

•> CASE 36

The 2½-year-old, first-born son of married parents is brought to a pediatrician's office by his father. Before this visit, the patient visited the pediatrician only for regular well-child checks and for treatment of one episode of otitis media. The father is concerned about the behavioral problems his son has developed. He reports that for the past month, after the patient goes to bed and to sleep, the parents hear him get up in the middle of the night. This behavior occurs perhaps once or twice a week. On these occasions, the child is found standing somewhere in the house, crying and seemingly disoriented with rapid breathing and profuse sweating. When the parents attempt to comfort him or return him to his room, he becomes quite upset, striking out at them and screaming loudly. He continues to scream and fight for several minutes but then stops spontaneously. If he can be awakened, he will continue to act frightened and cannot share any dream content. Once the child is calmed, the parents put him back in his bed, and he sleeps through the rest of the night without incident. In the morning, he wakes up in his usual happy mood and does not remember what occurred the previous evening. The parents are worried that he might be having seizures or developing a severe behavioral problem.

- **What is the most likely diagnosis for this child?**
- **What treatments would you recommend for this child?**

ANSWERS TO CASE 36: Sleep Terror Disorder

*Summary:* The patient is a 272-year-old boy with new-onset sleep problems who has no significant other history. He wakes at night, screaming with autonomic hyperarousal, and his parents are unable to soothe him. These episodes last a few minutes, after which he goes back to normal sleep. The child has no memory of the events in the morning.

- **Most likely diagnosis:** Sleep terror disorder.
- **Recommended treatments:** Protect the child from injury and do nothing. The disorder is usually time-limited.

Analysis

Objectives

1. Recognize sleep terror disorder in a patient (Table 36-1).
2. Offer treatment suggestions to the parents.

Considerations

This patient's presentation is typical for sleep terror disorder, a disorder that is found in 3% of all children and less than 1% of adults and typically manifests itself as emotional and behavioral disturbances at night. These events usually occur early in the nightly sleep cycle during **delta (slow-wave) sleep**. **With sleep terror disorder, the affected child does not remember the episodes in the morning. Fever, sleep deprivation, and central nervous system depressants may increase frequency of sleep terror episodes. Typically, these children have no psychopathology.** The episodes are usually self-limiting without treatment, and the prognosis is very good. Reassuring the parents is the usual indicated intervention. Nightmares occur during rapid eye movement (REM) sleep and are typically associated with the report of a "bad dream." If the child is awakened, he or she can typically recall the dream, even the next morning.

**Table 36-1**  
DIAGNOSTIC CRITERIA FOR SLEEP TERROR DISORDER

Episodes of apparent abrupt awakening from sleep usually occurring in the early part of the sleep cycle.  
Behavioral exhibition of intense emotion, often with extreme autonomic responses seen. Patient is often unresponsive to efforts to soothe or calm.  
Little memory of episode in the morning after a normal awakening.

## APPROACH TO SLEEP TERROR DISORDER

### Definitions

**Delta sleep:** Sleep stage characterized by low frequency (0.5 to 2 waves/sec), high voltage (amplitudes greater than 75 microvolts) waves in at least 20% of the waves

**Dysomnias:** Sleep difficulties associated with the duration and type of sleep

**Parasomnias:** Sleep disorders associated with problems during the stages of sleep

**Rapid eye movement:** A sleep stage characterized by fast eye movements and a wakeful pattern of electrical activity in the brain

**Sleep cycle:** The brain-wave activity associated with varying stages of sleep from light to deep

**Somnambulism:** Sleepwalking

### Clinical Approach

#### Normal Sleep

The human sleep cycle is divided into several different stages defined by brain wave patterns that can be measured in a sleep study. Parameters measured include an electroencephalogram (EEG), which measures and records electrical activity on the surface of the brain, an electro-oculogram (EOG), which records eye movements during sleep, and an electromyogram (EMG), which records the electrical activity emanating from active muscles in the body (Figure 36-1). The stages of sleep defined by the sleep study include:

Stage 1: The EEG may show theta waves, muscle tone may be relaxing, and eye movements may be slow and rolling; typically the "nodding off period."

Stage 2: The EEG shows K complexes and sleep spindles, no eye movements, and little muscle activity.

Delta sleep: The EEG shows low frequency, high voltage waves. Delta sleep has been divided into Stages 3 and 4 by some, depending on the number of delta waves seen.

Rapid eye movement: Low, fast voltage on the EEG, no muscle tone (cataplexy), and very rapid eye movements.

The sleep cycle is a dynamic presentation of the stages in a typical night's sleep. Sleep disorders are classified and defined based on their occurrence and manifestation in the context of the sleep cycle. Dysomnias are disorders characterized by excessive sleepiness or difficulty initiating or maintaining sleep. They include such intrinsic sleep disorders as narcolepsy and obstructive sleep apnea, and such extrinsic sleep disorders such as poor sleep hygiene, allergies, and insufficient sleep. Parasomnias are sleep disorders that occur during sleep or on arousal. They include such disorders as sleep terrors, sleepwalking (somnambulism), rhythmic movement disorder, sleep talking, nightmares, sleep paralysis, bruxism, and enuresis.



of the dream, differentiates this disorder from sleep terror disorder. Patients with posttraumatic stress disorder may have frightening dreams or dissociative experiences, because this disorder is one of autonomic reactivity and an exaggerated startle response following exposure to a traumatic experience. However, these patients typically remember frightening dreams and/or flashbacks that do not occur exclusively at night. Temporal lobe epilepsy is a type of seizure disorder that includes active, often violent, motor responses, but these typically occur during waking hours.

Perhaps one of the most common disorders of sleep in childhood is **enuresis**. The treatment of enuresis in childhood is best approached by **diagnosing the core problem correctly and advising the parents to be supportive of and not punish the child. Primary enuresis is defined as nighttime urination in a child with no previous significant period of dryness. Secondary enuresis is nighttime urination following a period of dryness (usually at least several months).** Secondary enuresis is often the result of a physical problem, such as a urinary tract infection, or a psychological stressor, such as regression associated with the arrival of a newborn sibling.

## Treatment

The treatment of sleep terror disorder usually consists of reassuring the parents that, with time, the child will outgrow these harmless events. They should be instructed to take measures to maintain the patient's safety during these episodes, as unrestrained thrashing can result in injury.

In somnambulism, special care must be taken to ensure that the patient cannot wander out of windows or out of the house or access dangerous materials. There have been case reports on using drugs such as diazepam or imipramine but no controlled studies.

Primary enuresis can be treated in a number of ways, although the developmental level of the child should also be considered. It often remits spontaneously as the child becomes older. Generally, pharmacologic or extensive behavioral treatment should not be considered prior to **age 7**. The behavioral treatment for enuresis primarily involves the use of **an enuresis alarm, alternatively known as a "bell and pad."** This device consists of a moisture-sensitive sensor attached to the child's underwear and an alarm linked to the sensor close by. When the sensor is activated, the alarm goes off, waking the child as well as the caretaker. The child should then be quickly and directly taken to the bathroom to urinate. This method of enuresis control has a 75% success rate, as well as a low rate of recidivism after the alarm is taken away. Buzzer ulcers sometimes can develop and should be discussed as a potential adverse effect.

**Desmopressin (DDAVP)** is a synthetic analog of a natural antidiuretic hormone that has been found effective in 18 randomized, controlled trials. A study comparing bell-and-pad method to DDAVP found comparable efficacy: bell-and-pad, 86% and desmopressin, 70%. It was used successfully in both

tablet and nasal form to control enuresis in children. Again, it is an effective short-term treatment for enuresis, but there is a high rate of recidivism once the medication is discontinued.

Another common treatment for enuresis involves medication. **Imipramine** was an effective treatment in more than 40 double-blind studies. Given in relatively low doses, it is very effective in controlling nighttime wetting. However, there is a high rate of recidivism after the medication is discontinued. **Electrocardiogram (EKG) monitoring is recommended in doses above 3.5 mg/kg/day, and the dangerousness of imipramine in overdosage should be stressed to parents and children.**

### Comprehensive Questions

- [36.1] A child with nightmare disorder experiencing a nightmare is in which of the following stages of sleep?
- A. Stage I
  - B. Stage 2
  - C. Stage 3
  - D. Rapid eye movement sleep
  - E. Light sleep
- [36.2] Which of the following is not true related to night terror disorder?
- A. The child has intense autonomic arousal.
  - B. The child typically can relate details of a bad dream.
  - C. They tend to occur in the first half of the night.
  - D. They tend to occur during delta sleep.
  - E. The frequency is higher in children than adults.
- [36.3] The best treatment for sleep terror disorder is which of the following?
- A. A selective serotonin reuptake inhibitor antidepressant
  - B. A benzodiazepine sleeping agent
  - C. Reassuring the parents
  - D. Gradually changing the sleep/wake cycle
  - E. Warm milk before bedtime

### Answers

- [36.1] D. Nightmare disorder is a parasomnia usually associated with the REM stage of sleep. Night terrors usually occur during non-REM sleep.
- [36.2] B. Because night terrors typically do not occur during REM sleep, there is usually no dream to recall.

- [36.3] C. The best treatment for night terrors and nightmares is to assure the parents that their child will probably grow out of this developmental stage rather quickly. Precautions should be taken to maintain the patient's safety during these episodes because unrestrained thrashing can result in injury.

## CLINICAL PEARLS

Patients with sleep terror disorder need to be protected from injuring themselves during these episodes, but otherwise do not require pharmacologic intervention.

Sleep terror disorder occurs almost exclusively during delta sleep.

Enuresis may be effectively treated with the bell-and-pad method, desmopressin, and imipramine.

## REFERENCES

- Gillin JC, Seifritz E, Zoltoski RK, Salin-Pascual RJ. Basic science of sleep. In: Sadock BJ, Sadock VA, eds.. *Comprehensive textbook of psychiatry*, 7th ed. Philadelphia: Lippincott Williams & Wilkins, 2000:199-209.
- Mikkelsen EJ. Elimination disorders. In: Sadock BJ, Sadock VA, eds. *Kaplan and Sadock's comprehensive textbook of psychiatry*, 7th ed. Philadelphia: Lippincott Williams & Wilkins, 2000:2720-2728.
- Moore CA, Williams RL, Hirshkowitz M. Sleep disorders. In: Sadock BJ, Sadock VA, eds. *Kaplan and Sadock's comprehensive textbook of psychiatry*. 7th ed. Philadelphia: Lippincott Williams & Wilkins, 2000:1677-1700.

