

Compulsion or Chronobiology? A Case of Severe Obsessive-Compulsive Disorder Treated with Cognitive-Behavioral Therapy Augmented with Chronotherapy

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CASE REPORTS

Objectives: Individuals with treatment-resistant obsessive compulsive disorder (OCD) have elevated rates of delayed sleep phase. This report describes a patient with severe OCD who had failed prior trials of pharmacotherapy and psychotherapy, and whose symptoms were associated with delayed bedtimes and delays in the time she initiated her nighttime compulsions.

Methods: Case report.

Results: A 54 year-old woman with OCD kept sleep/symptom logs as an adjunct to traditional cognitive-behavioral therapy for OCD. At presentation, she reported habitual bedtime = 06:00, wake time = 13:00, sleep latency \leq 5 min, and total sleep time = 6.5-7.5 h. Later time of initiating her compulsions was associated with longer time performing the compulsions ($r = 0.86$,

$p < 0.001$). Cognitive-behavioral therapy with adjunctive chronotherapy was associated with substantial improvement.

Conclusions: OCD patients with nighttime compulsions may receive light exposure that results in delayed sleep times/circadian phase. Chronotherapy may enhance outcomes for refractory OCD patients, particularly those who perform compulsions at night.

Keywords: Obsessive compulsive disorder, chronotherapy, sleep, circadian rhythms, delayed sleep phase disorder, anxiety

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Individuals with obsessive compulsive disorder (OCD) have higher rates of delayed sleep phase disorder than the general population.¹ Performing nighttime compulsions may contribute to delayed sleep onset, and nighttime light exposure may, in turn, contribute to circadian phase delay. Performing rituals at night also may result in an interaction between homeostatic sleep-wake processes and OCD symptoms, whereby prolonged wakefulness results in disrupted cognitive processes (e.g., impairment in sustained attention) that increase the amount of time needed to perform compulsions. We present a patient with treatment-resistant OCD whose symptom severity was associated with delayed bedtimes and delays in the times she initiated her nighttime compulsions.

REPORT OF CASE

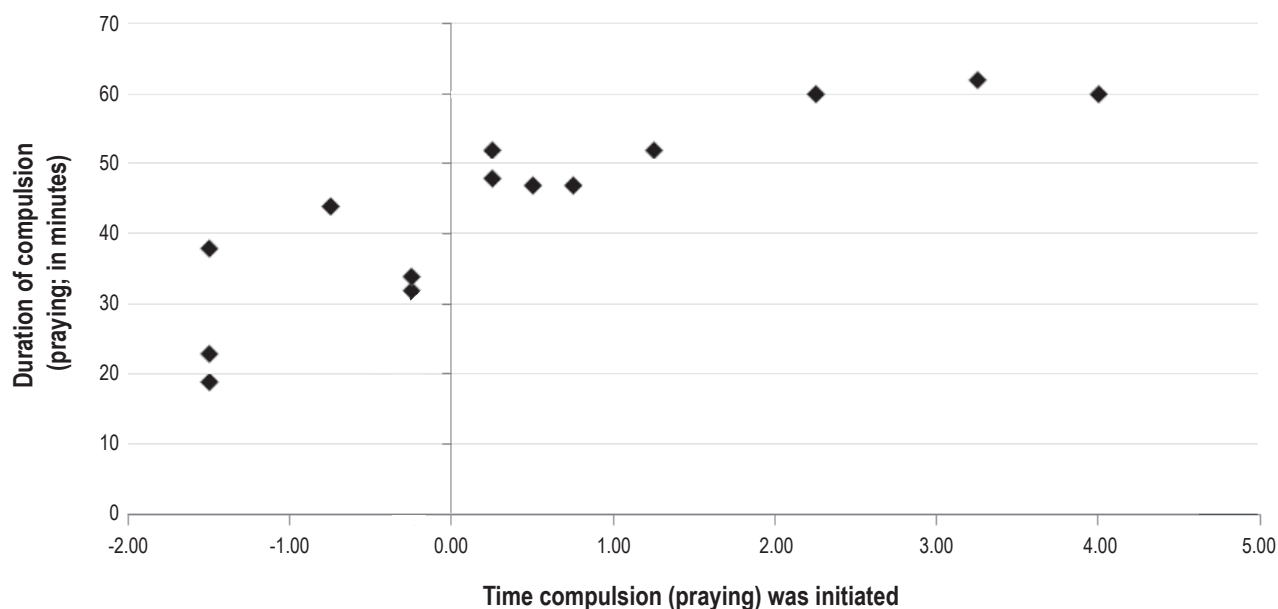
A 54-year-old female with OCD was referred to the Binghamton Anxiety Clinic by her primary care physician after unsuccessful treatment with several selective serotonin reuptake inhibitors and OCD-focused psychotherapy. The patient reported needing to engage in her morning and evening prayers “perfectly” and the need to be clean when attending church. At presentation, her Yale-Brown Obsessive Compulsive Scale (YBOCS) score was 35, indicating extreme OCD.² She described her symptoms as extraordinarily intrusive, and stated that she spent 5 to 8 h/day performing compulsions. The patient reported having experienced OC symptoms since age 5, with

onset of associated interference at age 38 when her compulsions were reported to cause a change in her sleep habits and to “take away” her sleep. The patient reported that during her late 30s she experienced increasing difficulty getting her day started and getting to work on time.

The patient had no history of chronic medical conditions or hospitalizations, and was taking no medications. Assessment of her sleep routines revealed that she typically went to bed at approximately 06:00 and woke around 13:00. She reported being unable to fall asleep or awaken earlier, which resulted in her sleeping separately from her husband and not arriving to work until 15:00. Sleep ratings revealed that the patient fell asleep quickly once in bed (within \leq 5 min) and that her sleep was of normal quality and duration (sleeping 6.5 to 7.5 h/night).

The patient’s OCD was addressed via 16 weekly sessions of cognitive-behavioral therapy.³ Despite within-session fear reduction, the patient was unwilling to abstain from praying at home and had difficulty reducing prayer duration. Self-monitoring revealed that in order to maximize her opportunity to perform her prayers “perfectly,” she sought out opportunities to pray late at night to avoid potential distractions. This resulted in her performing her “evening” prayers between 03:00 to 05:00 and her “morning” prayers between 13:00 to 15:00. She reported being fatigued and having difficulty focusing while performing her nighttime prayers.

Given the negative impact of disruptions in sleep and circadian rhythms on executive functions, the therapist proposed

Figure 1—Association between time of initiation of nighttime compulsions and duration of nighttime compulsions

Review of the data showed that when the patient began her prayers at or before midnight she completed them in ≤ 45 minutes, but when she began her prayers after midnight they took > 45 minutes to complete.

that the patient's pattern of starting her prayers late at night could be associated with impaired attention and more difficulty inhibiting responses (e.g., repeating phrases, etc).⁴ The patient reported this hypothesis was consistent with her experience. Therefore, the patient agreed to log the start time and duration of her evening prayers for 2 weeks (**Figure 1**). As hypothesized, later start times were significantly correlated with a longer amount of time to complete her compulsion (Pearson $r = 0.86$, $p < 0.001$).

In addition to the use of traditional cognitive-behavioral techniques for OCD (exposure, ritual prevention, and cognitive restructuring), the patient was encouraged to begin her nighttime rituals at an earlier time and adopt earlier bedtimes and wake times. Individualized cognitive-behavioral techniques were used to motivate the patient to advance her sleep-wake schedule. The therapist and patient worked collaboratively to list potential benefits of the shift, including less time devoted to OCD, an ability to run errands before work, and the ability to get to work at a more appropriate time. In addition, the patient and therapist employed a technique commonly used to assure compliance to sleep schedules in research settings, specifically, morning call-ins. To support the patient in shifting her wake times, the patient called the clinic with reports of her status by 12:00; when her wake times advanced, her call-in time was advanced to 10:30. Using these techniques, her sleep times gradually advanced from a bedtime of 06:00 and a wake time of 13:00 to a bedtime of 00:00 and a wake time of 10:00. Treatment was associated with decreases in time spent on compulsions from 8 h/day to 2 h/day and a 15-point decrease in overall OCD severity as measured by the YBOCS (a 43% reduction).

DISCUSSION

To our knowledge, this is the first report demonstrating a significant relationship between the timing of when compulsions were initiated and the amount of time needed to complete them. These data suggest that patients who perform compulsions late at night may become caught in a cycle in which circadian phase delay and homeostatic sleep-wake mechanisms interact, resulting in later bedtimes, prolonged wakefulness, difficulty resisting urges, and greater disruptions from the behavior. Circadian clock genes have also been associated with mood disorders and personality characteristics, and it is possible that some patients have a genetic predisposition to both OCD and circadian phase delay.⁵

We acknowledge that the correlational relationship observed herein between timing and duration of compulsions precludes conclusions regarding causality. Endogenous circadian phase was not measured in this patient. In addition, although the patient had failed pharmacotherapy and psychotherapy in the past, we are unable to disentangle the degree to which symptom reductions were due to chronotherapy techniques vs. the cognitive-behavioral therapy she received at an anxiety-specialty clinic. Delayed sleep phase may be driven by changes in exposure to light/dark cycles and social zeitgebers as a result of performing compulsions. Alternatively, misalignment of homeostatic and circadian sleep processes may lead to fatigue and cognitive deficits that could exacerbate OCD symptoms. Regulating sleep patterns may render CBT more effective. Regardless, recognition of the interplay between OCD and sleep/circadian rhythm disorders holds promise for enhancing our understanding of both disorders, and experience with this case

suggests that chronotherapy interventions that address circadian parameters may improve outcomes.

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