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Selim R. Benbadis and Lynn Liu

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# CPAP

## A treatment for epilepsy?

Selim R. Benbadis,  
MD  
Lynn Liu, MD

Address correspondence and reprint requests to Dr. Selim R. Benbadis, University of South Florida & Tampa General Hospital, 4 Columbia Drive, Suite 730, Tampa, FL 33606  
sbenbadi@health.usf.edu

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Sleep occupies a third of our existence. The most common sleep disorder of excessive sleepiness, obstructive sleep apnea syndrome (OSA), has been estimated to be undiagnosed in 24% in men and 9% in women in a middle aged population,<sup>1</sup> and its incidence increases with age.<sup>2</sup> Additionally, as the population ages, more people are diagnosed with new onset epilepsy, and the cause is usually unknown.<sup>3</sup> Furthermore, patients with epilepsy have been shown to be more likely to have OSA for several reasons including nocturnal seizures, CNS suppressing medications, and sedentary lifestyle. Based on the increasing frequencies of these two conditions, they are likely to present as comorbidities.

Sleep deprivation is a well-established precipitating factor for seizures. Patients with idiopathic generalized epilepsies are the most susceptible to sleep deprivation, but patients with localization-related (focal) epilepsies also can be affected. OSA is characterized by recurrent airway closure, which causes recurrent arousals and fragmented sleep, and prevents deeper sleep stages. As such it represents an intrinsic form of sleep deprivation. OSA has already been shown to exacerbate seizures in younger patients and children.<sup>5,6</sup> The treatment of OSA seems to improve seizure control in a medically refractory population.<sup>6,7</sup>

In this issue of *Neurology*®, the study by Chihorek et al.<sup>4</sup> provides good evidence that OSA is a risk factor for, or exacerbates, epilepsy in older patients. Patients with late-onset or worsening of seizures were compared to patients who were seizure-free or had improved seizure frequency. Worse seizure patients had significantly more OSA, using both objective measures (RDI) and subjective evidence (ESS scores and Sleep Disorders Questionnaire). While the definition of the two groups could be argued and was somewhat arbitrary and perhaps artificial, the findings are probably still valid and confirm other prior studies: OSA is associated with worse seizure control.

Unfortunately, OSA is notoriously underdiagnosed at all ages, and the diagnosis is often delayed. Yet screening for OSA is not particularly difficult. The combination of snoring plus daytime sleepiness, especially (but not only) in an overweight patient, is highly predictive of the diagnosis and justifies a polysomnogram. The neurologic consequences of OSA on health are increasingly documented, including on neurocognitive measures,<sup>8</sup> psychiatric diseases,<sup>9</sup> and cerebrovascular disease.<sup>10</sup>

In addition, the older population is more likely to have other comorbidities and take other medications. While seizures in the elderly are generally easy to control with medications, these patients are at increased risk for drug interactions. Therefore, the availability of a nondrug treatment option may be of great value. The treatment of OSA typically consists of CPAP, where positive air pressure acts like a pneumatic splint and prevents airway obstruction. Might this be viewed as a nonpharmacologic treatment for seizures?

The findings presented in the study by Chihorek et al. have practical clinical implications because new onset, or seemingly new onset, of epilepsy in the elderly is often of unknown cause. Correcting OSA may result in complete seizure control. These results should provide further motivation to screen systematically for OSA.

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From the University of South Florida & Tampa General Hospital (S.R.B.); and University of Rochester (L.L.), NY.  
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