Attention deficit hyperactivity disorder improved with Methylphenidate: a case report

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Abstract

Background: Attention deficit hyperactivity disorder (ADHD) is a neurobehavioral disorder characterized by either significant difficulties of inattention or hyperactivity and impulsiveness or a combination of the two. Objective: The case was discussed because its symptoms can be difficult to differentiate from other disorders, increasing the likelihood that the diagnosis of ADHD will be missed and with proper treatment, kids with ADHD can learn to successfully live with and manage their symptoms. Result: After 6 months of treatment with methylphenidate, the patient started to improve and at the end of 2 years he became a communicative boy, making good school progress with occasional setbacks. Conclusion: ADHD is often under diagnosed in children. So, early diagnosis and treatment is very important for prevention of long-term effects.

Key words: Attention; Deficit; Hyperactivity.

INTRODUCTION

ADHD is diagnosed in about 2% to 16% of school-aged children.1 Kids with ADHD act without thinking, are hyperactive, and have trouble in focusing. They may understand what is expected of them but have trouble following through because they cannot sit still, pay attention, or attend to details.1,2 Of course, all kids (especially younger ones) act this way at times, particularly when they are anxious or excited. But the difference with ADHD is that symptoms are present over a longer period of time and occur in different settings. They impair a child’s ability to function socially, academically, and at home. Standardized rating scales can be used for ADHD screening and assessment of the disorder’s symptoms’ severity.3 ADHD management usually involves some combination of medications, behaviour therapy, lifestyle changes, and counseling. Only children with moderate to severe ADHD symptoms should be considered for medication as a first-line treatment option. The good news is that with proper treatment, kids with ADHD can learn to successfully live with and manage their symptoms.3

CASE REPORT

This 11 year-old-boy, a student of class five, presented at the age of 8 years on 10.01.2010 at Delta Medical College Paediatric outpatient department with his parents. The parents had noticed that since 5 years of age he seemed constantly restless, irritable, disorganized, and inattentive than his older brother was at the same age. He was aggressive at times and had poor discipline. He would tear through the house, shouting, pulling clothes, ornaments, or spectacles of family
ADHD is the most common neurobehavioral disorder of childhood, among the most prevalent chronic health conditions affecting school-aged children. The prevalence rate in adolescent samples is 2%–6%. ADHD is often under diagnosed in children and adolescents. Inattention, hyperactivity, disruptive behavior, and impulsivity are common in ADHD. The symptoms are especially difficult to define because it is hard to draw a line at where normal levels of inattention, hyperactivity, and impulsivity end and clinically significant levels requiring intervention begin. To be diagnosed with ADHD, symptoms must be observed in two different settings for six months or more and to a degree that is greater than other children of the same age.

The specific causes of ADHD are not known. There are, however, a number of factors that may contribute to, or exacerbate ADHD. They include genetics, diet, and their social and physical environments. ADHD is predominantly a genetic disorder with environmental factors contributing a small role to the etiology of ADHD. Twin studies have shown that ADHD is largely genetic with 76% of the phenotypic variance being explained by inherited genetic factors. Mothers of children with ADHD are more likely to experience birth complications, such as toxemia, premature labour. Maternal smoking and alcohol use during pregnancy and pre or postnatal exposure to lead are commonly linked to ADHD. Abnormal brain structures are linked to an increased ADHD. Some researchers have theorized that ADHD is caused by dopamine imbalance in the brain of those affected. Food colourings and preservatives have inconsistently been associated. Psychosocial family stressors can also contribute to or exacerbate the symptoms of ADHD.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria state that the behavior must be developmentally inappropriate, must begin before age 7 years, must be present for at least 6 months, must be present in 2 or more settings, and must not be secondary to another disorder. DSM-IV identifies three subtypes of ADHD, such as Inattention type, Hyperactivity–impulsivity type, or a combination of both (Combined type). DSM-IV diagnostic criteria for ADHD is as follows:

1. Inattentive type (six or more of symptoms/signs must persist)
   - inability to pay attention to details or a tendency to make careless errors in schoolwork or other activities
   - difficulty with sustained attention in tasks or play activities
   - apparent listening problems
   - difficulty following instructions
   - problems with organization
• avoidance or dislike of tasks that require mental effort
• tendency to lose things like toys, notebooks, or homework
• distractibility
• forgetfulness in daily activities

2. Hyperactive-impulsive type (six or more of symptoms/signs must persist)\(^5\)
• fidgeting or squirming
• difficulty remaining seated
• excessive running or climbing
• difficulty playing quietly
• always seeming to be "on the go"
• excessive talking
• blurted out answers before hearing the full question
• difficulty waiting for a turn or in line
• problems with interrupting or intruding

3. Combined type, which involves a combination of the other two types and is the most common.

Many children with ADHD also present with co morbid psychiatric conditions, including opposition defiant disorder, conduct disorder, learning disabilities, and anxiety disorders.\(^6\)

There are no laboratory tests available to identify ADHD in children. Gathering as much information as possible about the child is the best way to get an accurate diagnosis and rule out other possible causes of the child's symptoms. The doctor may also check hearing and vision so other medical conditions can be ruled out.\(^5,6\)

ADHD can be successfully managed with a combination of behaviour therapy and medication.\(^7\) The parent and child should be educated with regard to the ways ADHD can affect learning, behavior, self-esteem, social skill, and family function. Behavioral therapy attempts to change behavior patterns by the following ways\(^7\):
• reorganizing a child's home and school environment
• giving clear directions and commands
• setting up a system of consistent rewards for appropriate behaviors and negative consequences for inappropriate ones

The most widely used medications for the treatment of ADHD are the psycho stimulant, including methylphenidate, amphetamine. There are a number of non-stimulant medications, such as, atomoxetine that may be used as alternatives.\(^8\) Methylphenidate is a norepinephrine and dopamine reuptake inhibitor, which means that it increases the level of the dopamine neurotransmitter in the brain.\(^8\) Methylphenidate should be used in children more than 6 years of age and started with a low dose (<20 mg/day). Over the first 4 weeks, the physician should increase the dose as tolerated to achieve maximum benefit.\(^5,8\) Methylphenidate may cause moderate appetite suppression, mild sleep disturbance, transient weight loss, emergence of tics.\(^9\) They may be associated with increased risk of sudden cardiac death, myocardial infarction, and stroke in patients with underlying cardiac disease. Patient should be kept on regular follow up for four or more times yearly.\(^9\)

ADHD medications reduce hyperactivity and impulsivity and improve their ability to focus, work, and learn.\(^10\) Medication also may improve physical coordination. About 60%–80% of children continue to experience symptoms in adolescence and 40%–60% of adolescents exhibit ADHD symptoms into adulthood.\(^5,10\)

In the presented case, patient fulfilled the diagnostic criteria for ADHD and methylphenidate was continued for 2 years along with behavioral management with good outcome.

**CONCLUSION**

As children diagnosed with ADHD often have significant difficulties in adolescence, regardless of treatment, so early detection, diagnosis and treatment is very important for prevention of long-term adverse effects of ADHD.\(^10\)
REFERENCES


