

ADHD IN CHILDREN AND ADOLESCENTS



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ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS

Introduction

Although attention difficulties, impulsivity and hyperactivity are common in the general population and may represent transitory or normative developmental patterns, certain individuals have a typical course and combination of symptoms associated with functional impairment, with well-known risk factors, abnormal neurodevelopmental functioning and neurobiological correlates. These individuals are affected by attention-deficit/hyperactivity disorder (ADHD), one of the most common mental disorders among children and adolescents, with approximately 5% of children under 18 years affected worldwide.

Overview and facts

Prevalence estimates of ADHD vary, but approximately 5% for individuals below 18 years of age, 6% for school age children and 3% among adolescents are affected by ADHD. Pooled data confirmed a higher prevalence among males than females, a widely acknowledged clinical observation.

Symptoms

ADHD is characterized by symptoms of inattention, hyperactivity and/or impulsivity. By definition, onset of symptoms must be early in childhood and differ from what is expected in normal development.

Inattention refers to a behavioral pattern in which the individual has difficulty initiating, remaining engaged in and completing a task. Inattentive children struggle to organize tasks and activities, to listen when spoken to, to plan or execute actions. Inattention also includes distractibility, forgetfulness, frequent loss or difficulty keeping track of objects. In adolescents and adults it is common to observe distorted time perception; patients commonly underestimate time in relation to tasks to be executed and tend to procrastinate.

Hyperactivity is characterized by:

- Excessive physical activity
- Constant feelings of restlessness, making patients incapable of remaining still even in situations in which that is expected
- Non-goal-directed motor activity; that is, activity is purposeless and affects the environment in a negative way (frequently standing up and walking purposelessly when they should remain seated, or move the hands and manipulate small objects when they are expected to remain still)
- Frequent fidgeting or squirming in their seat
- Inability to play quietly
- Talking too much, running around or climbing when it is inappropriate.

Impulsivity refers to difficulty in delaying an action or response even when it is known that this action will have negative consequences. Impulsiveness is associated with the need for immediate over delayed gratification, even when the postponement would lead to better results. Impulsive behaviors manifest themselves as difficulty waiting one's turn to speak,

in games and play activities or crossing the street. It can manifest also as a tendency to act without thinking. For example, giving immediate answers irrespective of their accuracy, giving answers not related to the question, or blurting out answers before the question is finished. Parents may hesitate in accepting an ADHD diagnosis based on the perception that the child is able to remain focused when performing specific tasks such as playing videogames, watching television or in certain situations. It is important to highlight that motivation, the relevance and attractiveness of the task for the child, and the environment largely influence the manifestation of symptoms.

Comorbidity

Children with ADHD often suffer from other psychiatric conditions; systematic screening for the presence of other mental disorders is essential. Learning Disorders, Oppositional Defiant Disorder, Anxiety Disorders, Conduct Disorders and depression and Tic Disorders are among the most frequent.

Causes and risk factors

ADHD is a familial disorder with a strong genetic component. Its heritability has been estimated as 76%, one of the highest among the mental disorders. Nevertheless, genetic factors alone do not explain the disorder's occurrence. The etiology of ADHD is considered to be multifactorial, that is, multiple environmental, genetic and biological factors play a role in increasing the risk for the disorder.

A number of environmental risk factors have been tested for their association with ADHD. Prematurity seems to be the factor most consistently associated with ADHD. Evidence also points to tobacco and alcohol exposure during pregnancy low birth weight as possible risk factors. It is also prudent to remember that no conclusive data exist linking ADHD to food additives, environmental toxins and computer games.

Neurobiology of ADHD

A growing body of evidence has associated ADHD with specific neurobiological deficits. It is important to note however that the neuroanatomical deficits implicated in ADHD cannot be interpreted as brain damage; they represent slight differences in mean values when samples of patients with ADHD are compared to controls. Furthermore none of the deficits identified so far are crucial for the development of the disorder, they cannot be linked to ADHD in a causal way and cannot yet be used for diagnostic purposes.

Test and diagnosis

The diagnosis of ADHD is exclusively made on clinical grounds and can follow either DSM-V (American Psychiatric Association, 2013) or ICD-10 (World Health Organization, 1993) criteria. The child's developmental stage must be considered in clinical evaluation as well as symptom pervasiveness (occurrence in more than one environment, like home and school) and clear evidence of clinically significant impairment in social, academic, or occupational functioning. In younger children it is essential to assess the family environment; where there is chaotic or inconsistent parenting, abuse or neglect, children often respond behaving in ways very similar to those of ADHD.

According to DSM-V, there are three possible subtypes based on the presence or absence of specific symptoms in the past 6 months:

- Combined (if criteria for both inattention and hyperactivity/impulsivity are met)
- Predominantly inattentive (if criteria for attention deficit are met but criteria for hyperactivity/impulsivity are not met)
- Predominantly hyperactive-impulsive (if criteria for hyperactivity/impulsivity are met but criteria for inattention are not met).

The predominantly inattentive subtype is more frequent among girls and less common in clinic settings because children are less often referred for treatment due to inattention than hyperactivity. This subtype is commonly associated with poor academic performance, cognitive deficits and delayed development. Predominantly inattentive patients are commonly described as disorganized, quiet, dreamers, and as “staring off into space”. The predominantly hyperactive-impulsive subtype is less common both in clinic and community settings and is often found in pre-school children. The combined subtype is the most commonly diagnosed subtype in clinic settings. Although all subtypes of ADHD are associated with oppositional defiant behaviors this association is stronger for the combined subtype, making treatment more challenging. Furthermore, the combined subtype is associated with higher functional impairment than the other two types.

Rating scales

While diagnosis cannot be made on the basis of rating scale data alone, using rating scales is good clinical practice for screening purposes, to measure symptom severity and to monitor response to treatment and outcome. There are numerous rating scales that can be either specific for ADHD or for general psychopathology. Most have a child, parent and teacher versions.

Treatment

ADHD interferes with multiple areas of functioning, such as behavior at home, in social situations, school performance; treatment should seek to improve functioning in all these areas.

Following assessment, clinicians should decide about targets for intervention and formulate a treatment plan integrating the different modalities needed to achieve all the treatment goals. Treatment plans should be individually tailored to each patient and constantly reviewed and updated according to emerging needs and previous response. A close monitoring of treatment response is required and should include data from different sources, including parents', patients' and teachers' reports of perceived changes following interventions.

Pharmacotherapy is effective for most children. Behavioral interventions are also valuable as primary treatment or as an adjunct treatment for many children, depending on the nature of coexisting conditions, outcomes targeted and family circumstances.

Behavior therapy

The effect size of behavioral interventions on ADHD symptoms is smaller than that of stimulant medications. Many guidelines for behavior therapy in ADHD are available. In general terms, the therapist identifies problem behaviors and collects detailed data on the circumstances that precede and follow such behaviors. Usually behaviors become ingrained when reinforced. After the identification of reinforcing consequences a detailed plan on how to deal with problematic

situations is drawn up and a different set of techniques to stop reinforcing unwanted behaviors or extinguish them is implemented. Behavior therapy for ADHD almost always involves parents and teachers as well as the child.

Pharmacotherapy

Many medications have been shown to be effective and safe for children with ADHD. Medications can be divided into stimulants and non-stimulants.

Stimulant medications

Stimulant medications have been used for decades in the treatment of ADHD and are licensed for this purpose in many countries. The efficacy and safety of these drugs have been extensively examined in numerous clinical trials as well as in systematic reviews and meta-analyses. Trials consistently show that stimulants are very effective, with effect-sizes varying from 0.8 to 1.1 and a positive early clinical response in approximately 70% of cases.

Medications are available in different presentations, including short-acting, long-acting and sustained-release. The main advantage of long-acting and sustained-release preparations is that one dose in the morning may sustain effect during the whole day, increasing adherence.

Non-stimulant medications

Non-stimulant medications are considered second line treatments in case of intolerance, contra-indications or treatment failure. Evidence of effectiveness of these drugs, although not as strong as for stimulants, is good for atomoxetine, extended-release guanfacine, and extended-release clonidine.

Sources and Links

http://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/Facts_for_Families_Keyword.aspx
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