

Supplemental oxygen eliminates morning blood pressure rise in sleep apnea patients

July 20 2018



Supplemental oxygen eliminates blood pressure rise after CPAP withdrawal.
Credit: ATS

Supplemental oxygen eliminates the rise in morning blood pressure experienced by obstructive sleep apnea (OSA) patients who stop using

continuous positive airway pressure (CPAP), the standard treatment for OSA, according to new research published online in the American Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*.

In "Effect of Supplemental Oxygen on Blood Pressure in OSA: A Randomized, CPAP Withdrawal Trial," Chris D. Turnbull, BMBCCh, a physician at the Oxford Centre for Respiratory Medicine at Churchill Hospital Oxford in the U.K., and co-authors report that in patients with moderate to severe OSA, [supplemental oxygen](#) prevented the rise in systolic and diastolic blood pressure, and the increase in [oxygen](#) desaturations that were seen in the control arm of the study after CPAP was withdrawn.

Twenty-five adults living in the United Kingdom participated in the study. All had been using CPAP successfully for over a year. CPAP was withdrawn for 14 nights, during which time participants first received supplemental oxygen or regular air overnight through a face mask or nasal cannula, and then crossed over to a second CPAP withdrawal period with the opposite treatment. Neither the researchers nor the participants knew when the participant was receiving the intervention (oxygen) or control (air) therapy.

Many studies have demonstrated an association between OSA, hypertension and cardiovascular disease. Some of these studies have linked the acute rises in blood pressure that OSA patients experience while sleeping to the constant need to wake up when their breathing stops or is partially blocked.

The authors of the current study wanted to find out if these recurrent arousals were also responsible for higher blood pressure in OSA patients during the day or whether intermittent hypoxia (low oxygen levels), resulting from interrupted breathing during sleep, caused a rise in blood

pressure during the day.

The study found that supplemental oxygen substantially reduced intermittent hypoxia, but had minimal effect on two markers of arousal: the apnea-hypopnea index, a measure of sleep apnea severity that takes into account episodes of paused and shallow breathing, and the heart rate rises index. Based on these findings, the authors wrote that "[intermittent hypoxia](#) appears to be the dominant cause of daytime increase in [blood pressure](#) in OSA."

Dr. Turnbull said, "This is important because many patients, especially those with few symptoms, are unable to tolerate using CPAP treatment and other treatments may be needed for these individuals," given that elevated levels of [blood pressure](#) put them at greater risk for heart attack and stroke.

However, before supplemental oxygen can be used as an alternative to CPAP, the authors write that more research must be done to prove it is safe. Other studies, they note, have shown that supplemental oxygen could increase injury to the heart when administered after a heart attack, and that in some patients, supplemental oxygen causes hypercapnia (excessive carbon dioxide in the bloodstream).

"The next challenge for researchers will be to see if supplemental oxygen treatment has similar effects in [patients](#) in the longer-term along with assessing its longer-term safety," Dr. Turnbull said.

The study also looked at objective and subjective measures of daytime sleepiness but did not find a difference between the two groups.

Provided by American Thoracic Society

Citation: Supplemental oxygen eliminates morning blood pressure rise in sleep apnea patients (2018, July 20) retrieved 10 April 2024 from

<https://medicalxpress.com/news/2018-07-supplemental-oxygen-morning-blood-pressure.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.