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A Case Report on Delayed Sleep Phase Disorder in an Adolescent: Misdiagnosis and Symptom Overlap with Mood Disorder and Attention Deficit Hyperactive Disorder

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Abstract

Delayed sleep phase syndrome (DSPS) is a circadian rhythm sleep disorder with a pattern of significantly delayed sleep onset and wakening times. According to DSM-5, delayed sleep phase syndrome is characterized by an inability to fall asleep and awaken at a desired or conventionally acceptable earlier time (American Psychiatric Association, 2013). This is a case report of an adolescent male who presented with mood dysregulation and ADHD symptoms, unsuccessfully treated with multiple psychotropic medications, and showed complete remission of symptoms after being correctly diagnosed with DSPS and treated with phototherapy.

Keywords: Delayed sleep phase syndrome; Mood disorders; ADHD; Suprachiasmatic nuclei

Introduction

Sleep timing and structure are controlled by the circadian clock, which generates daily rhythms from a pacemaker in the suprachiasmatic nuclei [1]. An abnormally delayed circadian clock caused by social, biophysiological, and environmental factors results in a delayed sleep phase syndrome [2,3]. Delayed sleep phase syndrome (DSPS) is characterized by a sleep-wake schedule that is out of synchrony with daily routine at work or school that can lead to poor performance and job loss. In adolescents, DSPS can lead to truancy, school failure, and an increased potential for substance abuse [4,5]. Management of DSPS involves shifting sleep timing with chronotherapy, phototherapy, or exogenous melatonin, followed by maintenance of consistent sleep-wake schedule and sleep hygiene [6-8].

Case Report

A 16-year-old male was admitted to hospital due to longstanding mood dysregulation and sleep problems. His symptoms worsened in the past two years with marked functional impairment and an inability to attend school. He showed irritability, easy distractibility, increased impulsivity, poor concentration, restlessness, and talkativeness. His symptoms were worse during school days and absent on weekends and holidays. He was diagnosed with Bipolar Disorder and ADHD, and had been treated at different times with stimulants, mood stabilizers, and neuroleptics without improvement of symptoms. Despite being in a dark, comfortable, quiet environment, he would not fall asleep for “hours”. The patient considered himself to be a “night owl”. He had difficulty waking up in time for school and would doze off during his classes. On the weekends, he would wake up on his own in the afternoon and feel rested.

Upon review of the patient’s history, there were no manic episodes, psychosis, self-injurious behavior, anxiety disorder, or major depression. He denied consumption of caffeine, smoking, or use of illicit drugs. His father had the same problem as a teenager.

His mental status examination revealed an irritable but cooperative patient with normal pressure speech. His cognitive skills were within normal range. His thoughts were organized, with no delusions, suicidal, or homicidal ideations. He acknowledged that his sleep schedule and mood dysregulation caused family conflicts and school problems. A general physical, neurologic, and ENT examinations were unremarkable. Basic lab work, sleep study, EEG, and Polysomnography had findings within normal limits.

The patient was started on phototherapy using 10,000 lux for 30–90 minutes at the patient's usual time of spontaneous awakening or shortly before awakening, along with structured scheduled sleep hygiene. His symptoms improved and he was discharged with no maintenance medications. Follow up visits reinforced sleep hygiene and family interaction, with no recurrence of previous sleep, mood and school problems.

Discussion

This is a case of an adolescent male with a previously undiagnosed delayed sleep phase disorder who had

predominant mood symptoms of irritability and behavioral symptoms impairing school performance and family relations. He had been given the diagnoses of ADHD and Bipolar Disorder and prescribed multiple psychotropic medications on different occasions with no improvement in his condition or behavior.

Among patients with insomnia in the outpatient clinics, a reported 10% have DSPS [9]. Adolescents may be at an increased risk for DSPS due to changes in circadian mechanisms during puberty that result in a later circadian phase and evening circadian phase preference [10].

The relationship between sleep disorders and ADHD is complex with overlapping emotional and behavioral symptoms. Sleep problems can manifest with symptoms that mimic ADHD, exacerbate ADHD, and may themselves be secondary to an underlying ADHD or their treatment (e.g. stimulants) [11,12]. Sleep problems in children and adolescents result in cognitive impairment, emotional instability, and increased hyperactivity, inattention, and impulsivity which are behavioral symptoms of attention-deficit/hyperactivity disorder [13]. While some studies report the impact of sleep problems in the pathogenesis of ADHD, others account for the sleep disorders in ADHD as being related to comorbid anxiety and pharmacotherapy [14,15]. The role of sleep in ADHD, whether "contributor" or "consequence" is still poorly understood, and research on sleep in children with ADHD has numerous confounding factors, and conceptual and methodological problems [16,17].

Sleep disorders can also adversely affect relationships and work performance, and lead to low self-esteem and depressed mood. Dagan et al. reported a case of an adolescent male who was misdiagnosed with depression and learning disabilities, but was later found to have non-24-hours sleep-wake schedule disorder and was successfully treated with melatonin [18]. Distractibility and inattention are pervasive among pediatric bipolar patients [19]. This further complicates the diagnostic picture in an adolescent with a sleep disorder manifesting as irritability and academic problems.

The complex interaction of sleep and the psychiatric diagnoses of ADHD and Bipolar Disorder have yet to be fully elucidated [20]. The overlapping symptomatology of sleep disorders, mood disorders, and ADHD continues to impact clinical practice in terms of diagnosis and management. A careful evaluation of sleep disorders improves diagnostic accuracy and treatment outcome. An unrecognized sleep disorder could result in multiple diagnoses and prescribed medications that are more likely to exacerbate than ameliorate the condition and unnecessarily accrue expenses for the patient's family.

Conclusion

More investigational studies are needed to explore the relationship that exists between circadian rhythm, mood, behavioral, and sleep disorders. Evidence-based criteria in the diagnostic approach and management of these conditions with overlapping symptoms would vastly improve treatment and outcome.

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