

SLEEP MEDICINE PEARLS

A Case of Sleep Paralysis with Hypnopompic Hallucinations

David E. McCarty, M.D.; Andrew L. Chesson Jr., M.D.

Sleep Disorders Center, Department of Neurology, Louisiana State University Health Sciences Center, Shreveport, LA

EB is a 22-year-old Caucasian woman requesting evaluation for a 2-year history of “spells of paralysis.” These began after an auto accident that was not associated with head trauma, but did result in a broken ankle. She described the accident as intensely terrifying. During recovery, she began having episodes of emerging from sleep to a state of being fully awake but unable to move, accompanied by a sense of fear and breathlessness. Sometimes, she would have visual imagery or strange sensations, such as feeling a distinct foreign presence in the room, seeing shadows, or hearing footsteps. Typically, episodes would occur from a nocturnal awakening, and could happen at any time of night. Initially, they would occur at random, from weekly, to a month or two apart. For the preceding month, events increased to several times a night and occurred during daytime napping. She became fearful of sleeping. She admitted reluctance to discuss these events with a physician for fear of being labeled mentally ill.

She described sleep quality as poor, with anxiety and excessive worry. She denied visual or auditory hallucinations during daytime hours. She admitted strong feelings of fatigue, with concentration and memory difficulty. Although one of her stat-

ed complaints was excessive daytime sleepiness, her Epworth Sleepiness Scale score was only 7/24. She estimated a somewhat restricted total nocturnal sleep time of 6 hours, and often resorted to a 1- to 2-h nap upon returning home from work, due to an overwhelming sense of sleepiness in the early evening. She denied restless legs symptoms, snoring, witnessed apnea, and cataplexy.

She denied smoking or recreational drug use, and drank alcohol infrequently. She used no regular medications and had no family history of sleep disorders.

Examination revealed a slim adult female in no distress. Blood pressure was 118/70 mm Hg; pulse was 90 beats/min and regular; height was 5 feet 9 inches; and weight was 139 pounds. Upper airway exam revealed an uncrowded upper airway with absent tonsils. Neck circumference was 13 inches. Cardiopulmonary exam revealed no abnormalities. She was alert and fully oriented, and thought content was goal directed. Affect was slightly anxious but showed full range and was appropriate.

CBC and thyroid function tests were normal.

What is the diagnosis?

Submitted for publication June, 2008

Submitted in final revised form July, 2008

Accepted for publication July, 2008

Address correspondence to: David E. McCarty, M.D., LSU Health Sciences Center, Department of Neurology, Sleep Medicine Program, 1501 Kings Highway, PO Box 33932, Shreveport LA 71130-3932; E-mail: Dmcca1@LSUHSC.edu

Recurrent isolated sleep paralysis associated with hypnopompic hallucinations, precipitated by behaviorally induced insufficient sleep syndrome

Isolated sleep paralysis (ISP) is defined as the transient inability to move or speak during the transition between sleep and wakefulness in the absence of other clinical features of narcolepsy. Eye movements are typically not affected. Isolated events are a commonly reported phenomenon, with lifetime prevalence estimates varying between 20% to 60%, depending on the population under study. Spanos and colleagues found that, in a large group of undergraduate college students, 21% reported having had at least one episode of ISP. However, only 4% reported that they had experienced 5 or more episodes in their lifetime.¹ The prevalence of cases with more frequent episodes, termed *recurrent isolated sleep paralysis* (RISP), such as seen in this patient, is not known, but is thought to be uncommon.

ISP is thought to be a form of REM dysregulation, similar to the atonia events seen in patients with narcolepsy. Takeuchi and coworkers demonstrated that events can be elicited in non-narcoleptic patients using sleep interruption protocols designed to create sleep onset REM periods (SOREMP), from which the patients are intentionally awakened.² Polysomnographic recordings of patients with experimentally induced ISP reveal features of REM sleep at the time of the reported paralysis. Takeuchi later demonstrated that patients who tolerated the sleep disruption poorly were more likely to experience ISPs than those who tolerated it well, which may explain the oft-cited correlation between ISP and anxiety disorders.³

ISP episodes tend to occur during awakening from sleep (hypnopompic) as opposed to narcolepsy-associated paralysis, which is more closely associated with sleep-onset (hypnagogic) events. Many reports indicate that events occur more often from the supine sleeping position, though the mechanism for this is not known.

Visual and auditory hallucinatory experiences are commonly reported with ISP, typically including a sense of an evil presence in the room, sensation of being touched, or hearing voices or other noises in the room. Occasionally more organized hallucinatory activity, such as seeing faces or people at the bedside, are reported. A sense of breathlessness (often described as pressure, or more disturbingly, as someone standing on the chest) is common, likely reflecting the disquieting feeling of relying solely on diaphragmatic musculature for respiration. Subjects often describe the episode as intensely frightening, even after understanding that the disorder is benign and self-limiting. In fact, ISP is part of the mythology of some cultures, attributed to supernatural forces such as witchcraft or even UFO encounters, with references to this experience found in the folklore of many ethnic groups (Figure 1). The cultural attribution of ISP episodes to the supernatural is salient to the clinician, as it is not uncommon for patients to deny such events out of fear, even under direct questioning.

The treatment for RISP is avoidance of sleep deprivation and other identified precipitants. Serotonergic agents may reduce the frequency of episodes.⁴

FOLLOW-UP

EB was advised to extend her nocturnal sleep time to 8.5 h and to keep a sleep diary, which would include a list of ISP



Figure 1—The Nightmare (1781), by British painter Henry Fuselli (1741-1845) captures the terrifying experience of ISP: A malevolent presence sitting on the chest, while the victim lies flaccid, helpless.

events. She was seen 2 weeks later and declared that her events had resolved completely. She denied the sense of fighting sleep on a daily basis, and no longer required a nap after work.

PEARLS:

1. ISP is common, but RISP is thought to be uncommon.
2. ISP is often associated with hypnopompic hallucinations consisting of visual and auditory hallucinatory experiences which can be intensely frightening to the patient and can sometimes carry deep cultural significance. Physicians should be aware of this fear, and approach questioning regarding this symptom with appropriate sensitivity.
3. RISP can be precipitated by sleep deprivation, stress, and sleep schedule disruption, so most cases can be managed by simple attention to sleep schedule and hygiene. Other sleep disorders, mental health disorders, and medical disorders which disrupt sleep also should be sought and addressed.
4. An SSRI can be considered for particularly troubling cases refractory to conservative measures.

DISCLOSURE STATEMENT

This was not an industry supported study. The authors have indicated no financial conflicts of interest.

REFERENCES

1. Spanos NP, DuBreuil C, McNulta SA, et al. The frequency and correlates of sleep paralysis in a university sample. *J Res Pers* 1995;29:285-305.
2. Takeuchi T, Miyasita A, Sasaki Y et al. Isolated sleep paralysis elicited by sleep interruption. *Sleep* 1992;15:217-225.
3. Takeuchi T, Fukada K, Sasaki Y, et al. Factors related to the occurrence of isolated sleep paralysis elicited during a multiphasic sleep-wake schedule. *Sleep* 2002;25:89-96.
4. Koran LM, Raghavan S. Fluoxetine for isolated sleep paralysis. *Psychosomatics* 1993;34:184-7.