Teaching *NeuroImages*: Obstructive sleep apnea triggered by vagus nerve stimulation

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A 47-year-old man with drug-resistant cryptogenic epilepsy, treated with vagus nerve stimulation (VNS), underwent polysomnography (PSG) for suspected obstructive sleep apnea (OSA). A previous PSG study, performed 1 year before VNS, had showed an apnea-hypopnea index (AHI) = 4 events/hour, but the patient reported that the activation of the VNS was associated with increase of apneas witnessed by his bed partner. PSG was consistent with mild OSA; the AHI was 14.0 events/hour. During PSG, the stimulator was active for periods of 30 seconds, generating a peculiar artifact (figure, black arrows), separated by a 3-minute interval. In 67% of the obstructive events (9.5 events/hour), the onset of the event was simultaneous or immediately followed the start of VNS activation, suggesting that VNS might trigger obstructive apneas/hypopneas^{1,2} (figure, white arrows).

AUTHOR CONTRIBUTIONS

Dr. Vollono: study concept and design, drafting the manuscript, revising the manuscript, final approval. F. Fuggetta: acquisition and analysis of data. Dr. Cioni: analysis and interpretation of data. Dr. Della Marca: study concept and design, drafting the manuscript, interpretation of data, study supervision, revising the manuscript, final approval.

STUDY FUNDING

No targeted funding reported.

DISCLOSURE

The authors report no disclosures relevant to the manuscript. Go to [Neurology.org](#) for full disclosures.

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Figure Five minutes of PSG

Recording montage is on the left. The stimulator activation artifact is evident on the EMG channel (black arrows). Vagus nerve stimulation activation triggers increase of respiratory rate, a consequent reduction of airflow, and, occasionally, an obstructive apnea (white arrows), followed by mild peripheral hemoglobin desaturation (arrowheads).

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Neurology 2015;85:e140

DOI 10.1212/WNL.0000000000002083

This information is current as of November 2, 2015

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