathing that may serve as the trigger of ventricular cardiac arrhythmia development in older men. The strong associations between central sleep apnea and atrial fibrillation [arrhythmia originating in the heart's upper chambers] suggest that central sleep apnea may be a sensitive marker of underlying abnormalities in autonomic or cardiac dysfunction associated with atrial fibrillation," they conclude. "Further prospective and intervention studies are needed to better determine causality and the impact of aggressive sleep-disordered breathing interventions on cardiac outcomes."

More information: Arch Intern Med. 2009;169[12]:1147-1155.

Source: JAMA and Archives Journals (news : web)