

BOARD REVIEW CORNER

A Teenager With Insomnia and Fatigue; Habit or Hard Wiring?

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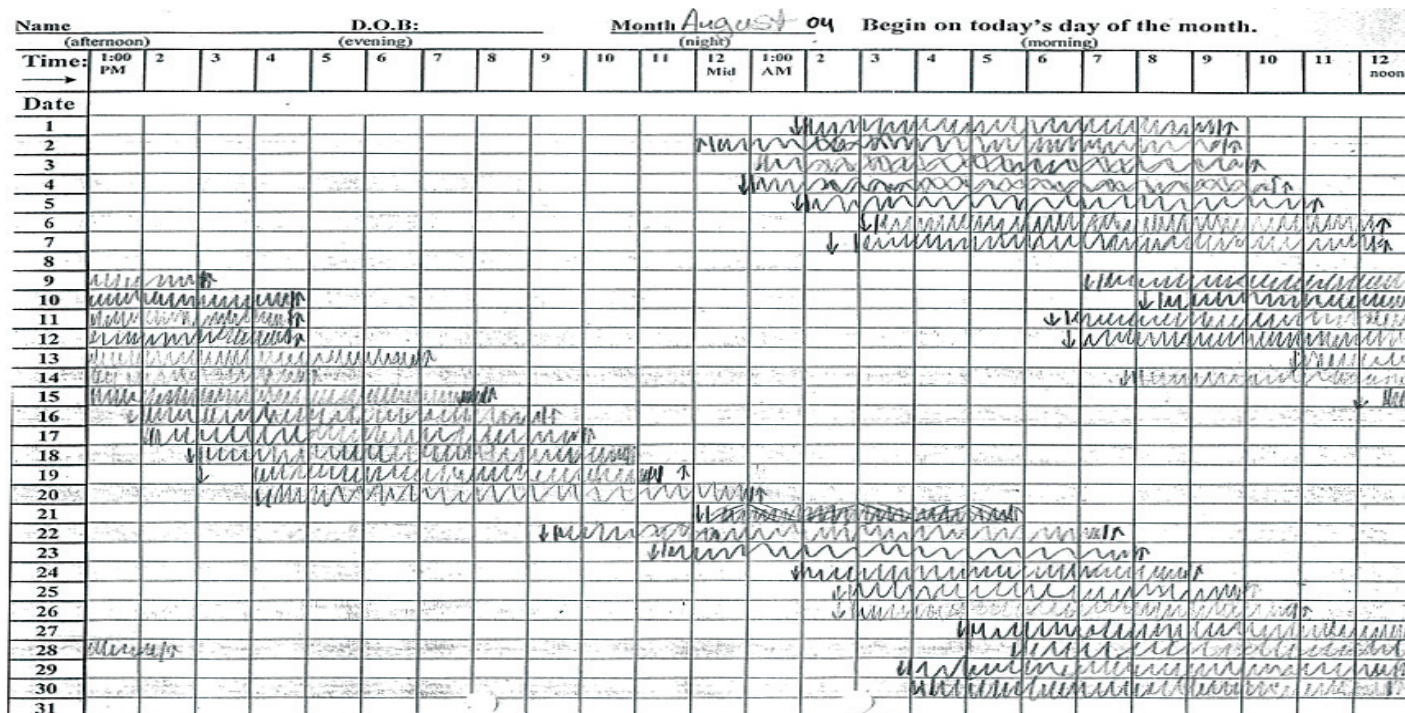


Figure 1—Sleep log at baseline. Downward arrow marks time in bed. Filled areas indicate sleep. Upward arrow marks time up from bed.

A 15-year-old boy presents with difficulty initiating sleep since age 13. He goes to bed at variable times (8:00 PM-1:30 AM) depending on when he feels sleepy. He takes 30 to 120 minutes to fall asleep. Once asleep, he stays asleep and is difficult to awaken in the morning. He feels more fatigued than sleepy during the day and does not fall asleep inadvertently. He describes times when he falls asleep more easily for days at a time, but this does not persist. On 1 occasion he stayed up all night and started sleeping at a more “normal hour” for a few weeks. He would go to bed at 11:00 pm and awoken at 6:00 AM to 8:00 AM and felt less fatigued during that time.

- When he cannot sleep, he lies awake in bed for up to 2 hours before getting up to play computer games, watch television, or read.
- He denies depressed mood currently. He admits to chronic morning headaches.
- Past medical history is significant for diagnoses of “chronic fatigue syndrome” and depression.

He was initially advised to stay awake 1 full night and then maintain a sleep schedule of 9:00 pm to 6:00 am. This was effective for approximately 1 week. He then went to sleep progressively later each night for several nights.

When asked to sleep ad lib for 1 month and record sleep logs, he returned with the following record and reported feeling refreshed during his wakeful hours (Figure 1)

What is his most likely diagnosis?

- Nonentrained type circadian rhythm sleep disorder (non-24-hour sleep-wake syndrome, or hypernycthemeral syndrome)
- Delayed sleep phase type circadian rhythm sleep disorder
- Inadequate sleep hygiene
- Irregular sleep-wake type circadian rhythm sleep disorder

Disclosure Statement

Dr. Zallek has indicated no financial conflict of interest.

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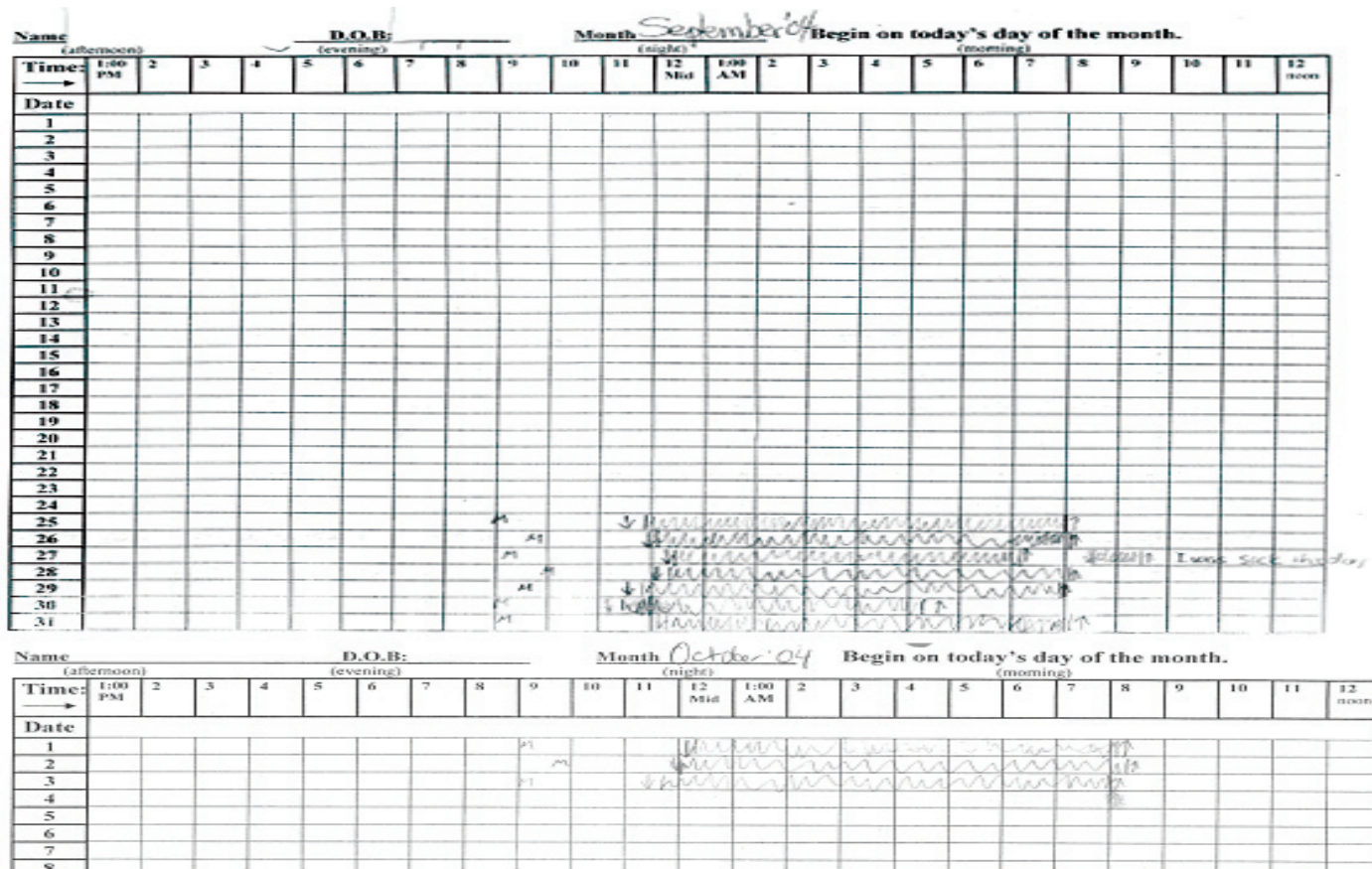


Figure 2—Sleep logs once treated with melatonin. M indicates time melatonin was taken. Downward arrow marks time in bed. Filled areas indicate sleep. Upward arrow marks time up from bed.

ANSWER: A

DISCUSSION

This patient has circadian rhythm sleep disorder, nonentrained type (also called non-24-hour sleep-wake syndrome or hypernycthemeral syndrome). This is well illustrated by his sleep logs, which show a progressive delay in sleep onset. Delayed sleep phase type circadian rhythm sleep disorder (delayed sleep phase syndrome) would typically show a later sleep onset than desired but would not show a progressive nightly delay. Irregular sleep-wake type circadian rhythm sleep disorder manifests as 3 or more sleep periods throughout the 24-hour period without a major sleep period. Although he has some features of inadequate sleep hygiene, they are not the root cause of his difficulty initiating sleep.

The normal intrinsic period of the circadian pacemaker is slightly longer than 24 hours. Light is the strongest zeitgeber (time cue) to entrain the cycle in normal people.¹ In nonentrained circadian rhythm sleep disorder, the circadian pacemaker is not in phase with the light-dark cycle and usually has a period of longer than 24 hours. Nonentrained circadian rhythm sleep disorder is common in blind people and is thought to be due to the lack of entrainment from light. It is much less common in sighted individuals, and the cause is not understood. A reduced sensitivity to light entrainment is one possible explanation.²

This patient described periods of days when he could fall asleep more easily, which likely represents times in which his sleep phase is relatively in phase with the light-dark cycle.

Diagnosis of nonentrained circadian rhythm sleep disorder may be difficult, as the history may initially suggest delayed sleep phase type. Sleep logs, as in this case, can be very helpful. Actigraphy may provide more objective data.³

Polysomnography is often not diagnostic and varies depending on the circadian phase at the time of testing.

Treatment may include melatonin, administered in the evening starting at a time when the patient’s free-running period most closely matches the desired sleep onset.⁴ Bright-light therapy may also be helpful in the sighted and in blind individuals who respond to light by suppression of melatonin, although there is limited evidence in this particular disorder. If used, it should be administered at the core body temperature minimum in the morning.⁵

This patient was eventually treated with melatonin and returned with the following sleep log (Figure 2).

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