ADHD, circadian rhythms and seasonality


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Abstract

Objective
We evaluated whether the association between Adult Attention-Deficit/Hyperactivity Disorder (ADHD) and Seasonal Affective Disorder (SAD) was mediated by the circadian rhythm.

Method
Data of 2,239 persons from the Netherlands Study of Depression and Anxiety (NESDA) were used. Two groups were compared: with clinically significant ADHD symptoms (N = 175) and with No ADHD symptoms (N = 2064). Sleep parameters were sleep-onset and offset times, mid sleep and sleep duration from the Munich Chronotype Questionnaire. We identified the prevalence of probable SAD and subsyndromal SAD using the Seasonal Pattern Assessment Questionnaire (SPAQ). Clinically significant ADHD symptoms were identified by using a T score>65 on the Conners Adult ADHD Rating Scale.

Results
The prevalence of probable SAD was estimated at 9.9% in the ADHD group (vs. 3.3% in the No ADHD group) and of probable s-SAD at 12.5% in the ADHD group (vs 4.6% in the No ADHD group). Regression analyses showed consistently significant associations between ADHD symptoms and probable SAD, even after adjustment for current depression and anxiety, age, sex, education, use of antidepressants and benzodiazepines (B = 1.81, p < 0.001). Late self-reported sleep onset was an important mediator in the significant relationship between ADHD symptoms and probable SAD, even after correction for confounders (total model effects: B = 0.14, p ≤ 0.001).

Conclusion
Both seasonal and circadian rhythm disturbances are significantly associated with ADHD symptoms. Delayed sleep onset time in ADHD may explain the increase in SAD symptoms. Treating patients with SAD for possible ADHD and delayed sleep onset time may reduce symptom severity in these complex patients.