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Snoring Resolution with Vagus Nerve Stimulator Activation

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Highlights

- VNS associated adverse effects, including dysphagia, and worsening of sleep-disordered breathing, are well documented.
- VNS activation may lead to resolution of snoring during NREM sleep, vis-a-vis REM sleep.
- VNS activation is well visualized on PSG with use of active and reference surface EMG electrodes over the left lower neck implanted lead.

1. Introduction to the case:

The patient is a 37-year-old man with cerebral palsy and mild right hemiparesis who has a vagal nerve stimulator (VNS) in place for the treatment of medically refractory focal dyscognitive seizures with generalized convulsions. VNS parameters are as follows: output current 2.25 mA, signal frequency 20 Hz, pulse width 250 μ s, on time 60 seconds, and off time 3 minutes. VNS on/off schedule was maintained during polysomnography (PSG). Patient's body mass index is 26.7 kg/m², and he reports witnessed snoring, with rare witnessed apneas.

Patient underwent diagnostic PSG for the assessment of possible VNS associated sleep disordered breathing (SDB), with additional surface electromyography (EMG) electrodes placed over the left lower neck to assess VNS activation. PSG revealed total sleep time of 352 minutes, sleep latency of 9 minutes, sleep efficiency of 91%, whole-night apnea-hypopnea index (AHI) and respiratory disturbance index (RDI) of 0.3 and 1.9, respectively and REM AHI and RDI of 0.7 and 2.0, respectively. During VNS activation snoring was dramatically reduced during NREM sleep (Figure 1a), but this effect was not seen during REM sleep (Figure 1b).

2. Image Analysis:

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