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[Case Reports](#)     [Mayo Clin Proc.](#) 2006 Jan;81(1):53-5. doi: 10.4065/81.1.53.

## Angiotensin-converting enzyme inhibitors and obstructive sleep apnea

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### Abstract

Angiotensin-converting enzyme (ACE) inhibitors may induce cough and rhinopharyngeal inflammation. Obstructive sleep apnea (OSA) is characterized by upper airway inflammation. We describe a patient who, during enalapril treatment, developed cough, upper airway symptoms, and diurnal sleepiness, with an increased number of obstructive apnea-hypopnea episodes (apnea-hypopnea index [AHI], 25) during sleep. Her symptoms and AHI improved 1 month after enalapril was discontinued and diuretic therapy (hydrochlorothiazide-spironolactone) was initiated. Similar findings were observed in 4 other patients with OSA who had ACE inhibitor-induced cough. The mean  $\pm$  SD AHI was  $33.8 \pm 21.0$  during enalapril treatment and  $20.0 \pm 17.0$  after withdrawal of this drug ( $P = .04$ ). Exhaled nitric oxide, a marker of airway inflammation, was increased during enalapril treatment ( $15.0 \pm 4.3$  parts per billion) and decreased after discontinuation of this drug ( $9.0 \pm 2.6$ ;  $P = .03$ ). No significant difference in the AHI and exhaled nitric oxide was observed in 4 patients with OSA who did not experience cough, before or after withdrawal of ACE inhibitor treatment. These findings suggest that ACE inhibitor treatment may contribute to OSA by inducing upper airway inflammation.

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