Key Cardiac Magnetic Resonance Changes Within 6 Months of CPAP

	Baseline	Follow-up
Left ventricular end-systolic volume	68 mL	53 mL
Left ventricular end-diastolic volume	199 mL	150 mL
Left ventricular mass	184 g	149 g
Left atrial volume index	49 mL/m^2	34 mL/m^2

Notes: Based on a study of 32 patients with moderate to severe obstructive sleep apnea. All reductions are statistically significant.
Source: Dr. Al-Mutairi

CPAP Reversed Atrial, Ventricular Remodeling

BY BRUCE JANCIN

FROM THE ANNUAL MEETING OF THE ASSOCIATED PROFESSIONAL SLEEP SOCIETIES

SAN ANTONIO — Six months of continuous positive airway pressure therapy markedly improved adverse left ventricular and atrial remodeling in patients with moderate to severe obstructive sleep apnea in a prospective study.

Diastolic as well as systolic abnormalities were reversed, raising the welcome prospect that CPAP is likely to prevent the development of one of the most dreaded complications of severe obstructive sleep apnea (OSA)—chronic heart failure—although this point remains speculative, Dr. Saleh Al-Mutairi said.

He recruited 32 patients with newly diagnosed moderate to severe OSA for the study, which involved serial follow-up by cardiac magnetic resonance (CMR), echocardiography, and cardiac biomarkers through 6 months of individually titrated CPAP therapy.

The subjects averaged 51 years of age, with a mean baseline apnea-hypopnea index of 53 events/hr and a body mass index of 34.5 kg/m^2. None of the participants had known cardiac disease. Adherence to CPAP was good. The patients' weight didn't change significantly during the study, and those being treated for hypertension remained on the same doses of medication throughout the follow-up period.

Other studies have shown improvement in left ventricular dysfunction with CPAP, but they were short-term trials. This is the first study with follow-up as long as 6 months using both CMR and echocardiography, according to Dr. Al-Mutairi of the University of Manitoba, Winnipeg.

He focused on the CMR results because he considers that technology more reliable than echocardiography for assessing ventricular size and function. The echo findings, however, corroborated the CMR results.

Most of the left ventricular measurements followed during the study were abnormal at baseline. The 6-month results included a 25% reduction from baseline in left ventricular end-diastolic volume and a 19% decrease in left ventricular mass. (See chart.)

Dr. Al-Mutairi drew particular attention to the 30% reduction in left atrial volume index, which he considers highly encouraging. " This is a very important point, given the association between the left atrial volume and cardiovascular events," he observed.

There was no significant change in C-reactive protein, brain natriuretic peptide, or other cardiac biomarkers during the 6 months of CPAP use.

The mechanism by which OSA is thought to predispose to heart failure involves an exaggerated negative thoracic pressure in response to the apneic episodes. This presumably leads to increased left ventricular systolic transmural pressure, which the left atrium resists, with resultant increased compliance and atrial overstretching, Dr. Al-Mutairi said.

He and his coinvestigators are in the midst of expanding their study to 50 patients in order to strengthen the conclusions. ■

Disclosures: *Dr. Al-Mutairi reported having no financial conflicts.*

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