Nocturnal Arousals in a Middle-Aged Woman

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A 46-year-old woman is being evaluated for recurrent nighttime awakenings and coughing for the past several years. Episodes occur 1-2 times per night. Sometimes, she awakens in a panic, gasping for air. However, there is no associated chest discomfort. She does not have any difficulty falling asleep and is able to resume sleep 5 to 10 minutes after these episodes. There is no history of snoring or witnessed apnea; however, she currently does not have a bed partner. She has been divorced for 2 years; her former husband never noted snoring or apneic episodes. When falling asleep, she sometimes notices some leg jerking which momentarily awakens her. However, there are no reports of leg movements or discomfort associated with nighttime awakenings. For the past several years, she has experienced a burning sensation in her chest, especially when recumbent and after eating large meals. She is tired in the morning when she awakens and often has a foul taste in her mouth. During the daytime, she is fatigued

and lacks energy, but cannot take a nap. She has irregular menses, but does not have hot flashes and is not taking hormone replacement therapy or other medications. She smokes one-half pack of cigarettes per day. Although she does not consume alcoholic beverages, she drinks 3-4 caffeinated diet soft drinks per day. On physical examination, she is overweight with a BMI of 28 kg/m² and has a mildly crowded oral pharyngeal airway. Her Beck Depression Inventory Score is 8 and her Epworth Sleepiness Scale Score is 9.

Which of the following would be the most likely to provide an etiology for her nocturnal awakenings?

- A. Home sleep study (Type III)
- B. Exercise tolerance test
- C. Esophageal pH monitoring
- D. Neuropsychologic testing
- E. Polysomnography

Answer: C. Esophageal pH monitoring

This patient most likely has nocturnal arousals from gastroesophageal reflux (GERD). She reports symptoms consistent with heartburn during the day especially after eating large meals.^{1,2} In addition, she is overweight, smokes, and uses caffeinated beverages, all of which are all reported risk factors for GERD.³⁻⁷ Esophageal pH monitoring (Answer C) will confirm the diagnosis. A positive test demonstrates episodes of reduction in pH to < 4 for more than 4.2% of the duration of the study.⁸ Although an esophageal pH test would be diagnostic, a therapeutic trial of anti-reflux measures and use of a proton pump inhibitor would be more cost-effective.

The patient does not give a strong history suggesting obstructive sleep apnea (OSA). Although the patient does not have a current bed partner, there is no past or current history of snoring or witnessed apnea. She is fatigued but does not have daytime sleepiness. Although she is overweight, female gender and lack of menopausal symptoms also make OSA less likely. Thus, a home sleep study (Answer A) would not likely confirm a diagnosis.

Except for the history of nocturnal dyspnea that might suggest an angina equivalent or sudden pulmonary vascular congestion, there is little in the history that is consistent with coronary artery disease. Thus, an exercise tolerance test likely would not be useful (Answer B).

The patient has no symptoms of a mood disorder or cognitive problems, and her Beck Depression Inventory is not consistent with depression. Therefore, neuropsychologic testing would not indicated (Answer D).

The patient describes hypnic jerks or sleep starts, but there is little in her history consistent with either restless legs syndrome or periodic limb movement disorder. The former is a diagnosis based on fulfilling clinical criteria.⁹ Periodic limb movement disorder (PLMD) is thought to be uncommon and periodic limb movements of sleep associated with arousals would be found on polysomnography.^{10,11} However, given the paucity of symptoms to suggest PLMD in this case, polysomnography (Answer E) would not be indicated as the initial diagnostic test.

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