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## CLINICAL VIGNETTE

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### Night Eating Syndrome

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A 60-year-old woman presented for evaluation and management of obesity. She has struggled with weight loss for most of her adult life. She describes her eating habits as “emotional overeating”, particularly late at night. Her late dinner is followed by desserts. She feels that she must follow this eating pattern in order to sleep better at night. She reports morning anorexia, does not eat much during the day, often skipping lunch. This pattern occurs most days of the week when she is alone at home. Past medical history of attention-deficit/hyperactivity disorder, gastroesophageal reflux disease, hyperlipidemia, hypertension, osteoarthritis, depression, anxiety, and overactive bladder. Medications include dextroamphetamine, bupropion, gabapentin, and solifenacin. She reports that dextroamphetamine contributes to reduced appetite during the day but her appetite returns in the evening. She is able to control her food portions better in the evening when her daughter is present.

Her obesity treatment includes fenfluramine/phentermine, phentermine monotherapy, and tirzepatide. While on tirzepatide, she lost 30 lbs over 10 months, improving her body mass index (BMI) to 25.6 kg/m<sup>2</sup>. However, during this time, she also developed four episodes of *Clostridium difficile* infection requiring hospitalizations. Though it was unclear whether this was due to tirzepatide, after discussion with her providers, she stopped tirzepatide. She subsequently had significant weight regain. She exercises twice a week for 1 to 2 hours at the gym, which includes weight-lifting and cardiovascular exercise. She reports multiple life stressors, being unemployed and separated from her partner.

Her initial visit was completed via televideo conference. Though unable to measure her vital signs, her recent office vital signs were unremarkable. Her current body mass index is 31.6 kg/m<sup>2</sup> with her highest BMI of 33.8 kg/m<sup>2</sup>. She was obese, but otherwise well appearing, in no acute distress, and breathing comfortably. No Cushingoid features were appreciated. Her laboratory tests show normal A1c 5.6%, lipid panel with total cholesterol 282 mg/dl, HDL 84 mg/dl, LDL 185 mg/dl, Triglycerides 67 mg/dl, normal TSH 1.0 mIU/ml, normal prolactin 8.5 ng/ml, and normal metabolic panel.

She started low dose diethylpropion for her late evening meal. On follow up, she reports reduction in appetite in the evening and denies poor sleep.

#### *Discussion*

Night eating syndrome (NES) is an eating disorder characterized by an abnormal pattern of eating during the evening and night. NES is listed in the 2013 Diagnostic Statistical Manual-5 (DSM-5) under Other Specified Feeding or Eating Disorder from the American Psychiatric Association. Proposed criteria for NES include hyperphagia in the evening with 25 percent or more of calories consumed after dinner with at least two or more nocturnal awakenings weekly to eat on average. The patient must recall these episodes which distinguishes NES from parasomnias and sleep disorders. The diagnosis should also include 3 of the following symptoms: breakfast and/or morning eating skipped due to lack of desire to eat, urge to eat between dinner and bedtime sleep, sleep onset insomnia, the belief that the individual must eat to return to sleep, and/or mood that worsens at night or frequently depressed.<sup>1,2</sup> Additionally, the symptoms should be present for three or more months and not secondary to another medical condition.<sup>1-3</sup>

The prevalence of NES is around 1.5% of the general population in the United States and is likely under recognized.<sup>1</sup> The etiology of NES is unknown. Data suggests this could be heritable given that those with first degree relatives with night eating pattern were more likely to have NES. Stress can exacerbate and NES is often associated with other psychiatric disorders like depression.<sup>1,3</sup> Those who have NES also frequently have a comorbid sleep disorder.<sup>3</sup> Insomnia can be a comorbid condition in NES but not all patients with NES have insomnia.<sup>4</sup> NES can be confused with parasomnias that involve involuntary food intake at night and also binge eating disorder which has unique diagnostic criteria and usually includes a higher calorie intake at times that are not always nocturnal. Also, unlike binge eating disorder, nighttime eating is closely linked with anxiety. Those with NES are more likely to have an overlapping eating disorder with binge eating disorder being most common in up to 15-20% of patients.<sup>1,4</sup>

There are higher rates of diabetes and obesity in those who suffer from NES.<sup>1</sup> NES is seen more frequently in populations who suffer from obesity but not all people who have NES have obesity. Those who seek weight loss surgeries report up to a 64% chance of having some night eating symptoms. Evaluation should include screening for diabetes and monitoring for weight gain and weight related health issues/metabolic diseases.<sup>1</sup>

Several therapies for NES have been proposed, however, there are no uniform treatment guidelines for clinicians. Bariatric surgery in those who suffer from obesity and also have NES has been shown to reduce night eating behaviors. However, the night eating scores tend to increase again in the 2nd and 3rd post-operative years.<sup>3</sup> Bright light therapy may be a helpful therapeutic strategy. One study from McCune and Lundgren in 2015, showed that exposing patients to 10,000 lux lights for 1 hour for 14 days, reduced NES symptoms, insomnia and depressed mood.<sup>3</sup> Psychotherapy has also been successful in reducing night eating symptoms. Specifically, cognitive behavioral therapy, with interventions that include patient education, logging of sleeping and eating habits, incorporating coping skills, regulating eating and sleep patterns, and weight management strategies have been most effective. Psychotherapy has shown reductions in weight gain, reduced evening calories consumed, reduced nighttime eating, less recurrent awakenings at night as well as improvements in mood and quality of life.<sup>1</sup> Progressive muscle relaxation has shown a 30% reduction in food intake after the evening meal with reduced depression and anxiety symptoms.<sup>1,3,4</sup>

Studies support the use of serotonin reuptake inhibitors given that serotonin is involved in regulation of sleep, mood and eating. Some studies investigating effects of sertraline in NES have shown reduction in nighttime awakenings, evening hyperphagia and calorie consumption after evening meals.<sup>1</sup> Two randomized placebo-controlled trials examined sertraline which has been more effective than placebo in improving NES symptoms and quality of life. Specifically, a study by O'Reardon et al in 2006, showed reduction in nocturnal ingestions from 81% to 14%, a reduction in nocturnal awakenings from 74% to 14% and reduction in evening hyperphagia from 68% to 29%.<sup>4</sup> Escitalopram has also been shown to be effective in small studies.<sup>4</sup> There have been a case series and case reports showing a possible benefit of topiramate in NES likely due to the anorexigenic and somnolence producing effects of topiramate.<sup>4</sup>

Our patient with NES, responded well to stimulant therapy which has not previously been reported in the literature. Because there can be a correlation with NES and insomnia it may not be initially considered by clinicians. In our patient, her sleep was not affected by this therapy and her NES symptoms have improved.

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