



Pediatric Clips

Delayed Sleep Phase Syndrome — Michael E. Steffan, MD

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Pediatric Clips from The Children's Medical Center are quick reviews of common pediatric conditions.

The Children's Medical Center is the region's pediatric referral center for a 20-county area. As the only facility in the region with a full-time commitment to pediatrics, Children's offers a wide range of services in general pediatrics as well as in 35 subspecialty areas for infants, children and teens. We welcome your inquiries about services available — call 937-641-3666 or e-mail marketing @childrensdayton.org.



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CASE: ADOLESCENT WITH SLEEP ONSET INSOMNIA AND DAYTIME SLEEPINESS

Daniel is a 15-year-old male that presented to the sleep disorders clinic complaining of difficulty falling asleep. Although he goes to bed at 10:00 pm during the week, he doesn't feel sleepy until 2:00 am or 3:00 am and just lies awake in bed. Mornings are difficult. His parents struggle to wake him for school at 7:00 am. He wakes without feeling re-

freshed and dozes on the bus and in morning classes. His grades are suffering.

Daniel's weekend schedule is quite different. He cosmic bowls with friends until 2:00 am on Fridays and surfs the web on Saturday nights. He has no trouble falling asleep when he goes to bed at 3:00 am and wakes on his own around noon the following day.

He has no history of snoring, leg jerks, bruxism, sleepwalking, sleep talking, enuresis, sleep paralysis, hypnologic hallucinations or cataplexy. Daniel smokes three to four cigarettes a day but does not consume alcohol, other recreational drugs, coffee, tea or pop.

CASE DISCUSSION

Delayed Sleep Phase syndrome (DSPS) is a disorder in which the major sleep episode is delayed in relation to the desired clock time. This delay results in complaints of sleep initiation insomnia and/or difficulty getting up at a desired time.¹ In effect, a person's internal "biological clock" is out of step with "clock time" in our everyday lives. Symptoms must be present for at least one month. Other explanations to account for excessive daytime sleepiness must be excluded.

Daniel's history and sleep diary showed classic features of DSPS. Specifically, his sleep quality and duration were normal. He woke spontaneously feeling refreshed when allowed to sleep on his own schedule. He consistently felt tired at the same time every night and would rise at about the same time if allowed. His sleep requirement of eight to nine hours is within a normal range for adolescents, although he obtained that sleep through a combination of night sleep and by napping during the day.

DSPS may be classified as "extrinsic" if the root cause is due to social factors and "intrinsic" when it

is due to malfunctioning of the internal circadian pacemaker. A distinction is not always apparent in clinical situations, particularly in adolescents.

The differential diagnosis of DSPS includes non-24-hour sleep-wake syndrome in which the phase delay is not static and successively lengthens each night. Individuals with "free running" circadian clocks also have periods of very late sleep onset and late rise times, but their night-to-night schedule varies in an irregular fashion. Either of these disorders can be identified from a sleep diary. Shy individuals or those with phobias may use a delayed sleep phase to avoid contact with people or with stressful situations.² It is clear that this is not the case with Daniel, who enjoys school and leads an active social life. When evaluating adolescents, the possibilities of depression, bipolar disorder and substance abuse must be considered. These problems may mimic delayed sleep phase or even coexist with it.³

DSPS would not be problematic in a world without schedules. It becomes an issue when it results in conflict with obligations. Some

adolescents are content with their DSPS and have no desire to change. This resistance presents a barrier to therapy. Families must understand that DSPS can only be alleviated in a motivated teenager, because therapy is considered "active."

Most humans have a biological clock whose period is a little longer than a 24-hour cycle. This principle serves as a core element in the chronotherapy approach to DSPS. While there are several ways to implement chronotherapy, we selected a modification devised by Thorpy⁴ that combines controlled sleep deprivation with phase advancement (SDPA).

SDPA is a five-step process:

1. The patient implements a regular bedtime and rise time for at least six days, even if these times are very late.
2. The patient experiences a night of total sleep deprivation, followed by moving the bedtime earlier by 90 minutes.
3. The modified sleep schedule is continued for an additional six days to consolidate the pattern.

Continued on the reverse side.

Continued from the front.

4. The process of one night of sleep deprivation followed by advancing the bedtime by 90 minutes is repeated. The process is continued until a target bedtime and rise time is attained.
5. The regular bedtime and rise time are maintained to prevent relapse.

Daniel responded to a trial of SDPA, although final success required three attempts. Social events and napping interfered with the first trial. He developed performance anxiety around falling asleep during the next attempt. He lay in bed and worried about not falling asleep. In this circumstance, a short course of zolpidem at bedtime was added for one week in combination with the SDPA. He

successfully reset his schedule to a 10:30 pm bedtime and a 7:00 am rise time.

DSPS patients have a high rate of recidivism, particularly when opportunities to fall off schedule arise, such as vacations and college. Daniel will likely face DSPS repeatedly in the years ahead. Fortunately, he mastered the tools needed to correct his sleep problems. He should be able to implement them again the next time they are needed.

REFERENCES

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4. Thorpy MJ, Korman E, Spielman AJ, Glovinsky PB. Delayed sleep phase syndrome in adolescent. *J Adolesc Health Care*. 1988;9:22-27.

FEATURED SPECIALIST



Michael E. Steffan, MD, is director of sleep medicine at The Children's Medical Center of Dayton. Dr.

Steffan is board certified in pediatrics, pediatric pulmonary medicine and sleep medicine. He is a graduate of Baylor College of Medicine and completed his pediatric residency at

Yale-New Haven Hospital, Yale University. He completed his pediatric pulmonary fellowship at J.W. Riley Hospital for Children, Indiana University. Dr. Steffan is assistant professor of pediatrics at Wright State University School of Medicine.

SLEEP DISORDERS CENTER

The sleep disorders center at Dayton Children's is the region's only accredited pediatric sleep program. Children may be referred to the sleep disorders clinic where they will be

evaluated by Dr. Steffan or they may be directly referred to our onsite laboratory for a sleep study. Experienced pediatric respiratory therapists conduct sleep studies. The laboratory is supported 24 hours a day by emergency pediatric physicians and other subspecialists.

CONTACT INFORMATION

To contact Dr. Steffan or to make a referral, contact the sleep disorders center at 937-641-5004 or steffanm@childrensdayton.org.



For further information about The Children's Medical Center or its specialists contact us at 937-641-3666 or marketing@childrensdayton.org.



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