Obstructive Sleep Apnea Awareness

Case Vignette: OSA and Nonepileptic Seizures

Presenting Complaints

A 61-year-old man visited his primary physician with chief complaints of multiple 'seizure- like spells' both in nighttime sleep and during daytime naps. They had been progressively worsening, with a frequency of eight to nine times every night. He described his typical spell as right lower extremity movements that would then generalize to involve all four limbs and would last anywhere from thirty seconds to one minute. He said he felt a sensation of "feeling tense" before the spell. However, the patient was conscious and was able to call out to the family for help. The episodes were not associated with tongue biting and bowel or bladder incontinence. He reported feeling tired but rarely has any confusion after the spell.

His wife added that the nighttime spells were often accompanied by an odd expiratory noise, almost like he stopped breathing for a few seconds each time. He is a car salesman by profession and has only been working part-time for the past 3-4 years.

Past History

The patient has a past medical history of cerebral palsy (CP), obstructive sleep apnea, and intractable epilepsy. He was first diagnosed with seizures at the age of 18 years and had been on multiple anti-epileptic drugs including zonisamide, phenytoin, lacosamide, and clonazepam for the past 35 years. His typical seizures are clinically different than the episodes described above.

He admitted that he was prescribed CPAP for his sleep apnea, but has not been very adherent. Additionally, his medical history was negative for smoking, alcohol consumption and use of illicit drugs.

Physical Exam

On physical examination, the patient was afebrile, slightly overweight, and displayed no clinical signs of cardiorespiratory decompensation. His vital signs were within the normal range, including a heart rate of 60 beats/min and oxygen saturation of 96% on room air. Examination of the patient's chest indicated vesicular breath sounds, and examination of the heart revealed rhythmic heart action without any murmurs. Neurological examination revealed no abnormalities, except for a mild rigidity in lower extremities.

- Blood pressure: 130/86 mmHg

This resource was supported by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $704,163 with 100 percent funded by CDC/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.

- Axillary body temperature: 98.2°F
- BMI: 30 kg/m^2

Testing

Routine labs were within normal limits. Both phenytoin and zonisamide levels were in the subtherapeutic range. His primary physician referred him to a neurologist who was also a board-certified sleep medicine specialist who admitted him to the epilepsy monitoring unit (EMU) for characterization of the spells.

A 16-channel video electroencephalogram (vEEG) monitoring was performed to characterize these spells. On the first night, he had five spells, and all of them occurred during sleep and manifested as arousals with an apneic event. One epoch during an ongoing spell demonstrated that the patient seems to have woken up as indicated by eye blinks intermixed with movement artifacts. However, no epileptiform discharges were seen.

Discussion of Treatment Plan

Based on these findings, the neurologist concluded that these non-epileptic spells were, in fact, obstructive apneas. The patient started CPAP therapy at a pressure level of 10 cm of water, ensuring that the oxygen saturation level would exceed 90 percent. Over the course of his remaining stay in the EMU, there was a significant decline in the number of spells after starting CPAP. There were no abnormal ictal and/or interictal discharges on the EEG. He was discharged with education about non-epileptic seizures and the prognosis of this condition.

Outcome of Case

During the follow-up appointment after three month in the clinic, the patient reported complete resolution of his spells.

Teaching Points

Commonly misdiagnosed as epilepsy, patients with ‘non-epileptic’ spells; also known as psychogenic nonepileptic seizures (PNES) are often treated with antiepileptic drugs for years before an actual diagnosis is made. Non-epileptic seizures are not uncommon in clinical practice, with most patients having associated psychiatric comorbidities.

This resource was supported by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $704,163 with 100 percent funded by CDC/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.

Count on Sleep | Obstructive Sleep Apnea Awareness

This case report highlighted the need to understand that not all nocturnal spells are seizures and that proper identification of the nature of the spells is important to address them appropriately.

Respiratory events associated with the patient's sleep apnea were mistaken for epileptic seizures and were being treated with antiepileptic medications. In patients with OSA, the number of epileptic events is related to intermittent hypoxia and the increased number of state transitions often observed during sleep. A video-EEG recording, which is the gold standard diagnostic test to make a distinction between psychogenic nonepileptic seizures and epilepsy was able to ascertain the nature of the spells. Treatment of sleep apnea with CPAP consequently alleviated the patient's problem.

Thirty to forty percent of people living with epilepsy have seizures despite optimal medical therapy. Treating sleep disorders is a novel therapeutic opportunity that should not be missed, especially in people who fail other options. Because nonepileptic disorders may cause episodic and paroxysmal symptoms that resemble epilepsy, these conditions and syndromes must be considered in the differential diagnosis or when antiepileptic drugs are ineffective.

The health risk of people with PNES misdiagnosed with epilepsy is considerable. Aggressive treatment to stop the seizure sometimes results in oversedation, requiring paralysis and intubation. PNES is a diagnostic and therapeutic challenge that is costly to patients and to society at large.

Adapted from: Natteru P, Rupareliya C, Zhou X, Bollu PC. Obstructive Sleep Apnea Presenting as Non-epileptic Spells: A Unique Combination. Cureus. 2017 Oct 24;9(10):e1800. doi: 10.7759/cureus.1800. PMID: 29282444; PMCID: PMC5741277.

Copyright © 2017, Natteru et al.

This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

This resource was supported by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $704,163 with 100 percent funded by CDC/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.

Count on Sleep | Obstructive Sleep Apnea Awareness

Additional Reading

- Boyle LN, Tippin J, Paul A, Rizzo M. Driver Performance in the Moments Surrounding a Microsleep. Transp Res Part F Traffic Psychol Behav. 2008 Mar 1;11(2):126-136. doi: 10.1016/j.trf.2007.08.001. PMID: 20090864; PMCID: PMC2808128.
- Morrone E, D'Artavilla Lupo N, Trentin R, Pizza F, Risi I, Arcovio S, Fanfulla F. J Sleep Res. Microsleep as a marker of sleepiness in obstructive sleep apnea patients. 2020;29:0.
- Durmer JS, Dinges DF. Neurocognitive consequences of sleep deprivation. Semin Neurol. 2005 Mar;25(1):117-29. doi: 10.1055/s-2005-867080. PMID: 15798944.
- Dinges DF. An overview of sleepiness and accidents. J Sleep Res. 1995;4(S2):4–14.
- Dzierzewski JM, Dautovich N, Ravyts S. Sleep Med Clin. Sleep and cognition in older adults. 2018;13:93–106
- Thiese MS, Hanowski RJ, Kales SN, Porter RJ, Moffitt G, Hu N, Hegmann KT. Multiple Conditions Increase Preventable Crash Risks Among Truck Drivers in a Cohort Study. J Occup Environ Med. 2017 Feb;59(2):205-211. doi: 10.1097/JOM.0000000000000937. PMID: 28079676; PMCID: PMC5293661.

This resource was supported by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $704,163 with 100 percent funded by CDC/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.