

Obstructive Sleep Apnea Mimics Attention Deficit Disorder

Journal of Attention Disorders
XX(X) 1–2
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DOI: 10.1177/1087054713479664
jad.sagepub.com



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Abstract

Attention deficit and hyperactivity are known possible symptoms or correlates of obstructive sleep apnea (OSA). However, these associations may be missed in children, because children often fail to report excessive daytime sleepiness, and attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD) are common primary diagnoses in themselves. We report on a 17-year-old, slender, non-snoring male who presented to his pediatrician with a prolonged history of four complaints: inattention, fidgeting, frequent sinusitis, and somnolence. He was diagnosed with ADHD, while the somnolence, which often abated somewhat upon use of antibiotics for sinusitis, was attributed to the sinus infections. A later sleep study revealed OSA, and thorough additional testing proved that the original ADHD diagnosis was in error. All four conditions were allayed with proper use of a continuous positive airway pressure (CPAP) machine. (*J. of Att. Dis.* 2013; XX(X) 1-XX)

Keywords

ADHD, obstructive sleep apnea

Introduction

Attention deficit, hyperactivity, and sinusitis are known possible symptoms or correlates of obstructive sleep apnea (OSA; Katz & D'Ambrosio, 2010; O'Brien & Gozal, 2004). However, these associations may be missed in children, because sinus infections and attention deficit disorder (ADD) are common primary diagnoses in themselves (Millichap, 2008).

Patient Presentation

A healthy, 17-year-old White male with a body mass index (BMI) of 18.8 kg/m² and a history of frequent sinusitis presented to our clinic complaining of difficulty concentrating at home and at school. He also complained of fatigue, but this symptom had seemed to improve significantly in the past when he received antibiotics for sinus infections (Lang, 2010). The patient had no known allergies and was not taking any medications. Physical exam was unremarkable, and on this occasion, a radiograph revealed clear sinuses. Complete blood count (CBC) and thyroid-stimulating hormone (TSH) were normal. His mother mentioned that fidgeting and inattention had seemed to be a problem at school over the years. ADHD was suspected.

The patient was referred to a clinical psychologist, who first ruled out depression and anxiety and then used the Conners' Continuous Performance Test (Conners, 2000) to diagnose ADHD. We subsequently prescribed

methylphenidate HCl 18 mg every day, and the patient reported that it helped both his ability to concentrate and his feelings of fatigue.

About 5 months later, the patient returned to our office again complaining that he felt very tired most of the time. Nighttime sleep hygiene and habits were apparently normal, without witnessed apneas, nor waking short of breath, waking with coughing, choking, gasping, nocturia, and the like. His average reported total sleep time at night was 8+ hr. He had received antibiotics at an urgent care center twice in the last 4 to 5 months for sinusitis, but his description of how he was feeling seemed out of proportion to his recent infections. Physical exam was unremarkable, and the following tests were within normal range: CBC with differential, basic metabolic panel ("Chem 14"), TSH, free T4, and vitamin D.

The patient was next referred to a sleep specialist, who found nothing remarkable in an ear, nose, and throat exam. An Epworth Sleepiness Scale score was 12/24 (normal < 10/24). A polysomnogram recorded for 385.7 min revealed

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30 total apneas (28 obstructive apneas, 2 central apneas), 1 hypopnea, and 94 total respiratory effort related arousals (RERAs). The sleep specialist diagnosed OSA.

Methylphenidate was discontinued, and the patient began using a continuous positive airway pressure (CPAP) machine at night, with reported significant improvement in energy level, focus, and attentiveness.

A follow-up polysomnogram for CPAP titration recorded his sleep for 354.5 min, revealing only one central apnea, one hypopnea, and zero RERAs. Nasal CPAP was incrementally titrated to optimal pressure of 9 cm H₂O.

To verify that the original ADHD diagnosis was incorrect, the patient was referred to a nearby university for a neuropsychological evaluation. He hoped to pursue a pilot license, which is unavailable to those with confirmed diagnosis of ADHD. With a vested interest in avoiding a particular diagnosis, it was critical that the patient obtain a comprehensive evaluation performed by impartial test administrators.

The university report stated,

The patient's performance on the Brown Adult ADD scale did not reveal an adult ADD diagnosis. His total score was 12 (normal < 55). . . . This patient does not currently have adult ADD. His obstructive sleep apnea does not currently impact his cognitive functioning, since he is on CPAP.

Discussion

Although the stimulant methylphenidate initially improved the patient's fidgeting, inattention, and feelings of fatigue, it was apparently merely masking some correlates of the true disorder, OSA. In the same way, antibiotics for the patient's respiratory infections were merely treating another complicating comorbidity of his core problem.

Impaired attention and hyperactivity are reportedly "major effects" caused by intermittent or chronic hypoxia, a possible feature of sleep apnea (Bass et al., 2004). Hypoxia aside, however, even sleep fragmentation itself, which is a key feature of OSA and may not necessarily be accompanied by hypoxia, is known to cause attention deficit (McGuire, 2008). This information is clinically important to psychologists, pediatricians, and general practitioners, because ADD is the most common disorder of childhood, with a prevalence estimated at 5% (Millichap, 2008). The point is that OSA could masquerade as ADD, particularly when an absence of other obvious risk factors for OSA

makes the condition harder to diagnose. Furthermore, children rarely report the differential symptom of excessive daytime sleepiness, and parental reports of sleepiness vary with the questionnaire used (Katz & D'Ambrosio, 2010). A reasonable compensation may be careful oral questioning of the parent. Follow-up with referral to a sleep specialist could increase the number of cases discovered and treated.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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