

# Sentinel Central Events Prevalent During DISE for Obstructive Sleep Apnea

Nearly half of patients undergoing drug-induced sleep endoscopy (DISE) experienced a sentinel central event after an average of 6 minutes in a study of 103 individuals with obstructive sleep apnea (OSA).

DISE has become the top choice for surgical selection in patients with OSA, but it has a variable effect on surgical outcomes, Julianna G. Rodin, MD, of the University of Pennsylvania, Philadelphia, and colleagues explain.

The University of Pennsylvania Sleep Surgery team developed a comprehensive DISE platform that includes simultaneous collection of respiratory airflow and effort measurements, airway collapsibility, and videoendoscopy.

"This home sleep study-style setup has allowed us to better characterize the upper airway during DISE, and even helped our team diagnose a patient with Cheyne-Stokes breathing/central sleep apnea," Rodin told *Medscape Medical News*.

"With it, we also began to notice relatively frequent central and/or mixed sleep disordered breathing events during DISE after propofol dosing initiation," she said.

In a study presented at the American Academy of Otolaryngology–Head and Neck Surgery, Rodin and colleagues measured both the frequency and timing of sentinel central and/or mixed events (SCent) in adults undergoing DISE to assess the prevalence and impact on DISE.

The researchers also assessed differences in VOTE classification (velum,

oropharynx, tongue base, and epiglottis) in sentinel central events compared with obstructive events. VOTE scores were calculated using a grade of 0 for no obstruction, 1 for partial obstruction, and 2 for total obstruction.

The study population included 103 adults with OSA who underwent DISE with propofol sedation at a single tertiary academic medical center between June 2020 and November 2022. The mean age of the participants was 53.5 years, the mean body mass index was 29.7 kg/m<sup>2</sup>, and 67% were male. The average apnea hypopnea index (AHI) was 30.7 events per hour. The researchers used a polysomnography platform to capture data on nasal airflow, thoraco-abdominal effort belt signals, and videoendoscopy.

A total of 47 patients (46%) had at least one SCent. The average time to the first SCent was just under 6 minutes, and average transition to obstructive pathology in these patients occurred between 7 and 8 minutes. Using the one-sided prediction interval, at least 95% of patients were expected to transition to obstructive pathology within 12 to 13 minutes, Rodin said.

In addition, 29 of the 46 patients with SCent (63%) showed significant variability between central/mixed VOTE scores and obstructive VOTE scores.

No statistically significant differences were noted between patients with and without SCent in terms of demographics or apnea hypopnea index.

## **Surprising Prevalence of SCents**

"We anecdotally noted that SCents seemed to be somewhat common during the initial period of DISE, but were surprised that we saw at least one SCent in almost 50% of our DISE population," Rodin said. "We also saw that the majority of these SCents eventually transitioned to obstructive events after approximately 12 minutes, which is often past the average duration of normal DISE exams."

The high frequency of differing VOTE scores between SCents and

obstructive events also was unexpected, she added. Within the changes in VOTE scores as defined in the study, "there was a higher tendency for SCents to have more complete tongue base collapse compared to no or partial collapse in obstructive events, and to transition from anterior-posterior (AP) velum to concentric velum collapse during the obstructive event."

This outcome could potentially affect a patient's candidacy for hypoglossal nerve stimulator therapy (HGNS), she explained.

The takeaway from the current study is an increased awareness of the prevalence and timing of SCents in OSA patients, said Rodin. Clinicians who offer DISE and PAP alternatives also should be mindful of clinical signs of effort, by monitoring the chest and abdomen during DISE in the absence of respiratory effort belts.

The study findings also suggest that clinicians consider extending the minimum DISE duration to 10 minutes to ensure that the majority of SCents have passed, and delay VOTE scoring until patients transition to obstructive events, she added.

As for additional research, Rodin said: "If we could repeat the study with a standardized protocol of target-controlled infusion (TCI) of propofol, that would further bolster the data." However, TCI is not approved in the United States.

"Our propofol dosing technique was not standardized across all patients, which in theory could account for more SCents if patients were more sedated," Rodin noted. "However, we did not see a difference in average bispectral index (BIS) levels across all patients."

Other limitations of the current study included an inability to visualize the entire upper airway to achieve a complete VOTE score for every patient, which could have led to underestimation of the VOTE difference frequency,