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Case Report

A young adolescent with misdiagnosed attention deficit hyperactivity disorder: a case report

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ABSTRACT

Attention deficit hyperactivity disorder (ADHD) is a prevalent neurodevelopmental disorder, found in 5-7% of the general population globally, and characterized by inattention, hyperactivity, and impulsivity. The etiology of ADHD involves genetic susceptibility and environmental factors. ADHD has major influences on academic, occupational, and social performance. Diagnosis is based on DSM-5 or ICD-11 criteria, supplemented by clinical assessment and teacher and family rating scales. Treatment includes stimulant pharmacotherapies, such as methylphenidate (MPH) and amphetamines, and nonstimulant medications, such as atomoxetine, supplemented by psychosocial therapies, particularly in children. Appropriate diagnosis and treatment are necessary to prevent adverse consequences, which include educational impairment, work impairment, and comorbid psychiatric illnesses. This case report discusses a 16-year-old male patient with previous symptoms of inability to focus on tasks and follow instructions correctly, leaving schoolwork incomplete, catatonia, psychotic behavior, and more. The patient was misdiagnosed with a psychotic disorder and received a series of pharmacological treatments and even electroconvulsive therapy without an appropriate clinical response. After ADHD was diagnosed and managed appropriately, the patient responded favorably to the procedures he underwent. The case highlights the extreme importance of thorough psychiatric evaluations, particularly the mental state examination (MSE), to facilitate accurate diagnoses and personalized treatment plans. In addition, a discussion was held on the symptoms of inadequately treated ADHD and why it occurs based on neuroimaging studies.

Keywords: ADHD, Psychiatric interview, Misdiagnosed, Psychotic symptoms

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders, featuring enduring patterns of inattention, hyperactivity, and impulsivity that negatively affect functioning or development.

Can occurs in both children and adults, and the global prevalence is estimated between 5 and 7%.[1,2] Genetic predisposition is very high, but environmental influences are also involved in the disease expression.[1]

The clinical presentation of ADHD includes symptoms such as difficulty sustaining attention, frequent fidgeting, and impulsive behaviors. These symptoms are associated with important disability in the academic, work and social environments. Diagnosis is mainly ascertained by criteria of DSM-5 or ICD-11, supported by established rating scales and thorough clinical assessments.[3,4]

Whereas the thorough assessment is particularly recommended the American academy of pediatrics (AAP) suggests it should also include input from parents, teachers, and other adults with whom the child has regular contact.[5]

Medication and non-medication are used together in the treatment of ADHD. Stimulant drugs [MPH and amphetamines] are currently thought of as first-line alternatives and have been demonstrated to be useful in decreasing core symptoms.[6,7] Non-stimulant medications (atomoxetine and viloxazine) are available for patients that are refractory to or intolerant of stimulants.[7] Psychosocial interventions including behavioral therapy also are indicated, especially in younger children and as adjunctive therapy in older children and adolescents.[6,8]

Unmanaged ADHD leads to significant adverse consequences, such as academic underperformance, employment challenges, and increased risk of comorbid psychiatric disorders (e.g., anxiety, depression, substance abuse).[7,9] Early and effective diagnosis and intervention plays an important role in reducing the risk, and promoting the prognosis of patients with ADHD. Routine follow-up and assessment are crucial for modifications of treatment regimens and management of any new problems.[6]

CASE REPORT

The patient is a 16-year-old male adolescent born and raised in New York. He lives with his parents and six siblings and attends a school with religious principles, although his attendance is intermittent.

Since childhood, the patient has exhibited learning difficulties, often masked by efforts to appear academically successful. Despite achieving good grades and receiving school awards, his mother reports that problems began at the age of 13 when he decided to attend a camp different from his usual one. He failed to integrate socially and began reporting bullying and a lack of motivation. He displayed symptoms of social and performance anxiety, as well as obsessive-compulsive manifestations since then, such as word repetition and constant checking behaviors. After changing schools, he began showing frequent tardiness, complained of being persecuted by the principal, and eventually refused to attend school altogether. During this period, he spent a year at home, inactive and withdrawn.

Four months before the first hospitalization the patient experienced physical symptoms of extreme weakness, reporting a sensation that "his head and body were not connected." Following a trip to Europe with his brother, he developed atypical behaviors, such as spending hours standing in prayer or obsessively reading religious texts. He expressed delusions of grandeur, believing he was the Messiah, and reported auditory hallucinations involving the voices of teenagers conversing. After the trip he displayed catatonic behavior, remaining immobile and refusing to interact. At this stage, he was treated with olanzapine (5 mg) and later with long-acting aripiprazole, but there was no significant clinical response. After being treated with sodium valproate, lorazepam, and valbenazine, he progressed to a state of physical collapse, requiring feeding via a nasogastric tube.

He has had three main hospitalizations. The first occurred when he was 15 years old, triggered by a catatonic episode characterized by refusal to eat and speak. He was hospitalized in the pediatric service at for four weeks, receiving treatment with lithium carbonate (900 mg), risperidone (0.5 mg), and undergoing 10 sessions of unilateral electroconvulsive therapy (ECT). The second hospitalization, four months later from first, was also prompted by signs of catatonia. During this period, he reported hearing voices and received adjusted doses of risperidone. The third hospitalization took place approximately 2 months after the second due to non-adherence to medication. During this time, he was treated with lithium carbonate (600 mg), sodium valproate (1250 mg), and long-acting risperidone (25 mg, later adjusted to 37.5 mg).

At the consultation that prompted this case report, the patient exhibited persistent symptoms, including difficulty sleeping, waking up feeling tired, bad dreams, and feelings of hopelessness, worthlessness, and lack of motivation. He reported difficulties in reading, writing, and comprehension, along with procrastination, organizational problems, and episodes of "mental blanking" during activities. He also described recurring auditory hallucinations, paranoia (such as the belief that his mother talks about him on the phone), and manic episodes characterized by increased energy, talkativeness, and grandiose ideas. Other reports include a compulsion for masturbation, which causes him distress afterward. However, he denies substance use, conduct disorders, or oppositional behaviors.

The patient expressed a desire to feel present in the moment and to achieve normalcy in his life, which he associated with being able to attend school, study, and maintain a basic routine, such as having breakfast.

During the consultation, it was identified that the patient, since before the afe of 13 years, consistently exhibited difficulties with attention to detail, maintaining focus on tasks, and following instructions appropriately, often leaving school assignments incomplete. The patient also demonstrated challenges in organizing tasks and activities, avoided tasks and activities requiring prolonged mental effort, and was easily distracted by external stimuli. Thus, the patient met the diagnostic criteria for ADHD according to the DSM-5.

Mental state examination

Well-groomed appearance, appropriately dressed, makes eye contact, cooperative, appropriate behavior. No changes in speech, fluent, appropriate tone, speed without changes. Euthymic mood. Emotional tone modulated to what is being discussed. Thought form and content are preserved. Denies delusions and hallucinations at the time

of consultation. autopsychically and allopsychically oriented. Intelligence not tested by scales but apparently within the clinical average. Preserved insight, acceptance of the psychiatric condition and agreement with the recommended help. No suicidal ideation.

Plan of treatment

Reduction of medications currently in use until stop it and start taking MPH HCI.

Outcomes

The patient reports improved sleep quality, denies auditory and visual hallucinations, better academic performance and greater ease of concentration in activities that require more effort.

DISCUSSION

Psychiatric interview

The value of an adequate psychiatric interview has been extensively reported in medical journals. The APA highlights the importance of a total psychiatric assessment for both correct diagnosis and proper treatment planning. According to APA guidelines, the first psychiatric assessment is supposed to consist of a complete evaluation of the patient's overall appearance, mood, thought contents, and perception, and the likes.[10] With this multidimensional perspective, clinicians obtain the crucial information needed for making the diagnoses and for managing the psychiatric disorders.

Furthermore, studies suggest the importance of creating conditions for patients' potential expressions of their subjective experience in psychiatric interviews. In a study of the comparison between various methodological approaches, interviews based on the patients' perceived subjective experience resulted in the disclosure of richer and more applicable content, which can importantly contribute to the individualization of care planning.[11]

In addition, the accuracy of psychiatric interview immediately influences the quality of data gathered in turn for accurate diagnosis and treatment. Employing good interviewing skills can help prevent unnecessary tests and procedures so as to enhance both cost-effectiveness and patient satisfaction.[12]

MSE

The MSE is a critical component of psychiatric evaluations, providing essential information for diagnosis and treatment planning. The APA recommends that the initial psychiatric evaluation include an MSE to assess mood, anxiety, thought content and process, perception, and cognition, among other factors. This comprehensive assessment helps in identifying psychiatric symptoms and differentiating between various psychiatric disorders.[10]

The American academy of psychiatry and the law (AAPL) also underscores the importance of the MSE in forensic assessments, noting that it elicits information about the frequency and severity of psychiatric symptoms, which is crucial for formulating a diagnosis and assessing the patient's strengths and vulnerabilities.[13]

Research supports the effectiveness of structured MSEs. A study found that using a semi-structured assessment template (OPCRIT+) significantly improved the quality of MSE documentation by junior doctors, making it more thorough, organized, and useful.[14] This suggests that structured MSEs can enhance the accuracy and comprehensiveness of psychiatric evaluations.

In primary care, the MSE is valuable for distinguishing between mood disorders, thought disorders, and cognitive impairments, guiding appropriate diagnostic testing and referrals.[15] It includes both historical reports from the patient and observational data gathered by the physician, making it a reliable method for objective data collection.

Untreated ADHD and its repercussions

Chronic neurobiological outcomes of untreated ADHD to the brain are marked changes in neural circuitry and brains structures. Neuroimaging studies have demonstrated that the graph topology of gray matter networks in persons with ADHD is altered, in particular, in corticostriatal circuits, including superior frontal gyrus, orbitofrontal gyrus, superior medial frontal gyrus, precentral gyrus, middle temporal gyrus as well as pallidum. These alterations correlate with cognitive impairment and impulsive behaviours.[16] In addition, there are changes in white matter maturation, with abnormalities in the integrity of fiber tracts, such as the superior longitudinal fasciculus and corticolimbic areas, which are associated with audiovisual, motivational, and emotional dysfunctions. These alterations are more marked in individuals with childhood onset symptoms.[17] Reduced structural and functional connectivity in the central and peripheral brain regions especially the frontoparietal control systems and sensory systems are reported in adults with ADHD. This structural-functional dissociation is associated with worse severity of ADHD-related symptoms.[18]

Longitudinal studies have demonstrated a role for ADHD and related delay in the maturation of intrinsic functional architecture of the brain, i.e., connectivity within the default mode network (DMN) as well as its modular connectivity with task-positive networks, the frontoparietal network and the ventral attention network. This latency may underlie attention and cognitive control deficits.[19]

It is already established that neurostructural changes caused by untreated ADHD can result in or be confused for psychotic depressive disorder as a consequence of changes in neural circuits and brain structures.[16,20]

Such alterations previously described may have an implication on emotional control and cognitive control and a tendency to increased psychiatric disorders.

The literature also reports a correlation between exposure in childhood of ADHD and a subsequent number of psychotic disorders in adulthood. A meta-analysis showed that the risk of developing psychotic disorders in ADHD-comorbid children is significantly increased, with a pooled relative effect 4.74.[21] Also, the presence of ADHD in youth with psychotic spectrum symptoms is correlated with greater severity of psychotic symptoms.[22]

One of the most prevalent structural changes throughout the two disorders include reductions of grey matter volume in the right insula and anterior cingulate cortex, which are both brain regions crucial for emotional processing and attention.[23] These changes may explain the shared symptoms of ADHD and psychotic depressive disorders.

Taking this into consideration, neurobiological changes associated with uncontrolled ADHD in humans could render the individual more prone to the development of later psychotic and depressive disorders due to functional disturbances of neural circuits involved in emotion regulation and cognitive processing.

CONCLUSION

A good psychiatric interview is crucial for accurate diagnosis, effective treatment planning, and overall patient care. It involves a comprehensive assessment of various aspects of the patient's mental and physical health, and it benefits from techniques that encourage patients to share their subjective experiences. The MSE is a vital tool in psychiatric evaluations, recommended by both the APA and AAPL, and supported by research for its effectiveness in improving diagnostic accuracy and treatment planning.

ADHD has been studied for a long time and has effective treatments, there is no reason to postpone intervention since untreated ADHD is associated with significant structural and functional alterations in the brain which can lead to persistent cognitive and behavioral deficits.

Otherwise, it is also necessary to be careful because treating all erratic behavior of a child or adolescent as a symptom of ADHD will lead to overdiagnosis and, consequently, overtreatment.

We urge the medical community to attend to the signs and symptoms of ADHD since our ultimate goal is the welfare of our patients.

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